EXPLANATORY MEMORANDUM TO THE CONTROL OF SALMONELLA IN TURKEY FLOCKS ORDER (WALES) 2010

1. This Explanatory Memorandum has been prepared by the Office of the Chief Veterinary Officer, Rural Affairs Department and is laid before the National Assembly for Wales in accordance with Standing Order 24.1.

Description

2. The National Control Programme (NCP) for Salmonella in Turkey Flocks is intended to reduce and/or control the prevalence of Salmonella Enteritidis and Salmonella Typhimurium in turkey flocks for the protection of human health. The NCP ensures compliance with the requirements of EU Regulations 2160/2003 and 584/2008. In order to support the NCP, the Control of Salmonella in Turkey Flocks (Wales) Order 2010 will set out specific sampling requirements for turkey flocks. It also requires operators of turkey fattening and breeding flocks to provide Welsh Ministers with certain information relating to those flocks, and imposes record keeping requirements.

Matters of special interest to the Subordinate Legislation Committee

3. There are no matters of special interest to the Committee.

Legislative Background

4. EU Regulation 2160/2003 provides a framework for the NCP that details the phases of production which sampling and testing for the salmonellas must cover. It applies to all primary production, except where it is a) for private domestic use, or b) leading to the direct supply, by the producer, of small quantities of primary products to the final consumer or to local establishments directly supplying the primary products to the final consumer. Regulation 584/2008 establishes the methods of the sampling and testing and the reduction target.

5. The NCP for Salmonella in Turkey Flocks follows the introduction of NCPs for breeding chickens in 2007, laying flocks in 2008 and broilers in 2009. Further NCPs will be introduced for the reduction of Salmonella in pigs (breeding and slaughter) in 2011/12, as agreed under EU legislation.

6. Welsh Ministers have powers to make the legislation under sections 1 and 8 of the Animal Health Act 1981 and section 2(2) of the European Communities Act 1972. The powers conferred under the Animal Health Act 1981 are now vested in the Welsh Ministers by virtue of the Transfer of Functions Order 1999 (SI 1999/672), the Transfer of Functions Order 2004 (SI 2004/3044) and paragraph 30 of Schedule 11 to the Government of Wales Act 2006.

7. The Welsh Ministers are designated for the purposes of section 2(2) of the European Communities Act 1972 in relation to the Common Agricultural Policy of the European Community in Wales pursuant to the European Communities (Designation) (no 3) Order 2005 (SI 2005/1766). The powers were transferred to the Welsh Ministers by virtue of sections 59(1) and 162 of and paragraphs 28 and 30 of Schedule 11 to the Government of Wales Act 2006. The Regulations will follow the negative procedure.

Purpose and intended effect of the legislation

8. As stated in paragraph 2, The Control of Salmonella in Turkey Flocks (Wales) Order 2010 will support The National Control Programme (NCP) for Salmonella in Turkey Flocks.

9. The following are the specific requirements of the NCP**:**

   - producers to meet a reduction target which is a maximum percentage of turkey flocks remaining positive for *Salmonella* Enteritidis and *Salmonella* Typhimurium serotypes to 1% or less by 31 December 2012.

   - operators to collect samples from fattening flocks for *Salmonella* testing, within 3 weeks prior to slaughter.

   - The Competent Authority to collect samples once a year from 10% of holdings with at least 500 fattening turkeys and from 10% of holdings with at least 250 adult breeding turkeys between 30 and 45 weeks of age.

   - specific control measures, following the detection of *Salmonella* Enteritidis or *Salmonella* Typhimurium in turkey flocks, to protect human health. Such measures include a cleaning and disinfection procedures and provides for the collection of official control samples from all houses on the holding, under the control of the Competent Authority, to ensure that infection is not transmitted to subsequent flocks.

10. The NCP will apply in full to all turkey breeding flocks with more than 250 birds, all fattening flocks with more than 500 birds and all hatcheries with a capacity for more than 1,000 eggs. Turkey fattening flocks of between 500 and 10,000 birds, which are able to demonstrate that they supply locally will not be required to carry out business operator sampling, but will remain subject to official control sampling under domestic arrangements. Prevalence results of these flocks will be reviewed at the end of the first year of implementation to assess whether these flocks need further monitoring to control prevalence levels.

Implementation

11. Failure to implement these Regulations could potentially be seen as inadequate transposition of EU legislation and could result in infraction proceedings. There is also a risk that it could lead to a lack of clarity and confusion as to the current requirements in force in the UK.

Consultation

12. A 12 week public consultation was carried out on the proposal to implement a NCP for turkey flocks. The consultation ran from 7th August to 30th October 2008, with comments invited from stakeholders, including industry representative bodies and individual producers. The consultation package included a copy of the draft Control of Salmonella in Turkey Flocks (Wales) Order and a UK wide Regulatory Impact Assessment (RIA).

13. In addition to public consultation, all major representative bodies covering almost all UK production, have been invited by DEFRA to attend regular stakeholder meetings. These meetings will continue as the NCP is implemented. Welsh Assembly Government officials also attend these meetings.

Regulatory Impact Assessment

14. As the NCP is a UK wide programme the Regulatory Impact Assessment has been prepared by the Department for Environment and Rural Affairs (DEFRA) on a UK wide basis.

15. The policy objective is to bring protection for human and animal health into line with EU requirements. The NCP sets out monitoring and controls that primary producers must follow to reduce or maintain the prevalence of Salmonella of public health significance in turkey flocks on UK holdings, at least to target levels set out in Regulation 584/2008. This is a maximum percentage of turkey flocks remaining positive for Salmonella Enteritidis and Salmonella Typhimurium to 1% or less by 31 December 2011.

Options

16. The following options have been considered;

    Option 1 - Do nothing

    Option 2 - Implement the NCP on a voluntary basis only

    Option 3 - For management of the NCP to be under the direct control of Government

    Option 4 - For the responsibilities for the management and auditing of the NCP to be shared by government and industry

    Option 5 - For turkey companies to establish their own company and control programme as part of the NCP.

17. A detailed analysis of each option is contained within the Regulatory Impact Assessment which is available at Annex A.

18. Following consultation and discussion at stakeholder meetings the preferred option for implementation is option 4 under which responsibility for the management and auditing of the NCP will be shared by Government and industry. It is intended that this is the option that will now be implemented.

Risk Assessment

19. Failure to implement these Regulations could potentially be seen as inadequate transposition of EU legislation and could result in infraction proceedings. There is also a risk that this could lead to a lack of clarity and confusion as to the current requirements in force in the UK.

Competition Impacts

20. All eligible turkey producers in the UK will be subject to the requirements of the NCP. In Wales, latest statistics show that there are 154 holdings with approximately 59,000 turkeys. It is not felt that these requirements will reduce the number or range of suppliers of breeding and fattening turkeys nor limit the ability to choose the price, range, quality and location of their products. The measures will not impose additional costs on new entrants compared to incumbent firms. The industry is not characterised by rapid technological change.

21. All EU Member States will need to implement the legislation so there will be a more level playing field for EU competition.

Race, Equality and Gender impacts

22. There will be no additional race equality or gender impacts resulting from the preferred option.

Carol Harris
Office of the Chief Veterinary Officer

Annex A

Summary: Intervention & Options		
Department /Agency:	**Title:** **Impact Assessment for the Consultation on the Control of *Salmonella* in Turkey flocks**	
Stage: Consultation	**Version:**	**Date:** 29 July 2009
Related Publications: Impact Assessment for *Salmonella* NCP.		

Available to view or download at:
http://www.defra.gov.uk/corporate/consult/

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

Salmonella is an important zoonotic pathogen that poses a public and animal health risk. The National Control Programme for turkey flocks puts in place a *Salmonella* monitoring and control program for turkeys. It complies with EU Regulation 2160/2003 on the control of *Salmonella* and other food borne agents and EU Regulation 584/2008 for the reduction of the prevalence of S. Enteritidis and S. Typhimurium in turkeys.

The NCP cannot be implemented and enforced under existing legislation and administration. It is not likely that we can meet our EU obligations by implementation on voluntary basis only.

What are the policy objectives and the intended effects?

To bring protection for human and animal health into line with EU requirements the NCP sets out monitoring and controls primary producers must follow to reduce or maintain the prevalence of *Salmonella* of public health significance in turkey flocks on UK holdings at least to target levels set out in Regulation 584/2008. This is a maximum percentage of turkey flocks remaining positive for *Salmonella* Enteritidis and *Salmonella* Typhimurium to 1% or less by 31 December 2011.

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

The specific options and their costs and benefits are described in detail in the Evidence Base. Our preference is for option 4.

Option 1 – Do nothing

Option 2 – Implement the NCP on a voluntary basis only.

Option 3 – For management of the NCP to be under the direct control of government.

Option 4 – For responsibilities for the management and auditing of the NCP to be shared by government and industry.

Option 5: For turkey companies to establish their own company control programme as part of the NCP.

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

Government will monitor progress of the NCP. The EU legislation provides for a review after its first year of implementation in December 2010.

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:

Summary: Analysis & Evidence

Policy Option: 2	Description: Implement the NCP on a voluntary basis only.

COSTS

ANNUAL COSTS		Description and scale of **key monetised costs** by 'main affected groups'
One-off	**Yrs**	**Industry** (all p.a.) – (a) BO sampling £46k; (b) Official sampling £2.2k; (c) Positive tests £5.6k; (d) Additional admin burden £46k. **Government** (all p.a.) - (a) BO sampling £108k; (b) Official sampling £28k
£	1	
Average Annual Cost (excluding one-off)		
£ 236k	2	**Total Cost** (PV) **£ 449k**

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

BENEFITS

ANNUAL BENEFITS		Description and scale of **key monetised benefits** by 'main affected groups'
One-off	**Yrs**	Public health benefits from reduced incidence of Salmonella in the UK: between £0 and £233k per annum
£ 0		
Average Annual Benefit (excluding one-off)		
£ 0 - £123k	2	**Total Benefit** (PV) **£ 0 - 233k**

Other **key non-monetised benefits** by 'main affected groups'
General: Competitiveness - requiring other EU countries to undertake testing will potentially improving the competitiveness of turkey production in the UK.
Option specific: there would be more flexibility for industry without Government intervention. It would also show a "light touch" approach to implementation in light of industry achieving target.

Key Assumptions/Sensitivities/Risks

See evidence base for assumed levels of compliance. Costs to holdings of legal action for non-compliance not estimated. Time period of analysis 2 years, to reflect review period.

Price Base Year 2009	Time Period Years 2	**Net Benefit Range** (NPV) **-£215k - -£448k**	**NET BENEFIT** (NPV Best estimate) **-£332**

What is the geographic coverage of the policy/option?				UK
On what date will the policy be implemented?				Jan 2010
Which organisation(s) will enforce the policy?				AH
What is the total annual cost of enforcement for these organisations?				£28k
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)	Micro	Small	Medium	Large
Are any of these organisations exempt?	Yes	No	N/A	N/A

Impact on Admin Burdens Baseline (2005 Prices) (Increase - Decrease)
Increase £ 44.7k Decrease £ **Net Impact £ 44.7k**

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

Summary: Analysis & Evidence

Policy Option: 3	Description: For management of the NCP to be under the direct control of government.

COSTS

ANNUAL COSTS		Description and scale of **key monetised costs** by 'main affected groups'
One-off	**Yrs**	As option 2 plus
£	1	**Industry** (all p.a.) – (a) audit costs £22k; **Government** – (a) audit costs £242k; (b) management of the programme £67k
Average Annual Cost (excluding one-off)		
£ 568k	2	**Total Cost** (PV) **£ 1.08m**

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

BENEFITS

ANNUAL BENEFITS		Description and scale of **key monetised benefits** by 'main affected groups'
One-off	**Yrs**	Public health benefits from reduced incidence of Salmonella in the UK: between £0 and £233k per annum
£ 0		
Average Annual Benefit (excluding one-off)		
£ 0 - £123k	2	**Total Benefit** (PV) **£ 0 - 233k**

Other **key non-monetised benefits** by 'main affected groups'
General: as option 2
Option specific: this option would ensure a comprehensive system and compliance with EU legislation. It would also be a level playing field between companies and government.

Key Assumptions/Sensitivities/Risks

See evidence base for assumed levels of compliance. Costs to holdings of legal action for non-compliance not estimated. Time period of analysis 2 years, to reflect review period.

Price Base Year 2009	Time Period Years 2	**Net Benefit Range** (NPV) **-£845k - -£1.08m**	**NET BENEFIT** (NPV Best estimate) **-£962k**

What is the geographic coverage of the policy/option?			UK	
On what date will the policy be implemented?			Jan 2010	
Which organisation(s) will enforce the policy?			AH	
What is the total annual cost of enforcement for these organisations?			£338k	
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)	Micro	Small	Medium	Large
Are any of these organisations exempt?	Yes	No	N/A	N/A

Impact on Admin Burdens Baseline (2005 Prices) (Increase - Decrease)
Increase £ 64.4k Decrease £ **Net Impact** **£ 64.4k**

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

Summary: Analysis & Evidence

Policy Option: 4	Description: For responsibilities for the management and auditing of the NCP to be shared by government and industry.

COSTS

ANNUAL COSTS		Description and scale of **key monetised costs** by 'main affected groups' As option 2 plus
One-off	**Yrs**	**Industry** (all p.a.) – (a) audit costs £22k (yr 1), £20k (yr 2); (b) info sharing £2.4k (yr 2) **Government** – (a) audit costs £242k (yr 1), £193k (yr 2); (b) management of the programme £67k per annum
£	1	
Average Annual Cost (excluding one-off)		
£ 543k	2	**Total Cost** (PV) **£ 1.03m**

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

BENEFITS

ANNUAL BENEFITS		Description and scale of **key monetised benefits** by 'main affected groups'
One-off	**Yrs**	Public health benefits from reduced incidence of Salmonella in the UK: between £0 and £233k per annum
£ 0		
Average Annual Benefit (excluding one-off)		
£ 0 - £123k	2	**Total Benefit** (PV) **£ 0 - 233k**

Other **key non-monetised benefits** by 'main affected groups'
General: as option 2
Option specific: this option will see Government and Industry having joint responsibility for the management of the NCP. However, the Government would retain responsibility for the monitoring and controls required by the programme and this will ensure that public health is maintained. This option would also allow companies with consistently good records and biosecurity standards to conduct their own audits of the operator sampling and avoid the need for regular inspections.

Key Assumptions/Sensitivities/Risks

See evidence base for assumed levels of compliance. Costs to holdings of legal action for non-compliance not estimated. Time period of analysis 2 years, to reflect review period.

Price Base Year 2009	Time Period Years 2	**Net Benefit Range** (NPV) **-£798k - -£1.03m**	**NET BENEFIT** (NPV Best estimate) **-£915k**

What is the geographic coverage of the policy/option?			UK	
On what date will the policy be implemented?			Jan 2010	
Which organisation(s) will enforce the policy?			AH	
What is the total annual cost of enforcement for these organisations?			£289k	
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)	Micro	Small	Medium	Large
Are any of these organisations exempt?	Yes	No	N/A	N/A

Impact on Admin Burdens Baseline (2005 Prices) (Increase - Decrease)
Increase £ 70k (yr 2) Decrease £ **Net Impact** **£ 70k (yr 2)**

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

Summary: Analysis & Evidence

Policy Option: 5	Description: For turkey companies to establish their own company control programme as part of the NCP.

COSTS

ANNUAL COSTS		Description and scale of **key monetised costs** by 'main affected groups' As option 2 plus
One-off	**Yrs**	**Industry** (all p.a.) – (a) audit costs £130k; (b) programme management £36k; **Government** – (a) audit costs £15k; (b) management of the programme £3.7k
£	1	
Average Annual Cost (excluding one-off)		
£ 417k	2	**Total Cost** (PV) **£ 793k**

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

BENEFITS

ANNUAL BENEFITS		Description and scale of **key monetised benefits** by 'main affected groups'
One-off	**Yrs**	Public health benefits from reduced incidence of Salmonella in the UK: between £0 and £233k per annum
£ 0		
Average Annual Benefit (excluding one-off)		
£ 0 - £123k	2	**Total Benefit** (PV) **£ 0 - 233k**

Other **key non-monetised benefits** by 'main affected groups'
General: as option 2
Option specific: provision of scope for producers and representative bodies to put forward their own control programmes for approval and adoption of controls as part of their internal systems. Company operating schemes would be updated to include sampling and controls in the NCP allowing for more independence and delegation and giving a sense of ownership of the NCP to industry.

Key Assumptions/Sensitivities/Risks

See evidence base for assumed levels of compliance. Costs to holdings of legal action for non-compliance not estimated. Time period of analysis 2 years, to reflect review period.

Price Base Year 2009	Time Period Years 2	**Net Benefit Range** (NPV) **-£559k - -£793k**	**NET BENEFIT** (NPV Best estimate) **-£676k**

What is the geographic coverage of the policy/option?			UK	
On what date will the policy be implemented?			Jan 2010	
Which organisation(s) will enforce the policy?			AH	
What is the total annual cost of enforcement for these organisations?			£47k	
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)	Micro	Small	Medium	Large
Are any of these organisations exempt?	Yes	No	N/A	N/A

Impact on Admin Burdens Baseline (2005 Prices) (Increase - Decrease)
Increase £ 53.5k Decrease £ **Net Impact** **£ 53.5k**

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

Evidence Base

Impact Assessment on a National Control Programme for *Salmonella* in turkeys.

1. Introduction

1.1 The NCP sets out the monitoring and controls primary producers must follow to reduce or maintain the prevalence of salmonella of public health significance in fattening and breeding turkeys flocks at least to the target levels set out in Regulation (EC) No 584/2008. This is a maximum percentage of fattening and breeding turkey flocks remaining positive for *Salmonella* Enteritidis and *Salmonella* Typhimurium to 1% or less by 31 December 2012.

2. The Objective

2.1 Defra is working in partnership with key industry representatives to implement National Control Programmes in the pig and poultry sectors under EU Regulation 2160/2003. The overall objective of the NCPs is to improve public health through the detection and control of salmonella of human health significance in primary production. The enhanced monitoring requirements should ensure that information on *Salmonella* status can be more easily compared across the EU, and the aim for a more unified approach to the control of *Salmonella* can be achieved. NCPs have been introduced for breeding (2007), laying flocks (2008) and broiler flocks (2009). We expect that a NCP for fattening and breeding pigs will be introduced in 2011.

2.2 The turkey NCP as enforced by The Control of *Salmonella* in Turkey Flocks Order (The Turkey flocks Order) meets the requirements of EU legislation to reduce (and/or maintain) the level of *Salmonella* infection of public health significance in turkey breeding and fattening flocks in the EU, and in turn aims to help reduce the level of human infection caused by *Salmonella*. The NCP seeks to accomplish this by ensuring that *Salmonella* serovars of human health significance are detected and controlled in turkeys and their environment in order to reduce any risk they may pose to human health further along the food chain.

2.3 A summary of the various costs of the legislation is shown below (see Annex 3 for a further breakdown):

- Option 2 – Implementing the voluntary basis - is estimated to cost £239k per annum
- Option 3 – Management of the NCP to be under the direct control of Government - is estimated to cost £528k per annum
- Option 4 - Responsibilities for the management and auditing of the NCP to be shared by government and industry – is estimated to cost (on average) £552k per annum
- Option 5 - turkey companies to establish their own company control programme as part of the NCP – is estimated to cost £425k per annum

2.4 The expected benefits are difficult to monetise. Based on an approximation of infection relating to *Salmonella* (see section 15 for further detail), the health impacts are estimated to be between £0 to £233k per annum. Although the benefits are assumed to be equal for each option, there is a risk that they will not be fully realised if the management of the NCP is unsuccessful. At this stage it is assumed that Government involvement at the monitoring stage is more likely to lead to a successful management outcome.

2.5 In accordance with Article 5(1) of Regulation EC No. 2160/2003, the Commission will carry out a review of the target and testing scheme set out in the Annex based on the experience gained in the first year of the programme (2010).During this review the National Control Programme for Turkeys will be evaluated in the light of results obtained and changes may be made.

The UK will be involved in the review process and will consult industry on the proposed changes.

3. Summary of costs

Annual costs (£)	Option2	Option 3	Option 4*	Option 5	Location (paragraphs)
Shared costs					
BO sampling	153,534	153,534	153,534	153,534	**16.3 - 16.23**
of which to industry	45,850	45,850	45,850	45,850	
of which to Government	107,684	107,684	107,684	107,684	
Official sampling	30,542	30,542	30,542	30,542	**16.24 - 16.37**
of which to industry	2,156	2,156	2,156	2,156	
of which to Government	28,386	28,386	28,386	28,386	
Costs of positive tests	5,582	5,582	5,582	5,582	**16.41 - 16.46**
of which to industry	5,582	5,582	5,582	5,582	
of which to Government	**-**	**-**	**-**	**-**	
Additional administrative burden	46,446	46,446	46,446	46,446	**16.38 - 16.40**
of which to industry	46,446	46,446	46,446	46,446	
of which to Government	**-**	**-**	**-**	**-**	
Option specific costs					**17.1 - 17.5.6**
Audit of applicable premises	**-**	264,429	213,986	142,127	
of which to industry	**-**	22,027	20,065	127,090	
of which to Government	**-**	242,402	193,921	15,037	
Management costs	**-**	67,438	67,438	39,266	
of which to industry	**-**	-	-	35,526	
of which to Government	**-**	67,438	67,438	3,740	

Sum	**236,104**	**567,972**	**517,529**	**417,498**	
Sum to industry	100,034	122,061	120,099	262,650	
Sum to Government	136,071	445,911	397,430	154,847	

* Option 4 costs refer to costs in year 2 of the programme. In year 1 these costs are expected to be the same as Option 3.

4. Definition

- A **zoonotic agent** means any virus, bacterium, fungus, parasite or other biological entity which is likely to cause a zoonosis.

- A **zoonosis** is any disease and/or infection which is naturally transmissible directly or indirectly between animals and humans.

- A **National Control Programme** (NCP) is a framework of measures required by Zoonoses Regulation 2160/2003 for the control and monitoring of zoonoses and zoonotic agents which must be implemented by all EU Member States.

- A **flock** means poultry of the same health status kept on the same holding or in the same enclosure and constituting a single epidemiological unit which, in the case of housed poultry, includes all birds sharing the same airspace.

- A **broiler flock** means a flock of domestic fowl (*Gallus gallus*) kept for the production of meat intended for human consumption. On most broiler holdings a flock is equivalent to a house. The capacity of a house is referred to as "bird places".

- A **laying flock** means a flock of poultry(*Gallus gallus)* kept for the production of eggs intended for human consumption;

- A **rearing flock** means poultry which are reared for the production of eggs or meat for human consumption.

- A **fattening turkey flock** means turkeys kept for the production of meat intended for human consumption. On most turkey holdings a flock is equivalent to a house. The capacity of a house is referred to as "bird places".

- A **breeding flock** for the purposes of this Impact Assessment comprises at least 250 adult turkeys that are reared or kept for the production of hatching eggs.

- **Poultry** means birds of the species (*Gallus gallus)*, chickens, turkeys, ducks and geese.

- **Business Operator (BO)** means the natural or legal persons responsible for ensuring that the requirements of the national control plan are met within the business under their control.

- **Competent Authority (CA)** means a government body, or agency of the government body with the overall responsibility for the implementation and enforcement of legislation.

- **Control Body (CB)** is an organisation responsible for management of the NCP which may undertake certain delegated duties on behalf of the CA.

- **Competent Authority Sampling** means sampling which takes place under the control of the Competent Authority (CA). Officials might be responsible for collecting these samples or supervising their collection by a third party or delegating the supervision of their collection to a third party. Such samples are sometimes also referred to as "official control samples".

- ***Salmonella* of human health significance** is *Salmonella* Enteritidis (SE) and *Salmonella* Typhimurium (ST). These salmonella are most frequently found in the human population.

5. The Control of *Salmonella* in Turkey Flocks Order Amendment

5.1 This Statutory Instrument (SI) revokes and remakes earlier legislation on the control of *Salmonella* in laying, breeding and broiler flocks. The new SI includes the measures farmers must take when salmonella is detected in a flock. These measures were previously imposed by the exercise of the Secretary of State's powers under the Zoonoses Order 1989 and the changes in the legislation will therefore make no difference to what farmers have to do in the event of infection. The change has been made to ensure that technical requirements for the implementation of European law are met.

6. Other legislation referred to in the Impact Assessment

6.1 See 2.2.0 of the National Control Programme

Application and scope for breeding flocks

6.2 The NCP will apply to all turkey breeding flocks with more than 250 birds and all hatcheries with a capacity for more than 1,000 eggs.

There are 187 breeding holdings and hatcheries in the UK that fall under the remit of the NCP:

- 86 of which are breeding holdings with adult/laying flocks
- 75 are breeding holdings with rearing flocks
- 23 are holdings with both rearing and laying flocks
- 9 are hatcheries

Application and scope for fattening flocks

6.3 The NCP will apply in full to all turkey fattening flocks with more than 500 birds and all hatcheries with a capacity for more than 1,000 eggs. Flocks between 500 and 10,000 which are able to demonstrate that they supply locally will be subject to official control sampling. Prevalence results of these flocks will be reviewed at the end of the first year of implementation to assess whether these flocks need further monitoring to control prevalence levels.

There are 679 holdings that are expected to fall under the remit of the NCP:

- 497 of which are holdings with between 500 and 10,000 bird flocks
- 182 are holdings with greater than 10,000 bird flocks

7. Background – Legislation

The establishment of a baseline prevalence of Salmonella

7.1 EU Zoonoses Regulation 2160/2003 on the control of *Salmonella* and other specified zoonotic agents was agreed by the Secretary of State in 2003. This was in response to the opinion on zoonoses adopted on 12 April 2000 by the Scientific Committee on Veterinary Measures relating to public health. That opinion found that the measures in place in some Member States at the time to control food-borne zoonotic infections were insufficient and that the epidemiological data that Member States were collecting was incomplete and not fully comparable. It was agreed that the reduction of prevalence levels of salmonella of public health significance were of particular importance and as a result the EU agreed in 2003 to set targets for reducing prevalence at the farm level.

7.2 This Regulation provides for the setting of Community targets for reducing the prevalence of *Salmonella* serovars (infections) of public health significance in pigs (fattening and breeding) and poultry (breeders, layers, broilers and now turkeys). The breeding flock turkey sector had met this target when the survey was carried out and the turkey fattening flock sector is expected to meet its target during the period of the NCP.

7.3 Surveys were carried out in all Member States, between October 2006 and September 2007, in order to determine a baseline prevalence level for *Salmonella* Enteritidis and *Salmonella* Typhimurium on turkey fattening holdings with at least 500 birds, in order to provide the scientific basis for setting a Community reduction target. A similar survey for turkey breeding flocks covering all flocks on holdings with 250 birds took place which was also used to set a reduction target. To meet the sampling frame required by the Commission 343 holdings (318 fattening flocks selected at random and 25 breeding holdings) were selected.

7.4 Further information on turkey survey see EFSA report:
EFSA publishes EU-wide survey on Salmonella levels in turkeys
After the results were examined a baseline figure for reduction was set. The target is a maximum percentage of turkey breeding and fattening flocks remaining positive for *Salmonella* Enteritidis and *Salmonella* Typhimurium of 1% or less by 31 December 2012 across the EU Community as a whole.

7.5 With a prevalence of 0.89% for SE in turkey breeding flocks the UK has one of the lowest prevalence rates in the EU, which is well below the EU target and demonstrates the success of the UK industry in controlling *Salmonella*. The prevalence in turkey fattening flocks was 4.6% for SE/ST, however later research and surveillance suggests a decrease in this percentage to minimal levels.

The establishment of National Control Programmes

7.6 The first NCP covered breeding flocks of domestic fowl and came into operation in January 2007, after full consultation under The Poultry Breeding Flocks and Hatcheries Order 2007 (which was revoked and replaced with The Control of *Salmonella* in Poultry Order (CSPO)). This set out the official controls necessary to verify the target level established by EU Regulation 1003/2005 which was made under Regulation 2160/2003. This was for a maximum percentage of adult breeding flocks (comprising

at least 250 birds) remaining positive for the five serovars (*Salmonella* Enteriditis, *Salmonella* Typhimurium, *Salmonella* Hadar, *Salmonella* Infantis and *Salmonella* Virchow) to be 1% or less by 31 December 2009. In December 2007 Defra was able to report that the breeding flock sector had met the requirements of the NCP and the prevalence estimate for UK flocks was well below the target set. The NCP for laying flocks followed on from the breeders NCP and came into force in February 2008 followed by the NCP for broilers earlier this year. Defra will also be expected to report on progress under the turkeys NCP to the Commission.

7.7 The NCP for turkey flocks complies with Regulations 2160/2003, 199/2009, 213/2009 and 584/2008. This legislation should ensure a consistent approach to the reduction of salmonella of public health significance across the EU and equivalent protection of human health from turkey meat imported from other European Community Member States. Over the next 2 years a separate NCP will be drawn up for fattening and breeding pigs. This will be subject to a separate consultation.

7.8 The UK NCP for turkey flocks was submitted for approval by the Commission in December 2008 after the setting of the reduction target by Regulation 584/2008 and has now been provisionally approved by the EU Commission. The *Salmonella* control programme for flocks of turkeys will start in every Member State on 2 January 2010 at the latest. Regulation 2160/2003 sets a general framework for control programmes which the NCP for turkeys integrates:

- Minimum sampling requirements detailing the phases of production which sampling must cover (Annex II, B).The majority of this sampling is carried out by the operator, although the NCP requires that some samples are collected under the control of the Competent Authority in order to determine progress towards reduction targets set by EU legislation and to monitor the implementation.

- The relevant guides for good biosecurity and animal husbandry which cover issues such as rodent control to reduce the risk of introducing and maintaining *Salmonella* on the farm, the prevention of between-flock transmission (for instance through insufficient disinfection and pest control in poultry houses) and the monitoring of feed production. Guidance produced by the Food Standards Agency (FSA) on feed and food safety is also of relevance.

- The respective responsibilities of the Competent Authorities (CA) and food and feed business operators and the method of approval of laboratories for analysis of samples.

- The measures to be taken following the detection of zoonoses and zoonotic agents, to protect public health (see annex). These should help prepare producers for the specific measures laid down in Annex II of the Zoonoses Regulation 2160/2003 when a turkey flock is suspected of being infected with *S.* Enteritidis or *S.* Typhimurium. These are likely to be enforced under separate legislation when the microbiological criteria for *Salmonella* absence in 25 grams of meat has been clarified by the Commission (due to come into force at the end of 2010).

The registration of poultry operators and record keeping at farms.

7.9 Relevant current national legislation is described in page 19 (paragraph 2.2.0) of the UK NCP for *Salmonella* in turkeys. The structure and organisation of the relevant Competent Authorities (CAs) is described in page 12 (paragraph 1.5.0) of the NCP.

8. Rationale for government intervention.

8.1 The NCP will bring UK standards into harmony with those in other Member States. It will ensure that UK producers cannot be undercut through competition with producers in other EU Member States and third countries without equivalent standards. NCPs are now in place for layers, broilers and breeders. This will ensure that the turkey sector is part of an integrated approach to *Salmonella* control.

8.2 The UK is committed to reducing *Salmonella* serotypes of public health significance at national and European Community level. There is currently no statutory monitoring programme for *Salmonella* in turkeys in the UK producing meat for human consumption and breeding turkeys. Existing surveillance for *Salmonella* involves voluntary monitoring with the requirement for all laboratories which isolate *Salmonella* from a turkey flock or its environment to report the finding, and supply the isolate to the National Reference Laboratory to be recorded and analysed.

8.3 These reports provide useful information on the serovars which are most common in the birds, and indicate trends. However they do not give information on the number of holdings or flocks sampled and so it is not possible to monitor the prevalence of *Salmonella* in turkey flocks from these figures. The number of reports which have been made depend on the level and sensitivity of monitoring undertaken by the producers. Therefore, in order to establish whether or not the turkey sector continues to meet the reduction target, government must ensure that all flocks are monitored for *Salmonella* in a regular and consistent manner which complies with the legislation.

8.4 It is recognised that some Farm Assurance Schemes in the poultry sector set out monitoring and testing requirements beyond those currently recommended as good practice. The Farm Assurance Schemes are encouraged to incorporate the sampling programme in their codes of practice.

8.5 By covering breeding as well as fattening flocks the NCP should establish comprehensive monitoring and controls which should minimise the risk of *Salmonella* being brought onto holdings from the breeding farms. The results of the EU survey of turkey flocks indicate that industry actions to control *Salmonella* over recent years have contributed to a low baseline level for the UK. However non-compliance with the monitoring and controls which other Member States should have in place would undermine future attempts to promote the reputation of the poultry sector. It would also have an impact on producers wishing to trade within the EU. Although some of these products would be redirected into domestic consumption, this may result in them losing value.

Establishment of Salmonella Reduction Targets

8.6 The reduction targets are set by Regulations made under Regulation 2160/2003 (as amended by Regulation 199/2009). The reduction target for breeding flocks was set by Regulation 1003/2005 (recently amended by Regulation 213/2009), Regulation 1168/2005 for layers and Regulation 646/2007 for broilers. Regulation 411/2009 which amends Regulation 798/2008 lays down provisions with regards to *Salmonella* control in turkeys in certain third countries. The purpose of Regulation 584/2008 for turkeys is:

a. To reduce or maintain the prevalence of salmonella of public health significance in flocks of breeding and fattening turkeys on holdings in the UK producing turkeys for meat for human consumption and breeding turkeys at least to the target levels set out in Regulation (EC) No 584/2008. This is a maximum percentage of turkey flocks remaining positive for *Salmonella* Enteritidis and *Salmonella* Typhimurium to 1% or less by 31 December 2012.

b. Set out requirements and testing methods under the control of the Competent Authority to verify the achievement of the Community target.

c. Set out requirements and testing methods to be performed by the operator

d. Ensures that samples are submitted to a laboratory authorised by the Competent Authority (CA), which applies quality assurance systems that conform to the requirements of the current EN/ISO standard.

9. Consultation

9.1 Outside government

9.1.1 Regular meetings have been held with major stakeholders in the UK turkey industry (including The National Farmers Union and The British Poultry Council) to discuss the requirements and implications of the NCP for the turkey flock sector.

9.2. Within government

9.2.1 During the drafting of the NCP Defra officials have also worked with colleagues in the Devolved Administrations, the Food Standards Agency, Animal Health and technical experts at the Veterinary Laboratories Agency.

10. Sampling and testing requirements of the National Control Programme

10.1 The NCP requires that samples are collected from birds and their environment for the detection of *Salmonella*.
Sampling of fattening and breeding flocks are summarised in the table at Annex 2.

10.2 Sampling of breeding flocks

10.2.1 For breeding flocks we have identified three possible options which comply with the legislation:

1	Official sampling at the hatchery and BO sampling at the holding.
2	NCP sampling (official and BO) at hatchery and industry voluntary sampling on the holding.
3	Industry voluntary sampling at the hatchery and NCP sampling (official and BO) at the holding.

10.2.2 After the target was set Defra held meetings with industry representatives to discuss the sampling requirements for turkey breeding flocks. Industry representatives expressed a preference for option 1 which would separate hatchery and holding sampling and reduce the potential for transfer between hatchery and the holding.

10.2.3 If this option is adopted Defra will need to ensure that industry can trace samples taken at the hatchery to flocks. It should also be noted that collecting samples at the hatchery will lead to more complicated sampling methods.

A.	**Do you support option 1?**
B.	**Do you agree that adoption of this option would enable samples to be traced to the individual flocks? If not, could you explain why?**
C.	**If you do not support option 1 which option would you prefer and why?**

10.3 Sampling of fattening flocks

10.3.1 The table above covers all the sampling methods currently required for fattening flocks.

11. Application and Scope

11.1 The NCP applies to all of the UK and therefore this Impact Assessment (IA) considers UK wide costs. It was agreed that the structured nature of the UK turkey industry (the larger companies are UK wide) meant that separating the costs between England and the Devolved Administrations would be an artificial exercise. Furthermore, the assumptions behind the costs and benefits sections are not specific to England. Although The Turkey Flocks Order 2009 applies to England only, parallel legislation will be introduced in Wales, Scotland and Northern Ireland. This SI will be made under the powers of the Animal Health Act 1981.

11.2 Defra is the Competent Authority (CA) for implementation of this NCP in England. It will be supported by the Veterinary Laboratories Agency, Animal Health, and the Food Standards Agency. In Wales the Welsh Assembly Government is the CA for implementation of this NCP, in Scotland it is The Scottish Executive and in Northern Ireland the CA is the Northern Ireland Executive.

11.3 There are around 687 premises (breeding and fattening) to which the requirements of the NCP can be applied. The scope and rigour of implementation is an important issue and is considered in sections 11-14 of this IA.

12. Devolution

12.1 As stated previously, this IA covers the costs and benefits to the UK. However, the Turkey Flocks Order will apply to England only. It is expected that parallel national legislation will be introduced by the Devolved Administrations.

13. Risk Assessment

13.1 The immediate risk is that the failure to bring the Turkey Flocks Order into force could result in the absence of powers to enforce the monitoring and controls required to implement the NCP. Without these powers, government could fail to support the overarching objective of the European Commission to reduce or maintain the low prevalence of *Salmonella* serovars of major human health significance in turkey flocks in Member States and could face infraction proceedings. Non-compliance would also reduce government and industry ability to ensure that *Salmonella* does not spread to the wider food chain with subsequent adverse effects on human health. This would be a breach of community obligations and a failure to meet EU standards on health. There could also be a trade restriction on UK turkey movements within the EU, which would have a substantial cost to some turkey producers.

14. Implementation options

Options for management of the National Control Programme

14.1 The implementation options below focussed on the collection, testing and auditing of operator and Competent Authority (CA) samples required by the NCP. Regulations 2160/2003 and 584/2008 require that government or a Control Body acting on the government's behalf should play a substantial role in the monitoring of the NCP.

14.2 The agent of the CA with overall responsibility for the NCP will be staff from Animal Health although the day to day management of the NCP could be delegated to LVIs or auditors from an Independent Control Body (ICB). Over the next three years officials from these organisations will manage the monitoring and controls of the NCP by:

- undertaking and/or supervising the collection of CA samples
- monitoring and auditing the operator sampling
- providing support to industry control programmes which operate under the NCP (if industry wishes to adopt these).

14.3 The Turkey Flocks Order as drafted will enforce the minimum sampling and record keeping requirements of the EU legislation. Government will retain full powers to collect samples and check records to implement the NCP. As previously stated under existing arrangements all samples collected under the NCP are tested at an approved laboratory.

Option 1 – do nothing (continue with sampling and testing under current arrangements)
Option 2 – implement the NCP on a voluntary basis only
Option 3 – for management of the NCP to be under the direct control of government
Option 4 - for responsibilities for the management and auditing of the NCP to be shared by government and industry
Option 5 - For turkey companies to establish their own company control programme as part of the NCP.

14.4 Option 1: Do nothing (continue with sampling and testing under current arrangements)

14.4.1 The measures required by Regulations 2160/2003 and 584/2008 cannot be implemented through current legislation and administration. It is possible that a number of the larger producers might be willing to adopt the controls on a voluntary basis. However, unless government can ensure that the controls and testing by all eligible producers meets new requirements on a voluntary basis, England will fail to have the same public health measures in place as those that will be implemented in other Member States.

14.4.2 Secondly, failure to implement the NCP – or partial implementation – would be a breach of Community obligations as well as a potential threat to public health. The NCP establishes comprehensive monitoring and controls which should minimise the risk of *Salmonella* in turkey flocks. Non-compliance would prevent the turkey flock sector from reinforcing and benefiting from the NCPs which have been established for breeding flocks, laying flocks and broilers.

14.4.3 Finally, although the current prevalence of *Salmonella* Enteritidis and *Salmonella* Typhimurium on turkey holdings is relatively low, it could still represent a reservoir for potential dissemination and amplification of existing and 'new' *Salmonella,* which could be a future public health concern. Breeding sites in particular provide a possible focus of infections. It should also be noted that improved hygiene and biosecurity to reduce *Salmonella* can be beneficial for wider disease control purposes.

14.5 Option 2: Implement the NCP on a voluntary basis only.

14.5.1 Under this option the NCP would be implemented on a voluntary basis without the government having powers to enforce. It is possible that a number of larger producers,

in particular those which export turkey meat, might be willing to adopt the controls on a voluntary basis.

14.5.2 This approach would be a saving to government for enforcement costs and avoidance of on-farm inspections. It would also show a "light touch" approach to implementation in light of industry achieving target.

14.5.3 The viability of this option would be contingent on government being able to ensure that the controls and testing by all eligible producers meets the new requirements without enforcement powers. At the present time this is not possible. If the UK failed to have the same public health measures in place as those other Member States it would be regarded by the Commission as a partial implementation of the legislation and open the UK to infraction proceedings. If *Salmonella* levels on UK holdings increased it might also be considered to be a potential threat to public health. Moves at EU level towards compartmentalisation, whereby areas or companies can be approved as having met specific standards of controls and monitoring mean that this is an option which could be explored in the future.

14.6 Option 3: For management of the NCP to be under the direct control of government.

14.6.1 The measures required by the legislation cannot be implemented through current legislation and administration. Under this option government would take full responsibility for monitoring and auditing the sampling and biosecurity requirements of the NCP. Such an arrangement would be likely to involve at least annual farm visits to all eligible holdings to check the operator sampling and the operator's arrangements for requirements such as cleansing and disinfecting between flocks, record keeping and sourcing of feed.

14.6.2 This option would have the advantage of ensuring a comprehensive system which could be managed directly by government and minimise possibilities for non-compliance. It would also be a level playing field between companies and be amenable to a quick response to outbreaks from government.

14.6.3 The costs to producers and government would be high. In the UK there are 866 premises (breeding and fattening) to which the requirements of the NCP can be applied. Official control samples will need to be collected from 10% (87) of these holdings. All of these holdings will need to be audited for the collection of operator samples. Unlike flocks of laying hens government officials do not have a programme for regular visits to turkey holdings (apart from IPPC inspections). There is an expense to government of setting up and maintaining a monitoring system. If the auditing was conducted on a cost recovery basis (which Defra may need to consider) these costs would be passed to industry.

14.6.4 These costs could however be partially controlled through a risk based auditing system to check operator sampling. In practice this would mean that visits would concentrate on holdings of a substantial size or where there are potential *Salmonella* problems.

14.7 Option 4: For responsibilities for the management and auditing of the NCP to be shared by government and industry.

14.7.1 Under option 4 Government would retain full responsibility for the monitoring and controls required by the NCP. However management for the auditing and possibly the collection of official control samples would be shared jointly by the Competent Authority and industry. In practice it would be possible for companies with consistently

good records and biosecurity standards to conduct their own audits of the operator sampling and avoid the need for regular inspections. These producers would be required to provide evidence that they are in compliance with the NCP's requirements by voluntarily sharing records with Animal Health. Producers could, for instance, forward the results of laboratory testing to Animal Health offices to confirm compliance with the operator sampling or request that their laboratories share the testing results with government. This would be facilitated by The Zoonoses Order 1989 under which laboratories are compelled to report positive samples to the CA. This option would recognise the success of industry in controlling *Salmonella* and lead to a possible cost saving to both government and industry.

14.7.2 This option would involve government working with individual farms, whereas Option 3 would require government to work with an industry control programme. If properly implemented it could combine the rigour of Option 3. It would take a light touch approach to the implementation of legislation to a sector where *Salmonella* monitoring and controls have been on a voluntary basis, and demonstrate trust in those producers which consistently work to high standards. It could also ensure that compliance with the NCP was driven by commercial incentives: verifiable adoption of the NCP requirements would mean a greater chance of avoidance of the costs associated with a farm visit from government. It would provide greater scope for individual producers to apply for conducting their own audits and avoid the need for regular inspections.

14.7.3 For government it would have the advantage of allowing Animal Health officials to manage their resources more flexibly and to concentrate them on those areas where there was greatest need. Such an approach would be consistent with the principle that food business operators should take responsibility for the safety of their products, which underlies much of the legislation.

14.7.4 Under this arrangement however on-farm inspections would continue to be necessary. These could take the form of auditing "spot checks" to verify that the sampling was taking place. Controls on *Salmonella* positive farms would also be necessary. In this circumstance sampling and testing work conducted to investigate a holding where the presence of *Salmonella* is detected (as in Annex to Regulations 584/2008 and 213/2009) would be overseen by the CA as a standard procedure.

14.7.5 This option would however be dependent on industry continuing to meet the reduction target and would be contingent on an adequate information flow on sampling and transparent processes. Such an approach could not be implemented until producers had been given time to accustom themselves to the new testing requirements. After this stage it would only be possible to authorise specific companies to manage the NCP with more independence from the CA. This is not an option that government would wish to require of industry. The onus would be on turkey producers to put forward their own case for greater independence.

14.8 Option 5: For turkey companies to establish their own company control programme as part of the NCP.

14.8.1 Article 5 of Regulation (EC) 2160/2003 provides scope for producers and their representative bodies to put forward their own control programmes for approval to become part of the NCP. The Official Feed and Food Controls Regulation (Regulation (EC) No. 882/2004) provides scope for the delegation of specific tasks related to official controls to Independent Control Bodies. The intention behind article 5 is that producers adopt controls as part of their internal systems (for instance by expanding the codes of practice). Under this option company operating schemes would be updated to include the sampling and controls in the NCP. It should avoid the need for

producers affiliated to farm assurance schemes to follow multiple control programmes. It would change the relationship between the CA and a producer, allowing for more independence and delegation. For this option to be adopted we would need to ensure that there was a reliable exchange of information between the CA and the auditors of the industry control programme. This would include reliable data on the audits of operator samples, and regularly updated lists of holdings covered by the control programme.

14.8.2 If this option was implemented it would mean that although Defra/AH would be the CA for the NCP, the Independent Control Body as the control programme's auditors would be responsible for the day to day management of the sampling programme. This would most likely be proposed or established by industry under a Farm Assurance Scheme, possibly after an interim period for the new sampling requirements to become established. There could be a number of control programmes specific to producers. These might be farmers covered by Quality British Turkey, or possibly organic farmers certified by appropriately accredited organic inspection bodies.

14.8.3 These bodies would be covered by protocols with the CA to enable proper monitoring and auditing. Their respective roles could be expanded as experience of the NCP grew.

14.8.4 The role of the CA would be to ensure that the industry control programme was managing the monitoring and controls of a holding to an acceptable standard. This would be contingent on external appraisal by Defra (or Animal Health), possibly through a programme of on the spot auditing at turkey farms and other relevant stages of production. It would also mean that the control programme would be prepared to take part in audits by the CA and the EU Food Veterinary Office. These interventions by the CA would be less frequent than under Option 4.

14.8.5 If properly managed by industry this option could offer the rigour of Option 3 with the flexibility of Option 4, and would give a sense of ownership of the NCP to industry. However, this option needs to be considered with caution as the validity and impartiality of official controls outside of direct CA control can be open to challenge by an EU Food Veterinary Office visit and competitors.

15. Benefits and costs

Benefits

15.1 *Salmonella* is an important zoonotic pathogen that can lead to disease in human beings. Human salmonellosis cases, although often mild, can sometimes be serious and possibly even fatal. Human salmonellosis cases are usually characterised by fever, abdominal pain, nausea and sometimes vomiting. Symptoms are often mild and most infections only last a few days. However, sometimes the infection can be more serious and even fatal. The disease can also give rise to long-term or chronic conditions such as reactive arthritis.

15.2 The disease can therefore impose a significant economic cost, including the cost of medical treatment, possible fatalities, lost work days, and the pain and suffering of affected persons. A potential benefit of the proposed policy would therefore be to reduce the incidence of human salmonellosis in the UK.

15.3 Reduction in disease incidence is not expected to occur as a result of actions undertaken within the UK, as the UK National Control Plan is likely to keep *Salmonella* Enteritidis and Typhimurium prevalence in turkey flocks in the UK at the existing low level instead of reducing it further. The introduction of improved harmonised testing should help stimulate a reduction in other *Salmonella* serovars that may be present in replacement birds supplied to the independent and seasonal sectors. However, since this is EU legislation, similar control plans will be implemented in other EU countries, some of which have a significantly higher *Salmonella* prevalence. Benefits to the UK can therefore be expected as a result of reduced risk of *Salmonella* infection from consumption of meat imported from these countries. There will also be a similar benefit for UK citizens who consume meat while visiting these countries.

15.4 It is difficult to monetize the potential benefit, as there are large areas of uncertainty, e.g.
(i) the reduction in *Salmonella* prevalence in turkey flocks that will be achieved in other EU countries as a result of the control plans implemented in these countries,
(ii) the impact of the above on the incidence of human salmonellosis cases in the UK, and
(iii) the cost of the avoided cases, which would depend upon the degree of severity.

The following sections therefore present a more general discussion of the potential benefit of the policy. Broad estimates for the health benefits have been calculated, but it has not been possible to monetise the other benefits at this stage.

Human salmonellosis in the UK

15.5 A total of 13,213 laboratory-confirmed cases of salmonellosis were reported in the UK in 2007. Under-reporting of infectious intestinal disease is common, and it is expected that there are three unreported cases for each confirmed case[1]. In 2005 the prevalence rate of Salmonella in the UK was 21.3 cases per 100k people; in the EU the prevalence rate in general was 38.2.

15.6 The economic cost of salmonellosis is significant. Cost estimates in the literature imply that the per case cost of cases in which the patient visits a GP is about £765 in current prices. This includes medical costs as well as direct costs to cases and carers, including time off work. The per case cost of cases in which the patient does not visit a

[1] Defra (2008) Zoonoses report: United Kingdom 2007

GP is estimated to be about £55 in current prices[2]. Based on these estimates and the number of infections assumed per annum (13k reported, 40k unreported), the costs of *Salmonella* infections are estimated to be approx £12m per annum in the UK.

15.7 Note that at each of the options 2 to 5 (set out at paragraphs 14.5 to 14.8), some of the main benefits to the UK are the same. In the case of Option 2 which would be the establishment of a voluntary management programme, without the benefit of a coherent management system, it is unlikely that the UK would be able to ensure that the UK would be able to ensure that the controls and testing requirements of the legislation would be carried out effectively. Without such assurance the benefits of the NCP may not be fully realised. A particular benefit of Option 3 (which requires the management of the NCP to be under the control of Government) would be that it would enable the Government to have a comprehensive system that would minimise the risk of non-compliance. However, as noted above, the costs to producers and Government would be high.

15.7.1 Option 4 which requires the responsibility for the management and auditing of the NCP to be shared by Government and the industry would enable the Government to retain responsibility for the monitoring of the controls required by the NCP. The management for the auditing and possibly the collecting of samples would be shared jointly by the Government and Industry. This option would recognise the success of industry in controlling Salmonella, whilst maintaining Government involvement during these early stages of the NCP.

15.8 Option 5 offers the industry with the scope to put forward their own control plans for approval. This should avoid the need for producers affiliated farm assurance schemes to follow multiple control programmes. It would allow for more independence and delegation between the Government and the producer. Although, it should be noted that under option 5 the level of Government control in the management of the programme would be less than under option 4. This could potentially create an increased risk that the benefits of the NCP may not be fully realised.

Sources of infection

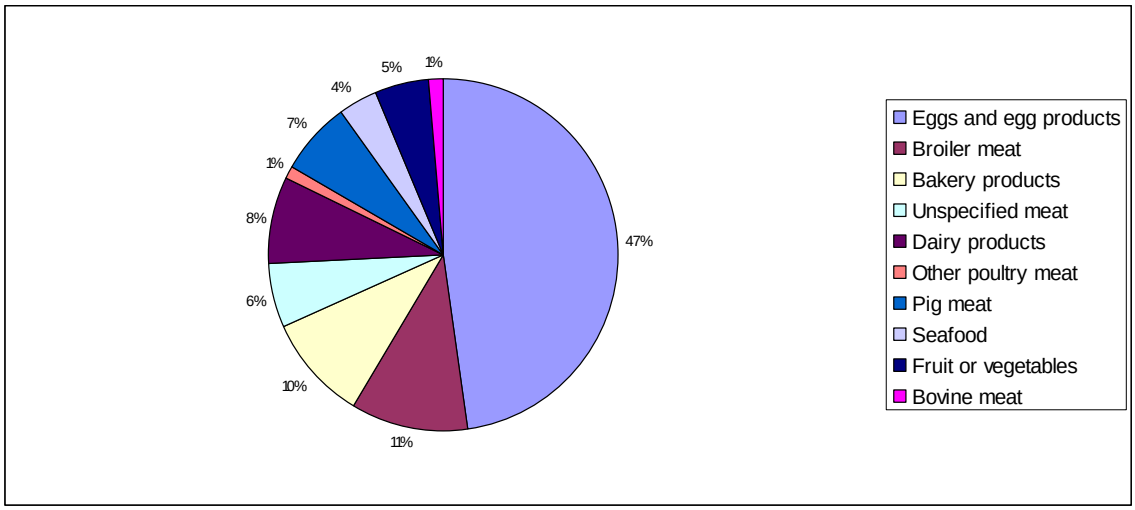
15.9 It is not possible to estimate how many of the salmonellosis cases in the UK arise due to consumption of turkeys imported from the EU. Infection can result from consumption of a wide variety of contaminated foods, including but not limited to poultry. It can also be the result of direct contact with a wide range of animal species and contact with faecally contaminated environments.

15.10 Within the EU as a whole, figure 1 shows that turkeys (contained within the other poultry meat category) are not a major source of *Salmonella* infection.

15.11 If we assume that 1% of *Salmonella* cases in the UK are estimated to be due to consumption of turkey meat, then the costs of *Salmonella* infection from turkey meat is estimated to be £233k per annum in the UK. Note that this figure is an approximation and meant to be illustrative of the possible magnitude of costs.

[2] based on Roberts, J A (2000) Economic aspects of food-borne outbreaks and their control. British Medical Bulletin 56(1): 133-41.

Figure 1. Main known sources of infection in salmonellosis cases in the EU in 2005



(Source: Adapted from EFSA, 2006)[3]

Salmonella prevalence in the UK and EU

15.12 An EU-wide baseline survey of commercial turkey flocks conducted in 2006-07 found that, overall, 1.7% of turkey flocks in the EU tested positive for *S.* Enteriditis and/or *S.* Typhimurium, the two serovars currently targeted by EU legislation[4]. The range in values for positive testing breeding flocks in EU Member States for *S.* Enteriditis and/or *S.* Typhimurium was 0 (80% of Member States) to 8.3% (Italy)[5] and 0% to 18.4% in fattening turkey flocks[6] .

15.13 A total of 3,406 salmonellosis outbreaks reported in the EU in 2005, accounting for nearly 64% of all food-borne outbreaks. A total of 25,760 people were affected, of whom 14% were hospitalised and 16 people died. Germany, Slovakia, Austria, Spain and Poland accounted for the majority of outbreaks (EFSA, 2006).

Imports from EU countries with high Salmonella prevalence

15.14 As noted in the previous section, the EU country with the highest *S.* Enteriditis and/or *S.* Typhimurium prevalence was Italy. Turkey imports from Italy to the UK, and the share of the total supply of turkey to the UK domestic market, are shown in the following table. Italy accounts for about 11% of total turkey imports from the EU, and contributes about 2% of the total supply of chicken. This might indicate that the potential benefit of the policy is likely to be low, on the other hand, since *Salmonella* prevalence in turkeys raised domestically is low, it is possible that these imports may exert a disproportionate influence on the incidence of human salmonellosis in the UK.

[3] European Food Safety Authority (EFSA) (2006) The Community summary report on trends and sources of zoonoses, zoonotic agents, antimicrobial resistance and food borne outbreaks in the European Union in 2005. The EFSA Journal 94: 2-288.

[4] Other Salmonella serotypes with public health significance, possibly all serotypes, may be considered only after a transitional three-year period.

[5] European Food Safety Authority (EFSA) (2008) Report of the task force on zoonoses data collection on the analysis of the baseline survey on the prevalence of Salmonella in turkey flocks, Part A. The EFSA Journal 134: 1-91.

[6] European Food Safety Authority (EFSA) (2008) Report of the task force on zoonoses data collection on the analysis of the baseline survey on the prevalence of Salmonella in turkey flocks, Part A. The EFSA Journal 134: 1-91.

Table 1. Imports, exports and domestic production of turkey meat in the UK in 2008 (tonnes)

Category	Quantity
Turkey imports from Italy	2,407
Turkey imports from all EU	21,894
Turkey imports from non-EU	1,580
Total turkey imports to the UK (1)[7]	23,474
Total UK exports of turkey (2)	38,810
Domestic turkey production in the UK (3)[8]	135,440
Total supply of turkey to domestic market (3+1-2)	120,103
Share of Italy in total supply	11%
Share of EU in total supply	18%

15.15 Based on these figures it is possible to make a broad approximation of the health benefits of the legislation. At a maximum, assuming all cases of *Salmonella* due to consumption of infected turkey meat no longer occur due to the legislation, the benefit to the UK economy would be £233k per annum. At a minimum, where there is no reduction in the cases of *Salmonella* due to consumption of infected turkey meat, there would be no health benefit.

15.16 Given a higher rate of prevalence of *Salmonella* in the EU, the proportion of EU produce in domestic turkey supply (approx 18%) and a lack of evidence regarding the role of imports in *Salmonella* infection, a best estimate for the proportion of cases prevented due to the legislation is that around half of all cases due to turkey consumption would be prevented. Based on this approximation, the health benefits are estimated to be £61k per annum.

Other benefits

15.17 The presence of voluntary industry initiated assurance schemes that impose requirements for *Salmonella* testing is an important contributory factor to the low *Salmonella* prevalence in the UK. About 85% of fattening turkey production in the UK is subject to such assurance schemes. While these schemes aim to reassure consumers, they also raise the costs of production as participating holdings are required to undertake *Salmonella* testing based on litter, faecal or bootswab testing prior to slaughter. By requiring other EU countries to undertake testing, the policy will have the effect of imposing similar costs on other EU producers, thus potentially improving the competitiveness of turkey production in the UK. The success of the control programme in breeding flocks means that the day old poults placed on farm should be free of SE and ST. Whichever of the options from 2 to 4 that can be successfully implemented they should enable the fattening sector to be part of an integrated approach to food safety through adequate and harmonised monitoring across the EU. It should also be noted that improved farm hygiene and biosecurity to reduce *Salmonella* can be beneficial for other disease control purposes and demonstrably consistent with EU standards. A harmonised monitoring programme

[7] Source of all trade data is www.uktradeinfo.com
[8] Source: Poultry and Poultry Meat Statistics 2008 https://statistics.defra.gov.uk/esg/statnot/ppntc.pdf

across the EU will facilitate international trade by the countries where *Salmonella* is uncommon.

Conclusion

15.18 *Salmonella* is an important zoonotic pathogen that is a major cause of food-borne outbreaks. Although we would expect the proposed policy to be more likely to hold *Salmonella* prevalence in the UK at existing levels rather than reduce it further, potential benefits could arise from lowering the rate of *Salmonella* prevalence in EU countries that supply to the UK. Italy accounts for about 11% of the total supply of turkey to the UK domestic market. It is not possible to monetize the potential benefit due to lack of knowledge about the role of imports from EU countries with high *Salmonella* prevalence on human salmonellosis outbreaks in the UK.

15.19 Although the NCP is likely to lead to greater costs for producers these are relatively low compared to the economic benefits. By agreeing to meet the same criteria of the Member States – even though the prevalence of *Salmonella* is low – we agree to bear the same costs in return for the benefits to industry and consumers of standards and methods which are equal across the EU for the production of turkeys.

15.20 Note that each of the options 2 to 5 are assumed to provide the same benefit to the UK. It should be noted however that under a voluntary management programme (option 2), without the benefit of a coherent management system, it is unlikely that the UK would be able to ensure that the controls and testing requirements of the legislation would be carried out effectively. Without such assurance, the benefits of the NCP may not fully be realised.

16. Costs

16.1 Although the costs applicable to each policy option differ, they share some of the same costs. These shared costs include the costs relating to sampling, various administrative costs relating to the new regulation and the applicable costs in the case of a positive test for *Salmonella*.

Shared costs – Sampling

16.2. The routine costs of sampling are based on the costs applicable to the operator and costs applicable to the Competent Authority (which will be recovered through fee introduction). These costs vary depending upon the differing requirements for Fattening Flocks and Breeding Flocks (rearing and adults), as per Annex 2. The description of the various costs below broadly follows the structure of the requirements within Annex 2.

BO Sampling

Fattening flocks

16.3 On average, holdings have 2 crops per year and 4 flocks at any one time. The requirement for operators to take samples 3 weeks prior to slaughter in holdings with greater than 500 birds, unless they can demonstrate that they supply locally, therefore translates to a requirement to take 8 sets of samples on average per year. The costs of the different sampling methods per flock are described below in table 2, and are based on farm staff time at £11 per hour plus materials and postage:

Table 2. Fattening flocks BO sampling		
Test	Cost	Proportion of overall tests
Type 1: 2 pairs of boot swabs - pooled to one sample	£6	80%
Type 2: 1 pair boot and 1 dust sample ("may pool")	£5	10%
Type 3: Hand drag swabs if <100 turkeys	£5	10%

16.4 Assuming that the current numbers of holdings that are required to collect samples remain constant (679) and that the sampling method chosen is approximately in the ratio as described above, approximately 4346 tests of type 1 (80%*£5432), 543 of type 2 and 543 of type 3 would need to be done. The cost of testing these samples to labs is assumed to be £10 per test.

16.5 Hence the cost of sampling to industry would be £32k per annum (4346*£6 + 543*£5 + 543*£5); testing would cost the industry be £54k per annum (5432*£10).

16.6 It should however be noted that 85 percent of turkey production is under assurance schemes. If we assume that all of the large producing (>10,000 birds) holdings are part of assurance schemes and hence are already carrying out similar testing procedures, only those holding between 500 and 10,000 birds will need to carry out additional testing. It is assumed that 50% of these holdings will apply for the small quantity derogation, meaning they will no longer be required to carry out BO sampling. For the purposes of cost calculation therefore it is assumed that 37% of all 679 holdings (50% of the 497 holdings with between 500 and 10,000 birds) with greater than 500 birds will be required to carry out BO testing above what is already performed.

16.7 The estimated per annum costs of BO sampling for Fattening flocks to industry are therefore £31k (£86k*37%), based on the cost of administering the tests and the cost of testing the samples.

Breeding Flocks – rearing

16.8 On average holdings with Breeding flocks of rearing age are assumed to have 4 flocks at a given time and 2 crops per year. Given that each flock needs to be sampled 3 times at different stages of crop life (see Annex 2), each holding will need to take 24 samples per year for testing.

16.9 The costs of each different sampling method are described below and as before are based primarily on farmer's time:

Table 3. Breeding flocks - rearing BO sampling		
Tests	Cost	Proportion of overall tests
Type 1: Liners from 5 baskets covering 1m² and dead on arrival poults	£6	5%
Type 2: 2 pairs of boot swabs - pooled to one sample	£6	90%
Type 3: 1 pair boot and 1 dust sample ("may pool")	£5	5%

16.10 Assuming that all holdings involved with greater than 250 turkeys at any one time are required to carry out testing (97), and that each holding will be required to carry out 24

tests per annum, this translates to a total of 2,328 tests per year for the industry. It is assumed for the purposes of the cost calculation below that the types of tests taken are taken in the proportions described above.

16.11 Hence the cost of sampling to industry would be £14k per annum (116*£6 + 2095*£6 + 116*£5); testing would cost the industry be £23k per annum (2328*£10).

16.12 Approximately 90 percent of breeder holdings are already required to carry out testing much like that required by the NCP. In these cases the sampling requirements under the NCP are not applicable costs.

16.13 Together with the costs of having samples tested at approved labs at £10 per test, this translates to a cost for industry of £3.7k per annum (£37k*10%).

Breeding flocks – adults

16.14 Each holding is assumed to have 3 flocks at any one time and 2 crops per year. The requirement of testing every 3rd week during the laying period (of March to July) and 3 weeks before slaughter translates to each flock requiring on average around 8 tests. Overall therefore each holding will on average be required to undertake 48 tests. Given that 109 holdings are assumed to have to perform these tests during the year, this means 5,323 tests would be undertaken.

16.15 Note that testing during the laying period can be done at the hatchery or holding, carried out by the CA or BO respectively. It has been assumed for the purposes of the cost calculations that these testing responsibilities will be shared equally by the CA and BO. Hence 2,616 tests will be undertaken by the industry and CA at the holdings and hatchery respectively.

16.16 In common with the other types of flocks, the cost of sample tests at approved labs is estimated to be £10 per test. However for tests performed by the CA, testing of samples will be carried out by a VLA lab, with the associated testing cost of £15.30 per test. The costs for sample testing are would therefore be £26k per annum for BOs and £40k for the CA.
(26k = £10*2616; 40k = £15.3*2616)

16.17 The costs of each different sampling method are described below and as before are based primarily on farm staff time (for BO sampling) or CA time (for hatchery sampling). The costs for hatchery sampling can be broken down into average time costs for an Animal Health Officer at £56 per hour (2 hours travelling, 2hrs on the visit, and 20 minutes to arrange and prepare for the visit), time costs for an Administrative Officer at £46 per hour (0.5hr) and consumables, invoicing and management costs (£34):

Table 4. Breeding flocks - adults BO sampling

Tests	Cost	Proportion of overall tests
Type 1: Pooled faeces (300)	£12	0%
Type 2: 5 pairs boot swabs	£10	50%
Type 3: 1 pair boot swabs, dust samples taken with 900cm² swabs	£5	50%

Table 5. Breeding flocks - hatchery CA sampling

Tests	Cost	Proportion of overall tests
Type 1: Liners from 5 baskets covering 1m²	£10	33%
Type 2: 900cm² swabs or fluff from 5 places	£6	33%
Type 3: 10g broken eggshells from 25 hatchers	£5	33%

16.18 For industry, assuming a split as described above between each testing option, this translates to a cost of £20k per year for sampling (1308*£10 + 1308*£5).

16.19 Given the small number of hatcheries in the UK (9), it is assumed that samples from multiple holdings could be tested on one visit. As the limited laying period is assumed to be from March to end July, it is estimated that each hatchery will need to be visited on one occasion during the laying period each week. This translates to 25 visits to each hatchery per annum.

16.20 Given the costs per visit as described above, equating to £301 per visit, this means that the costs from CA sampling at the hatchery to the Government will be £68k per annum (9*25*£301).

16.21 In addition to these costs to the CA from hatchery sampling however, there are costs applicable to BOs from accompanying the CA whilst visiting the hatchery. Assuming that each visit on average takes approximately 2 hours and that farm staff time is worth £14 per hour (plus 30% for overheads as this is an administrative burden), this translates to an average cost per visit of £27 (£13.7*2) to the BO.

16.22 As before, approximately 90 percent of breeder holdings are assumed to be already required to carry out testing much like that required by the NCP. In these cases the sampling requirements under the NCP are not applicable costs.

16.23 Therefore the overall costs to industry from sampling and testing are equal to £11k (£48k*10% plus £6k) and to the CA £108k.

Table 6. Summary of costs from sampling requirements				
		To industry	To the CA	Total per annum
Fattening flocks	Sample gathering	£11,530	£0	£11,530
	Sample testing	£19,880	£0	£19,880
Breeding flocks - rearing	Sample gathering	£1,385	£0	£1,385
	Sample testing	£2,328	£0	£2,328
Breeding flocks - adults	Sample gathering	£1,962	£67,660	£69,622
	Sample testing	£2,616	£40,025	£42,641
	Accompanying CA for sampling	£6,148		£6,148
	Total	**£45,850**	**£107,684**	**£153,534**

Competent Authority sampling

16.24 The Fees Regulations will be amended to include turkey costings and it is likely that government will maintain the same charging regime as with other NCPs.

16.25 The various requirements are set out in Annex 2. Sampling at a holding is assumed to take approximately 2 hours of an Animal Health Officers time (£56 per hour), as well as an average of 2 hours travel and an average of 20 minutes to arrange and prepare for the visit . Each visit is also assumed to take approximately 0.5 hours of an AO's time (£46 per hour) plus consumables, management and invoicing costs (£34). The costs relating to each type of sample are assumed to be equal (i.e. that each type of sample takes an equal amount of CA time to perform). Each sample visit is therefore estimated to cost £301 to the CA.

16.26 In each testing visit it is assumed that the type of test taken is random and that samples need to be tested at a cost of £15.30 per test at VLA labs.

Fattening flocks

16.27 There are 4 aspects to the sampling requirements for the CA for Fattening flocks.

a) If all flocks are tested at 10% of holdings with at least 500 fattening turkeys, this translates to 18 visits per annum under official NCP rules and 50 visits per annum under the National Survey.
b) Evidence suggests that up to 4 holdings are expected to test positive for *Salmonella* Enteritidis or *Salmonella* Typhimurium in a given year. This means that 4 visits will be carried out per year for this reason.
c) Likewise the requirement to test those holdings previously testing positive, given the above, means that an extra 4 visits will be carried out per year.
d) It is assumed that the Competent Authority will additionally wish to carry out 10 additional visits per year.

16.28 Each fattening turkey holding is expected to have 4 flocks at any one time and that all flocks will be tested. This means that on average 86 visits will be carried out per year and therefore that 344 samples will be taken.

16.29 Overall the costs to the CA are therefore estimated to be £26k per annum from visits (86*301) and £5.3k for sample testing by the VLA (£15.3*344). £6.5k of this figure will however be recovered by the CA from the industry, relating to costs of visits where the BO has tested positive or where the CA considers it necessary. These costs are discussed further in the section "Shared Costs – Cost of a positive test for Salmonella" below.

16.30 In addition to these costs to the CA, there are costs applicable to BOs from accompanying the CA whilst visiting the holdings during the 10% of visits carried out per year at random. Assuming that each visit on average takes approximately 2 hours and that farmers time is worth £14 per hour (including 30% for overheads), this translates to an average cost per visit of £27.

Table 7. Fattening flocks CA sampling			

		CA costs	CA costs	BO costs	
	Number of visits	Sample gathering	Sample testing (£15.30 per test)	Accompanying CA	Total costs
Requirement of all flocks being tested on 10% applicable holdings	68	£ 20,418	£ 4,155	£ 1,855	£26,429

16.31 Therefore the overall costs of CA sampling the industry is £1.9k: this is an administrative burden to the industry. The costs to the CA are estimated to be £25k.

Breeding Flocks – rearing

16.32 There are no requirements for the CA to carry out sampling for rearing Breeding flocks as part of the NCP.

Breeding Flocks – adults

16.33 There are 3 aspects to the sampling requirements for the CA for laying flocks.

a) If all flocks are tested at 10% of holdings with at least 250 breeding turkeys between the ages of 30 and 45 weeks, this translates to 11 of visits per annum.
b) Evidence suggests that 2 holdings may be expected to test positive for *Salmonella* Enteritidis. or *Salmonella* Typhimurium. in a given year. This means that 2 visits will be carried out per year for this reason.
c) Likewise the requirement to test those holdings previously testing positive, given the above, means that 2 additional visits will be carried out per year.

16.34 Each breeding turkey holding is expected to have 3 flocks at any one time and that all flocks will be tested. This means that on average 15 visits will be carried out per year and therefore 45 samples will be taken.

16.35 Overall the costs to the CA are therefore assumed to be £4.5k per annum from visits (15*£301) and £700 for sample testing by the VLA (45*£15.3). £1.4k of this figure will however be recovered by the CA from the industry, relating to costs of visits where the BO has tested positive or where the CA considers it necessary. These costs are discussed further in the section “Shared Costs – Cost of a positive test for Salmonella” below.

16.36 In addition to these costs to the CA, there are additional costs applicable to BOs from accompanying the CA in their sampling. Assuming that each visit on average takes approximately 2 hours and that farmers time is £14, this translates to an average cost per visit of £28.

Table 8. Breeding flocks official sampling					
		CA Costs		BO costs	
Visits due to	Number of visits	Sample gathering	Sample testing (£15.30 per test)	Accompanying CA	Total costs
Requirement of all flocks being tested on 10% applicable holdings	11	£ 3,308	£ 505	£ 301	£4,113

16.37 Therefore the overall costs of CA sampling to the CA are £3.8k and to industry is £300.

Shared costs - Administrative costs

16.38 There are two main types of administrative costs that are shared by each of the options, all falling on the industry. In these cases the costs refer to the farm manager time of fulfilling these obligations, plus 30% overheads.

a) Costs of record keeping

- A requirement of the legislation is that holdings keep a record of the testing results. This is assumed to take 6 hours at a holding per year on average.

b) Costs of reading the legislation

- It is assumed that familiarisation will take 2 hours per annum.

16.39 Note that not all holdings will encounter additional costs from record keeping. For those holdings currently part of assurance schemes (overall 596 holdings) there is no cost assumed from record keeping.

Table 9. Additional Administrative Costs			
	Number of holdings	Per holding affected	Industry total
Record keeping (not part of assurance scheme)	276	£82	£22,618
Familiarisation with the legislation	872	£27	£23,828
Total for holdings outside of assurance scheme		£109	£46,446

16.40 Taken together these costs equate to an additional administrative burden on the industry of £46k per annum (£109 per holding fully implementing the legislation and not part of an assurance scheme).

Shared costs - Costs of a positive test for Salmonella

16.41 As mentioned above, the costs of follow up visits from the CA to re-sample BO flocks in the case of a positive test will be recovered from BOs. In addition, the costs of testing samples will also be recovered.

16.42 For fattening holdings, it is assumed that a maximum of 8 such visits will occur per annum, based on the need to re-test positive samples this year and the previous year. Given a cost per visit for the CA of £301 per visit (based on sample visit costs above)

and sample testing costs of £61 (4*£15.30), the costs to the fattening industry is estimated to be £2.8k per annum (8*£301 + 8*£61).

16.43 Likewise, for holdings with adult breeding flocks, it is assumed that a maximum of 4 such visits will occur per annum, based on the need to re-test positive samples this year and the previous year. Given a cost per visit for the CA of £301 per visit (based on sample visit costs above) and sample testing costs of £46 (3*£15.30), the costs to the breeding industry is estimated to be £1.4k per annum (4*£301 + 4*£46).

16.44 In addition to follow up visits from the CA to re-test BO samples, there are further costs related to positive tests including clean up and disinfection. Assuming that a maximum of 4 fattening holdings and 2 Breeding holdings will test positive for *Salmonella* Enteritidis or *Salmonella* Typhimurium in a year as above and that the costs of clean up are £550, the additional costs to industry are estimated to be £3.3k.

16.45 However, if we assume that only one of the positive tests at Fattening holdings and only one of the positive tests at Breeding holdings / hatcheries occurs in farms not part of an assurance scheme, the costs of clean up are significantly less. For those farms that are part of assurance schemes, we can assume that the majority of the clean up and disinfection procedures are already completed following a positive test. The cost to members is assumed to be £50.

16.46 The overall costs therefore of positive tests per annum to the industry are therefore expected to be £5.6k (£2.8k + £1.4k + £50*4 + £550*2).

Table 10. Costs of positive BO tests for Salmonella		
	Fattening holdings	Adult/Laying Breeding holdings
Number of positive tests per annum	4	2
Recovered costs to the CA from sample visit	£ 301	£ 301
Recovered costs to CA from VLA testing	£ 61	£ 46
CA charges sum	£ 2,895	£ 1,386
Cost of positive tests (assurance)	£ 50	£ 50
Cost of positive tests (non-assurance)	£ 1,650	£ 50
Cost of positive charges sum	£ 1,700	£ 100
Total	£ 4,595	£ 1,486

17. Cost and benefits of management options

17.1 There are three main aspects to the management of the NCP for (not clear what this mean) which the options discussed vary:

- Auditing the BO sampling
- Checking other aspects of holdings management including checking records
- Developing and maintaining an overall management system

17.2 Option 2 – Implement the NCP on a voluntary basis only

17.2.1 The costs of the management of the NCP programme run under a voluntary industry scheme would fall primarily on those firms willing to participate on a voluntary basis. It is assumed however that these auditing checks on sampling and other aspects of the management on individual holdings for these firms will already be carried out as part of their normal processes.

17.2.2 It is therefore assumed that there would be no costs to either the industry or Government from this option.

17.2.3 Without the benefit of a coherent management system however, it is unlikely that the UK would be able to ensure that the controls and testing requirements of the legislation would be carried out effectively; official sampling could not be managed effectively. Without such assurance, the benefits of the NCP as previously stated may not fully be realised.

17.3 Option 3 – For management of the NCP to be under the direct control of Government

17.3.1 Auditing the sampling procedures and other farm management aspects of all applicable holdings would be costly to the Government. AH have estimated that annual visits of this nature would take approximately 4 hours (including 2 hours travel time). There would also be administration costs based on approximately 0.33 hours of an AHO's time and 0.5 hours of an AO's time plus £34 per visit for other costs.

As a number of holdings will be visited for sampling purposes, the size of these costs will be curtailed somewhat. AH have indicated that for these holdings there would be no additional time costs for auditing. As 88 holdings are expected to be sampled, there are expected to be an additional 806 specific audit visits that would have to be made under this option. Therefore for all 894 holdings and hatcheries (including potential visits to both the laying and rearing parts of those holdings with both types of flocks), overall Government costs will be £242k per annum (£301*806). If these costs were recovered from industry, this would cost each holding £271 on average.

17.3.2 In common with CA sampling costs previously discussed, additional audit inspections by the CA would also incur a cost to industry in terms of farm manager time to facilitate the inspection. Based on 2 hours for an audit visit at £14 per hour (farm manager time plus 30% overheads), the cost to industry is expected to be £22k per annum (£27*806).

17.3.3 In addition to auditing of holdings and hatcheries, the Government would have to introduce a management system in order to properly manage the enforcement of the Directive. Based on estimates provided by AH, start up costs, including staff training, policy work and IT development costs would be negligible, as these costs have already been paid for as part of the NCP. The ongoing costs, including administration costs, are estimated to be £67k per annum, based on 1.5 hour of AO time per holding audited plus £14 overheads {[(£46*1.5)+£14]*806}.

17.3.4 Overall therefore the costs to Government would be £310k on an annual basis. The costs to industry would be £22k per annum.

17.4 Option 4 – For responsibilities of the management and auditing of the NCP to be shared by Government and industry

17.4.1 Under this option the Government would retain fully responsibility for the monitoring and controls of the NCP, but would have the flexibility to grant companies with consistently good practice and levels of biosecurity a level of independence.

17.4.2 In practice this would mean that some auditing of holdings could be done by companies themselves, after an initial period. For the purposes of cost calculation it has been assumed that those holdings granted limited independence would effectively avoid the yearly audit as described under option 2. They would however be required to submit evidence to Government, for example sharing the results of test results with Government. It has been assumed that such a level of information sharing would cost the holding approximately one hour of a farm manager's time (at £14 per hour including 30% overheads) per annum.

17.4.3 The level of independence that the CA might be willing to grant (i.e. the number of holdings granted independence) is difficult to assess. For the purpose of cost calculation, it has been assumed that 20% of holdings would be permitted to carry out their own process audits.

17.4.4 Therefore the cost of auditing to Government would effectively decline by 20%, although it should be acknowledged that this saving would only be implemented in the 2nd year of the programme.

17.4.5 Likewise the cost to industry overall for 20% of holdings not having to accompany inspectors will result in a reduction in admin burden for this reason by the same percentage in the 2nd year. Although this will be offset to an extent by the requirement to share information, savings will be greater should the Government wish to implement cost recovery by the introduction of fees.

17.4.6 In terms of the costs of setting up and managing a management system, these costs will be the same for Government as considered in option 2.

17.4.7 Overall therefore the costs to Government would be the same as Option 3 in year 1 (£310k) and £261k on an annual basis thereafter (80%*£242k + £67k). The costs to industry would be the same as Option 3 in year 1 (£22k) and £20k per annum thereafter (£22k*0.8 + £14*20%*894).

17.5 Option 5 – For turkey companies to establish their own company control programme as part of the NCP

17.5.1 Option 5 potentially devolves a large proportion of the responsibility for management to the NCP to industry, represented by an Independent Control Body (ICB) set up to service the industry. Aside from option 1, this option is the most cost effective for Government.

17.5.2 Once established, an ICB could carry out audits of members in much the same way that Government would carry out audits, either in terms of annual inspection visits to all holdings (as with option 2) or with visits to some holdings and information sharing requirements to others (as with option 3). The role for the CA would be to monitor the ICB to ensure enforcement was carried out to an acceptable standard, which for the purposes of cost calculations would mean spot checks. As official sampling is already carried out on a random basis, it is envisaged that these checks could be carried out at the same time, with no additional time requirements.

17.5.3 Random sampling is however not performed on holdings with breeding flocks for rearing. It has been assumed that 10% of these holdings would be spot checked also and that the cost per visit is the same for both industry and the CA as sampling visits at adult breeding flock holdings. Given 10 additional visits therefore, the additional costs to the industry are estimated to be £270 per annum (£27*10) and to the CA £2.9k per annum (10*£301).

17.5.4 The cost of establishing an ICB is difficult to assess, but all costs would be passed on to the members of the scheme through membership fees. As large proportions of fattener and breeder holdings are already members of assurance schemes, it is likely that such an ICB could be developed through these schemes. For the purposes of cost calculations it is assumed that many of the management systems are already in place that would have otherwise have had to have been set up by the Government. There will however, have to be some change based on the additional requirements of managing the audits and sample records. **It is therefore assumed that the costs to the industry will be approximately half that of those that would have fallen on the Government.** For the industry, assuming 95% of fattening holdings, breeding holdings and hatcheries would join the ICB, this will therefore be £163k per annum. This is based on £127k costs for auditing (including time to accompany ICB auditors) and £36k for ICB management.
[£127k = £270 + 45*£27 + 0.95*0.5*(£242k + £22k)]
(£36k = 0.5*894*0.95*£84)

17.5.5 The Government would still have a role in the monitoring of those holdings that are not members of the ICB (approximately 45 holdings). Each of these holdings will be audited on an annual basis as under option 2 and a management system will also need to be developed. Given the reduced numbers of holdings that such a system would involve the costs management are greatly reduced. Based on AH estimates, it is assumed that such a system and auditing would cost the Government £22k per annum, including £2.9k for additional spot checking as above (0.05*£242k + £3k). As before, there is also a cost relating to the accompaniment of the CA for those holdings not part of the ICB during audit visits. This cost is estimated to be £1.2k per annum to the industry.

17.5.6 Overall therefore the costs of Option 5 would be £162k per annum to industry and £22k per annum to the Government.

18. Issues of equity and fairness

18.1 The NCP does not introduce any questions of equity or fairness.

19. Enforcement and sanctions

19.1 To be completed after the consultation.

20. Implementation and delivery plan

20.1 The consultation period for the Turkey Flocks NCP began in July and will end in September. This section will then be completed.

Specific Impact Tests: Checklist

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	***Results in Evidence Base?***	***Results annexed?***
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

Annexes

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

Competition assessment

All eligible turkey producers in the UK will be subject to the requirements of the NCP. It is not felt that these requirements will reduce the number or range of suppliers of breeding and fattening turkeys nor limit the ability to choose the price, range, quality and location of their products. The measures will not impose additional costs on new entrants compared to incumbent firms. The industry is not characterised by rapid technological change.

All EU Member States will need to implement the legislation so there will be a more level playing field for EU competition.

Small Firms Impact Test

The NCP will not apply to turkey fattening flocks with up to 500 birds and all hatcheries with a capacity for up to 1,000 eggs. Flocks between 500 and 10,000 which are able to demonstrate that they supply locally will be subject to official control sampling under domestic arrangements. Prevalence results of these flocks will be reviewed at the end of the first year of implementation to assess whether these flocks need further monitoring to control prevalence levels.

This will help to reduce the burden on small business, and, if prevalence amongst these flocks is not within the target after the first year provides them with an additional year to ensure that they put in practice measures to reduce their *Salmonella* levels.

Legal Aid

The draft Regulations create new civil penalties for producers who fail to comply with the monitoring and controls required by the National Control Programme for turkey flocks. The penalties are monetary. A producer who refused to pay a penalty would risk prosecution. A producer who faced prosecution in this circumstance would not be eligible for legal aid.

Sustainable Development

The Regulations are in accordance with the shared UK principles of sustainable development.

Carbon Impact Assessment

The NCP will have no significant effect on carbon emissions, as in the main the nature and scale of conventional turkey production and marketing is likely to remain the same.

Other Environmental Issues

As the nature of conventional turkey production and marketing is likely to remain the same, the NCP has no implications in relation to climate change, waste management, landscapes, water and floods, habitat and wildlife or noise pollution.

Health Impact Assessment

The NCP may have an impact on health by increased monitoring of *Salmonella* levels within the Turkey industry, thus potentially leading to a reduction in cases of *Salmonella*.

Race /Disability/Gender

The NCP does not introduce any questions of equity or fairness.

Human Rights

The NCP is consistent with the Human Rights Act 1998.

Rural Proofing

Although the majority of producers and many suppliers are based in rural areas the NCP will not have a negative effect on the rural community.

Annex 2 – Sampling of fattening and breeding flocks

Reg. 584/2008	Fattening flocks	Breeding flocks – rearing	Breeding flocks - adults
Target		None	1% by 2012
BO sampling	3 weeks before slaughter (Results valid for 6 weeks)	Day old + 4 weeks of age + 2 weeks before moving to laying unit	Every 3rd week during laying period in holdings >250 **(hatchery or holding)** + 3 weeks before slaughter
Competent Authority sampling	Once a year all flocks on 10 % holdings with at least 500 fattening turkeys + All flocks on the holding when one flock tested positive for *S.* Enteritidis or *S.* Typhimurium in samples taken by BO, unless the meat of the turkeys in the flocks is destined for industrial heat treatment or another treatment to eliminate *Salmonella* + All flocks on the holding when one flock tested + for *S.* Enteritidis or *S.* Typhimurium during the previous round of samples taken by the BO + When the Competent Authority considers it necessary	None	Once a year all flocks on 10% holdings with at least 250 adult breeding turkeys between 30 and 45 weeks of age including: • all holdings with elite, great grandparent and grandparent breeding stock; **(hatchery or holding)** + All holdings where *S.* Enteritidis or *S.* Typhimurium was detected during the previous 12 months + All flocks on holdings in case of trace-back of *S.* Enteritidis or *S.* Typhimurium from samples taken at hatchery by BO/official controls
Sample Protocol (For breeding flocks hatchery under rearing / holding under adults)	• 2 pairs boot swabs – pooled to 1 sample OR • 1 pair boot and 1 dust sample (“may” pool) OR • hand drag swabs if <100 turkeys	• visibly soiled liners from 5 baskets covering 1 m2 • 900cm2 swabs or fluff from 5 places • 10g. broken eggshells from 25 hatchers	• Pooled faeces / naturally mixed droppings if caged OR • 5 pairs boot swabs OR • 1 pair boot swabs and dust samples and 900cm2 swabs
Dispatch	Official samples to VLA labs BO samples to approved labs	Official samples to VLA labs BO samples to approved labs	Official samples to VLA labs BO samples to approved labs

Annex 3 – Breakdown of summary costs

Shared costs

BO sampling		Fattening holdings	Breeders - rearing	Breeders - laying*	Sum
Industry	Sampling	£11,530	£ 1,385	£ 1,962	£14,878
	Sample testing	£19,880	£ 2,328	£ 2,616	£24,824
	Accompanying CA	N/A	N/A	£ 6,148	£6,148
	Sum - to Industry	£ 31,410	£3,713	£10,726	£45,850
Government	Sampling	N/A	N/A	£ 67,660	£67,660
	Sample testing	N/A	N/A	£ 40,025	£40,025
	Sum - to Government	N/A	N/A	£ 107,684	£107,684
Total		£31,410	£3,713	£118,411	£153,534

Official sampling		Fattening holdings	Breeders - rearing	Breeders - laying*	Sum
Industry	Accompanying CA	£ 1,855	N/A	£ 301	£ 2,156
Government	Sampling	£ 20,418	N/A	£ 3,308	£ 23,726
	Sample testing	£ 4,155	N/A	£ 505	£ 4,660
	Sum - to Government	£ 24,574	N/A	£ 3,813	£ 28,386
Total		£ 26,429	£ -	£ 4,113	£ 30,542

Cost of positive tests		Fattening holdings	Breeders - rearing	Breeders - laying*	Sum
Industry	Cleanup costs	£ 867	N/A	£ 433	£ 1,300
	CA charges	£ 3,211	N/A	£ 1,070	£ 4,282
	Sum	£ 4,078	£ -	£ 1,504	£ 5,582

Additional administrative burden		Fattening holdings	Breeders - rearing	Breeders - laying*	Sum
Industry	Record keeping	£ 20,372	£ 709	£ 1,537	£ 22,618
	Familiarisation with legislation	£ 18,554	£ 2,364	£ 2,910	£ 23,828

	Sum	£	38,926	£	3,073	£	4,447	£	46,446

Option specific costs

Option 3

Audit of applicable premises		**Fattening holdings**	**Breeders - rearing**	**Breeders - laying***	**Sum**
Industry	Accompanying CA	£ 16,699	£ 2,651	£ 2,678	£ 22,027
Government	Audit AHO time costs	£ 148,815	£ 23,621	£ 23,865	£ 196,301
	AO time and consumables costs	£ 34,949	£ 5,547	£ 5,605	£ 46,101
	Sum - to Government	£ 183,763	£ 29,169	£ 29,470	£ 242,402
Management costs					
Government	AO time and consumables costs	£ 51,125	£ 8,115	£ 8,199	£ 67,438
Total		£ 251,587	£ 39,934	£ 40,346	£ 331,868

Option 4

Audit of applicable premises		**Fattening holdings**	**Breeders - rearing**	**Breeders - laying***	**Sum**
Industry	Accompanying CA	£ 13,359	£ 2,120	£ 2,142	£ 17,622
	Information sharing	£ 1,855	£ 265	£ 322	£ 2,443
	Sum - to Industry	£ 15,215	£ 2,386	£ 2,465	£ 20,065
Government	Audit AHO time costs	£ 119,052	£ 18,897	£ 19,092	£ 157,041
	AO time and consumables costs	£ 27,959	£ 4,438	£ 4,484	£ 36,881
	Sum - to Government	£ 147,011	£ 23,335	£ 23,576	£ 193,921
Management costs					
Government	AO time and consumables costs	£ 51,125	£ 8,115	£ 8,199	£ 67,438

Total		£ 213,350	£ 33,836	£ 34,239	£ 281,425

Option 5

Audit of applicable premises		**Fattening holdings**	**Breeders - rearing**	**Breeders - laying***	**Sum**
Industry	Accompanying CA - non members of ICA	£ 928	£ 133	£ 161	£ 1,221
	Accompanying CA - members ICA (spot check)	£ -	£ 265	£ -	£ 265
	Own audit	£ 95,220	£ 15,114	£ 15,270	£ 125,604
	Sum - to Industry	£ 96,147	£ 15,512	£ 15,431	£ 127,090
Government	Audit AHO costs - non ICA	£ 7,441	£ 1,181	£ 1,193	£ 9,815
	AO time and consumables costs - non-ICA	£ 1,747	£ 277	£ 280	£ 2,305
	Audit AHO costs - ICA members (spot check)	£ -	£ 2,362	£ -	£ 2,362
	AO time and consumables costs - ICA members (spot check)	£ -	£ 555	£ -	£ 555
	Sum - to Government	£ 9,188	£ 4,375	£ 1,473	£ 15,037
Management costs					
Industry	ICB management	£ 26,982	£ 3,855	£ 4,451	£ 35,288
Government	AO time and consumables costs	£ 2,840	£ 406	£ 468	£ 3,715
Total		£ 137,895	£ 24,665	£ 22,255	£ 184,814

Annex 4

Legislation Referred to in the Impact Assessment

The Zoonoses Regulation 2160/2003 the "The Zoonoses Regulation"

http://eur-lex.europa.eu/LexUriServ/site/en/oj/2003/l_325/l_32520031212en00010015.pdf

Regulation (EC) No 1774/2002 of the European Parliament and of the Council of 3 October 2002 on laying down health rules concerning animal by-products not intended for human consumption:
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:273:0001:0095:EN:PDF

REGULATION (EC) No 199/2009 of the European Parliament and of the Council on 13 March 2009 laying down a transitional measure derogating from Regulation (EC) No 2160/2003 of the European Parliament and of the Council, as regards direct supply of small quantities of fresh meat derived from flocks of broilers and turkeys.
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:070:0009:0010:EN:PDF

COMMISSION REGULATION (EC) No 213/2009 of 18 March 2009 amending Regulation (EC) No 2160/2003 of the European Parliament and of the Council and Regulation (EC) No 1003/2005 as regards the control and testing of *Salmonella* in breeding flocks of *Gallus gallus* and turkeys
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:073:0005:0011:EN:PDF

The Animal Health Act 1981

Food Safety Act 1990
European Communities Act 1972
The Zoonoses Order 1989

The Animal by Products Regulations 2005 (implementing EU Regulation (EC) No 1774/2002)

All EU legislation can be viewed at:
http://eurlex.europa.eu/RECH_legislation.do?ihmlang=en

UK legislation can be viewed at:
www.defra.gov.uk

Or printed copies of both EU and UK legislation can be obtained from (or emailed by): zdri@DEFRA.GSI.GOV.UK

Annex 5

WORKING DOCUMENT FOR A CODE OF PRACTICE FOR THE PREVENTION AND CONTROL OF SALMONELLA IN TURKEY FLOCKS

Defra

Contents

Preface

This voluntary Code of Practice is issued by the Department for Environment, Food and Rural Affairs (DEFRA), the Scottish Executive Environment and Rural Affairs Department (SEERAD) and Welsh Assembly Government and has been drawn up in consultation with Veterinary Representatives of the poultry industry and Veterinary Laboratories Agency (VLA). All DEFRA Codes of Practice are available from DEFRA Publications, Admail 6000, London SW1A 2XX, telephone 08459 335577.

Introduction

Small numbers of *Salmonella* organisms occur in nature and their complete elimination from the environment of all turkey farms is unlikely to be economically feasible other than at the breeding and Grandparent level. Despite this, good management can reduce the risk of introduction and persistence of infection to minimal levels, particularly since improved *Salmonella* control in the breeding sector and in feed production has reduced the risk from these major sources of infection.

The purpose of this Code is to assist turkey flock owners in preventing the introduction, spread and persistence of *Salmonella* infection.

They are therefore strongly encouraged to include the Code as part of their standard management practice. This Code has been drawn up taking into account the fact that turkeys are predominantly produced in controlled environment housing systems and that not all practices can be applied in full to free range or small scale rearing systems. Nevertheless, many of the basic principles are applicable and should be followed as far as possible.

Preventing the Introduction of Infection

1. FARM

1.1 Location

Where circumstances permit newly constructed turkey farms should be located as far away as possible (ideally more than 2km) from other commercial poultry premises, other livestock enterprises and other potential sources of contamination such as abattoirs, sewage treatment plants, land fill sites etc.

When an existing farm is close to such sites then a higher level of disease security is required, including wildlife control and ensuring that no drainage or waste from the nearby property enters the farm.

It is unwise to deliberately place large turkey flocks on other livestock farms, especially breeding flocks.

1.2 Poultry Site

Good biosecurity is extremely important to prevent the introduction of a wide range of micro-organisms into turkey farms and where possible site design and management practices should be planned to facilitate this.

If possible the site should be fenced and entry restricted to personnel and essential visitors, under supervision, with clean parking facilities provided away from the turkey buildings. A notice should be displayed at the entrance of the site requesting visitors to attract attention by means of a bell or telephone line/number provided or vehicle horn rather than entering the site unsupervised. A disinfectant footbath and brush should be placed at the entrance to the site and/or near the vehicle parking area. Where possible a separate gatehouse should be provided where visitors can change into overalls, boots and hair protection, sanitise their hands and sign a visitors' book. Suitable disinfectant spraying facilities should be provided for vehicles which have to enter the site, but where possible it is best to keep unnecessary vehicles away from the main part of the site.

The site should be kept clean and tidy to discourage wild birds, rodents and flies.

All feed spillages outside the houses should be cleaned up immediately, disposed of as waste, not used as feed and the area surrounding the houses kept as free of vegetation and as well drained as possible. It is also good practice to remove litter which has escaped from doors of houses and to fill puddles as these may act as a source of infection for wildlife pests which may enter the site, and a means of contaminating workers' footwear, trolleys, vehicles, etc.

1.3 Houses

Buildings should be of sound construction and well maintained to prevent access by wild birds and to deter rodents. Damaged insulation cladding or poorly maintained block walls allow easy refuge for rodents and in-house storage areas should be carefully designed and maintained for the same reason. Main doors can be sealed by loose concrete or lime after placing the birds. Naturally ventilated turkey houses should be netted to prevent the entry of wild birds and a high standard of rodent control should be maintained across the whole site, focusing on potential entry points and areas where signs of rodent activity have been identified. Areas around feed bins and hoppers are particularly attractive to rodents entering the unit for the first time.

Where possible surfaces of buildings and surroundings should be smooth, hard and impervious to enable effective cleaning and disinfection. Ancillary buildings such as storage rooms, rest rooms,

toilets etc. should be of a similar standard. Drains should be kept in good condition and running freely, but arrangements should be made to prevent entry of rodents via drains.

2. LIVESTOCK

2.1 Poultry

Day old poults should be obtained from a reputable breeding flock or hatchery which has implemented a *Salmonella* monitoring programme in line with the statutory one required for domestic fowl under the CSPO 2007, or equivalent EU schemes in the case of imported day old poults or hatching eggs. A check on results of this monitoring can be made by the private veterinary surgeon for the turkey flock if required by contacting the suppliers. Additional *Salmonella* tests can be carried out on Dead-on-Arrival poults and delivery box liners if there is a suspicion of infection in replacement poults. The whole site should be managed on an all-in all-out basis with sufficient time (ideally at least 6 days) allowed between cleaning the last house and restocking the first to minimise the risk of reinfection.

2.2 Domestic Animals

The entry of dogs, cats and other livestock to poultry buildings and feed and equipment stores (including during cleaning) should be forbidden.

2.3 Wild and Feral Animals

All buildings, including store rooms, should be proofed against entry by wild birds. Their presence in the vicinity should be discouraged by maintaining general tidiness, clearing vegetation and other perching places, cleaning up feed spillages and good drainage to reduce pooling of surface water. Rodent habitats should be eliminated by maintaining the premises in a tidy state and a planned programme of baiting and trapping in and around the buildings and around the site perimeter should be undertaken. This programme should be intensified during periods when houses are empty. Further guidance on rodent control is available in the Defra Code of Practice for control of rodents. On free range farms foxes and other small mammals as well as wild birds may also be carriers of *Salmonella* and these should also be deterred. Co-grazing with sheep or cattle may also present a risk of introduction of infection.

3. FEED AND WATER

3.1 Feedstuffs

Finished feed or ingredients for home mixing should be obtained from a mill or supplier who operates in accordance with the relevant Defra Codes of Practice for the Control of *Salmonella* (or equivalent) and will make available the results of *Salmonella* monitoring of feed and the milling process. The private veterinary surgeon for the turkey flock is a suitable person to assist with interpretation of these results.

Ingredients known to present a higher risk of *Salmonella* of human health concern, such as cereals stored in flat stores or open bins on livestock farms should be avoided. There may also be advantages in treating protein ingredients with aldehyde/acid mixtures before mixing.

Feed should be heat treated for a sufficient time and at an adequate temperature to control *Salmonella*. Medicated feedingstuffs should only be obtained from mills which are registered with the Feedingstuff Manufacturers Code of Practice under the Veterinary Medicines Regulations. Ideally, finished feed should be delivered in vehicles that are dedicated to that purpose and that are not backloaded with ingredients or other non heat treated feeds. If this is not possible, vehicles

should be sanitised before finished feed is carried and wet cleaning should be avoided to reduce *Salmonella* risk. Home mixers should take special care to avoid carrying contamination from livestock areas to feed milling areas, and should ensure a high standard of control of wildlife pests and effluents.

Drivers of delivery vehicles should wear clean boots and overalls and should not enter poultry or storage buildings.

Feed should be stored in closed bulk storage bins, sealed hoppers or bags. Any rainwater leaks or condensation problems in feed storage areas should be corrected. Storage areas and slave hoppers etc., should be kept free of birds and rodents, and should be included in the terminal disinfection programme.

Attention should be paid to regular cleaning of bulk storage bins, augers, hoppers and chain feeders.

Addition of organic acid products to feed can help to reduce the risk of introduction of infection via feed but is not 100% reliable. Such treatments also reduce the risk of establishment of contamination within feed pipes in pan feeder systems.

Long term planning should consider replacement of open feed delivery systems with closed systems delivering feed to suspended tube feeders.

3.2 Water Supply

Water should be from a mains or other chlorinated source and the delivery system, including any header tank, should be enclosed to prevent contamination. Chlorine will inactivate live virus vaccines and data sheet recommendations should be followed if these are to be administered in the drinking water. Bowl or bell drinkers are more likely to become contaminated than nipple lines, and should be subject to a high level of cleaning and disinfection between flocks.

4. PERSONNEL

4.1 Farm Staff

Management should ensure that all farm staff, including relief and casual staff, understand the importance of personal hygiene and are aware of the means by which infection can be spread on hands, clothing and equipment. A farm hygiene guide, which incorporates the principles of this Code should be displayed in a prominent place. Adequate toilet and washing facilities should be available and work boots and overalls provided for use on the farm only. Alcohol gel based hand sanitisers should be provided at the entry to the site and to each house. Disposable plastic gloves should be available for use for carrying out dirty jobs such as collecting dead birds.

Staff should not keep or have contact with any other poultry and should avoid working with other livestock if possible. If this is not possible turkeys should be serviced before other livestock and protective clothing changed between different livestock categories.

Those who enter poultry buildings should wear disposable overalls or overalls which are capable of being laundered and boots which can be cleaned and disinfected. When they leave the poultry house they should wash their hands, and/or use a hand sanitiser and disinfect their boots. Ideally separate boots should be used in each house as well as using the boot dips at the entry to the service area of the house and the area occupied by birds.

4.2 Visitors

Visitors (such as fieldsmen, maintenance personnel, delivery and collection staff, veterinarians, officials etc.) are a potential means of introducing infection, especially if they visit other poultry farms. Catching and cleaning gangs and their vehicles are a particular hazard and should be encouraged to use the same high hygiene standards as farm staff.

Non-essential visitors to the farm should be discouraged. Visitors should enter turkey buildings only if this is essential and should wear protective clothing and waterproof boots provided by the farm.

5. SUPPLIES

5.1 Litter

Litter should be obtained from a reliable and traceable source and should be free from contamination by livestock, wild birds and/or rodents. It is preferable to obtain straw bedding from specialist arable farms without pigs, poultry or cattle. Litter should be transported on cleaned and disinfected vehicles and stored in a clean rodent and bird proof area. Wood shavings should be made from sources of timber which present no risk of *Salmonella*. Treatment of bedding with organic acids can reduce the risk of introduction of infection by this route.

5.2 Equipment

Equipment used for catching and transporting birds poses a high risk of introducing *Salmonella* onto a site. On each occasion, before and after items are used they should be cleaned and disinfected with a DEFRA approved disinfectant applied at rates of at least General Orders Concentration. These precautions should also apply to equipment and vehicles used for moving poults between brooding and fattening accommodation, or for moving breeding turkeys to the laying site.

It is best to avoid sharing equipment with other farms. If this is unavoidable any equipment (such as weighers etc.) transferred from other sites should be disinfected before transport and again before use on the site.

It is advisable that facilities are available for spray disinfection of the exterior of cleaning and catching team vehicles and equipment by power washer before entry to the turkey houses.

6. DISPOSAL OF FARM WASTE

6.1 Birds

Any dead birds and birds that have to be culled should be removed as soon as possible and placed in a closed leak proof and pest proof and lockable container at the perimeter of the site ready for disposal in accordance with Animal By-Products legislation. Carcasses can be incinerated on site or they may be carefully removed for suitable disposal off site, taking care to avoid leaks and spillages. Where facilities exists the incineration of used litter is preferred on site.

6.2 Used Litter

Poultry manure should be disposed of following the guidelines given in the Defra Codes of Good Agricultural Practice for the Protection of Water (PB0585), Soil (PB0617) and Air (PB0618) and should not be spread on land to which other livestock have access. When possible litter should be stacked for at least four weeks before spreading. Where facilities exist the incineration of used litter is preferred. Any litter spilled during the removal process should be cleaned up, and preferably avoided by appropriate loading and sheeting of vehicles.

Animals should not be grazed on land on which poultry litter has been spread for at least five weeks if possible. It is preferable to dispose of litter on arable land, especially if *Salmonella* is known to have been present in the house from which the litter originates.

Vehicles and equipment should be cleaned and disinfected after being used for removal of litter. They should not be used for carrying feedstuffs or new litter but if this is unavoidable, on small farms, the items should be cleaned and disinfected immediately after litter removal, left to dry completely then redisinfected and dried before use for feedstuffs or new litter.

7. ROUTINE HYGIENE AND HUSBANDRY

Each farm should have its own operating procedures, preferably as a manual of working instructions, which contains a check list of routine hygiene and husbandry tasks.

7.1 Personnel

A footbath containing a DEFRA approved, preferably chlorcresol or ‘synthetic phenolic’-based, disinfectant made up at the maximum recommended concentration and a brush should be provided outside each turkey house and used each time the building is entered or left. Boots should be cleaned of gross soiling before dipping. The bath should be replenished regularly to maintain sufficient depth and the disinfectant renewed once soiled or at least once a week. Dilution of footdips by rainwater should be avoided but any lids should be easy to use to avoid staff not consistently using the bootdips. The use of separate boots for outside the house and a step-over barrier to the inside where inside boots are put on are more effective than footbaths alone.

Rest rooms, toilets etc., should be kept clean and tidy and sweepings disposed rather than returned to the house. Adequate washing facilities should be provided. Hands should be washed with antibacterial soap and sanitised before smoking and before and after meals as well as after

visits to the toilet. Protective clothing should be laundered regularly, ideally daily, and kept separate from that which is in use. Non-farm clothing should also be kept separate. On large farms separate boots and overalls should ideally be maintained and used in each separate building. This should be considered essential on multi age sites.

Hand washing facilities or disinfectant hand sprays should be provided in poultry buildings and hands should be washed and sanitised after handling birds and on leaving a poultry building. Disposable plastic gloves may be used for operations which would lead to gross hand contamination.

7.2 Feedstuffs

Equipment for storage and distribution of feed should be properly maintained and any spillage that does occur should be cleared away promptly. A regular check should be made of bird proofing and pest control measures and baiting increased if higher levels of rodents, droppings, tracks, chewing damage or disturbed bait are seen.

7.3 Cleaning, disinfectants and chemicals

Cleaning and disinfection schedules and methods must be available for all parts of the process in farms and transport. These must include surfaces, equipment, machinery and transport.

Where a *Salmonella* Enteritidis and/or Typhimurium-positive flock was found previously, environmental swabs may be taken after cleaning, disinfection and drying of surfaces such that they are representative of the whole building and must include swabs from each of the following areas: walls/roofs, floor swabs or sweepings, in-house feed hoppers, high beams and pipe-work, feeders, drinkers, ventilation systems, nest boxes and AI equipment on breeding farms, and tested for *Salmonella*. There should ideally be no restocking until negative results have been obtained. If this is not possible the replacement flock should be tested for *Salmonella* after 1-2 weeks and plans for improved cleaning and disinfection at the next turnaround period, as well as scheduling the positive flock at slaughter, should be made.

Only “approved” chemicals/disinfectants may be used, refer to The Diseases of Animals (approved disinfectants) (amended) Order 2003. Usage must be in accordance with recommended dosages/dilutions. In general disinfectants which are least likely to be easily inactivated by residual organic matter and biofilms should be used. Such disinfectants currently include those based on formaldehyde blends, chlorcresol or high potency glutaraldehyde based products. It is best to obtain advice from a Defra specialist when designing a disinfection programme for turkey production.

All disinfectants and chemicals must be stored and used in compliance with COSHH regulations.

7.4 Staff and visitor hygiene

All farm staff and visitors should have access to a toilet, hand washing facilities, alcohol-based hand sanitisers, changing and canteen facilities appropriate to numbers of staff. They should sanitise hands before entering and on exiting any site. They should wash their hands before and after using the toilet, eating, drinking and smoking.

All farm staff and visitors should change into protective clothing and footwear on entering sites. The clothing and footwear should be left at the site on departure. All protective clothing is to be laundered regularly and clean clothes should be available at all times.

Visitors should be asked to certify that they are not suffering from any illness which could compromise the health and hygiene of stock.

Visitors should be asked to declare their last visit to any other poultry sites.

In respect of visitors, management should exercise discretion to refuse entry if there are grounds for concern.

Hygiene procedures must be followed by farm staff and visitors.

Employees should not keep poultry or any other avian species outside work, or work on other farms with poultry unless this is a requirement of the job on multi-site poultry companies.

Visitors to all agricultural sites must be accompanied at all times by an authorised member of staff.

Monitoring of the *Salmonella* Status of the Flock[9]

From 2010 there is a statutory requirement to monitor the *Salmonella* status of turkey flocks. Many producers already have monitoring regimes in place. Knowledge of the *Salmonella* status of flocks can help with decision making on disinfection at depopulation and possibly organisation of slaughter. This will allow positive flocks to be slaughtered late in the day to reduce contamination of the processing plant, or to be directed to heat-treated products.

The monitoring regime to be used from 2010 should ideally be implemented in advance and should be discussed with the flock owners' veterinary advisors to ensure correct implementation. Veterinary advice should be sought if the results of tests on any samples are positive.

8. TIME TO SAMPLE

8.1 Poults

If day old poults are obtained from a breeding flock which is monitoring voluntarily for *Salmonella* using a sampling system in line with the one required under the CSPO 2007and such monitoring has given negative results, no further testing should be necessary unless further confirmation of freedom from infection acquired in the hatchery or during transit is required. In this case, and in the case of poults obtained from untested flocks, delivery box liners and poults dead on arrival should be examined for *Salmonella*. It is especially important to take delivery box liner samples in an aseptic manner, using disposable plastic gloves, immediately after unpacking as these can be easily contaminated by residual *Salmonella* in dust even in a thoroughly disinfected house.

8.2 Growing Birds

It is best to take these samples as late in the growing stage as possible, to maximise detection of late infection (e.g. after thinning). Results of testing must be available in time to take action so 2-3 weeks before depopulation is the optimum time for sampling. New EU regulations specify sampling using two pairs of boot swabs, during the three week period before slaughter. In thinned flocks the test result remains valid for six weeks, after which a further sample must be taken before slaughter of subsequent batches.

In breeding flocks samples of poult delivery box liners and dead-on-arrival should be taken according to EU Commission Regulation 213/2009 and the UK NCP. Two pairs of boot swabs, or optionally one pair of boot swabs plus a dust sample, should be taken 2-3 weeks before transfer to the laying house. Whilst in the laying house five pairs of bootswabs (or one pair plus a dust sample) must be taken every three weeks from each flock on the site. Any sample taken for

[9] Under the Zoonoses Order 1989 the presence of a Salmonella must be reported by the laboratory to Defra

Salmonella should be tested as soon as possible after collection and suitable arrangements made with the laboratory. Samples must be tested in a Defra approved laboratory using the ISO6579: Annex D method.

A proportion of flocks will also be visited by officials of the competent authority who will take samples to be sent to the National Reference Laboratory. This sampling can replace one of the operator samples.

The table below summarises sampling requirements under the National Control Programme.

Reg. 584/2008	Fattening flocks	Breeding flocks – rearing	Breeding flocks - adults
Target		None	1% by 2012
BO sampling	3 weeks before slaughter in holdings >500 (Results valid for 6 weeks)	Day old + 4 weeks of age + 2 weeks before moving to laying unit	Every 3rd week during laying period in holdings >50 **(hatchery or holding)** + 3 weeks before slaughter
Competent authority sampling	Once a year all flocks on 10 % holdings with at least 500 fattening turkeys + All flocks on the holding when one flock tested positive for *S.* Enteritidis or *S.* Typhimurium in samples taken by BO, unless the meat of the turkeys in the flocks is destined for industrial heat treatment or another treatment to eliminate Salmonella + All flocks on the holding when one flock tested + for *S.* Enteritidis or *S.* Typhimurium during the previous round of samples taken by the BO + When the competent authority considers it necessary.	None	Once a year all flocks on 10% holdings with at least 250 adult breeding turkeys between 30 and 45 weeks of age including: • all holdings with elite, great grandparent and grandparent breeding stock; **(hatchery or holding)** + All holdings where *S.* Enteritidis or *S.* Typhimurium was detected during the previous 12 months + All flocks on holdings in case of trace-back of *S.* Enteritidis or *S.* Typhimurium from samples taken at hatchery by BO/official controls.
Sample (For breeding flocks hatchery under rearing / holding under adults)	2 pairs boot swabs – pooled to 1 sample OR 1 pair boot and 1 dust sample (“may” pool) OR hand drag swabs if <100 turkeys	• liners from 5 baskets covering 1 m2 • 900cm2 swabs or fluff from 5 places • 10g. broken eggshells from 25 hatchers	• Pooled faeces OR • 5 pairs boot swabs OR • 1 pair bootswabs and dust samples and 900cm2 swabs
Dispatch	Official samples to VLA labs BO samples to approved labs	Official samples to VLA labs BO samples to approved labs	Official samples to VLA labs BO samples to approved labs

Cleaning and Disinfection at Depopulation

Thorough cleaning and disinfection (including rodent and arthropod control) should be part of every turkey farm's routine. The programme used should be capable of eliminating *Salmonella* from the environment even if it has not been identified as a minority of flock infections will always evade detection. If *Salmonella* has become persistent in a house, ideally it is advisable to allow sufficient time after depopulation for both cleaning and disinfection to be carried out thoroughly, for its effectiveness to be checked by bacteriological examination and for the process to be repeated if necessary.

On multi-age sites precautions should be taken during cleaning to reduce the chances of transmitting infection to buildings that are still occupied. Likewise care should be taken to avoid transferring infection from older birds to newly introduced birds. (See Sections 4-7 above)

It is helpful to have a check list detailing each step of the cleaning and disinfection process to ensure that all aspects are dealt with.

Careful attention must be given to Health and Safety before and during cleaning and disinfection procedures.

9. CLEANING AND DISINFECTION PROCEDURES

9.1 Forward Planning

The timing of depopulation and restocking and organisation of cleaning and disinfection should allow for the maximum possible empty time. Planning will include booking contract workers in advance and arranging for minimal feed and other supplies to remain after depopulation. A list of items needing maintenance, repair or replacement once the buildings are empty should be made.

Rodent and insect control should be part of the normal routine. If rodent infestations have built up intensive baiting and trapping will be necessary at depopulation to reduce their dispersal into the surrounding environment and subsequent re-entry to buildings after restocking. Detailed guidance on rodent control can be obtained in the Defra Code of Practice for the Prevention of Rodent Infestations in Poultry Flocks (PB2630).

Disinfectant footbaths should be maintained at the entrances to the houses throughout the cleaning and disinfection procedure. Clean footbaths should be put in place immediately after washing is completed.

9.2 Dry Cleaning

Dead birds should be removed for early incineration or disposal off the site together with any rubbish from the buildings. Surplus feed should also be removed from the site. All moveable equipment should be taken to a hard standing for cleaning and disinfection or returned to the house after cleaning for disinfection, ensuring that floor surfaces beneath are still accessible for treatment.

Buildings should be treated for arthropods, such as litter beetles, if present immediately after removing the birds and rodent control measures intensified as necessary. In cases of severe arthropod infestation a residual insecticide/acaricide should also be applied after completion of disinfection and drying. Rodent baiting points should however be removed immediately before the washing and disinfection process and replaced with new or disinfected equipment and new bait as soon as possible after completion of disinfection or

fogging/fumigation. If there is a gap between washing and disinfection baiting should be resumed during this period.
Dust should be blown down or vacuumed from high fittings before mucking out and litter removed for disposal off the site. Floors should be swept clean of remaining litter. When litter is removed from the site loads should be covered with sheeting.

Buildings, including passages, feed and equipment stores, rest rooms and other ancillary buildings should be cleaned of dust by vacuum or sweeping. The external surfaces and fittings of the house and the entrances and pathways should be well cleaned.

9.3 Washing

Use of a detergent/sanitiser applied through a power washer may assist with loosening adherent dirt or steam cleaning may be useful for cleaning difficult equipment, such as metal tube feeders. Some manual scrubbing may also be necessary. Steam cleaning may also be used for the structure of the house but it has no sterilising effect so adequate disinfection should also be carried out. The shell of the building, ancillary rooms and equipment should then be cleaned by power washing paying particular attention to litter trapped in cracks and holes in dwarf walls at bird level.

If the electric system is not waterproof a higher standard of dusting together with fogging or fumigation should be used for high fittings. Small fittings such as switch boxes which cannot be power washed may be wiped with a cloth soaked in disinfectant after dry cleaning. The insides, and outside of the house should reach the same stage of cleaning before disinfection to avoid recontamination. After washing surfaces should be allowed to dry as fully as possible before disinfection and in particular all pooled wash water should be washed away.

9.4 Feed Bins

Feed bins, together with other parts of the distribution system such as augers, pipes, slave hoppers, reservoirs, pans, chain feeding systems etc., should be emptied and cleaned to a high standard and allowed to dry completely. Feed and water trays or pans, gas heaters and wire to be used in brooders as well as space heaters and mobile stir fans should also be cleaned and disinfected to a high standard. Cleaning equipment such as scrapers, brushes, power washes etc., should be cleaned and disinfected before transferred to another house.

9.5 Water System

Water lines should be cleaned by flushing through followed by internal disinfection using a water system sanitiser. The header tank and surrounding platforms, beams etc., should be thoroughly cleaned and disinfected. Limescale aggregate on bell drinkers should be removed using acid products before disinfection.

9.6 Repairs and Maintenance

Staff and contractors carrying out repairs etc., should wear protective clothing provided by the farm. The exterior of toolboxes and stepladders etc., used by contractors should be disinfected on entry to the farm. Holes which allow easy access to rodents should be sealed. This includes drain holes which can be sealed with wiremesh plugs. All repairs which are likely to dislodge hidden litter or dust should be completed, preferably before washing but certainly before disinfection. If this is not possible the area worked on should be cleaned and redisinfected.

9.7 Disinfection

Cleaning of buildings and equipment should be followed by disinfection using a Defra approved disinfectant. **It is important that all disinfectants are made up to the correct concentration otherwise they are likely to be ineffective.** In most cases the Defra General Orders concentrations are appropriate for *Salmonella* control on clean surfaces but in difficult to clean houses (e.g. old structures, earth floors etc.) higher concentrations can be used.

For houses that have not completely dried or are recurrently infected higher concentrations of disinfectant (e.g. Defra T.B. Orders Concentration or concentrations up to the manufacturer's maximum recommended concentration) may be more appropriate. In general formaldehyde based disinfectants and, to a lesser extent, chlorcresol or synthetic phenolic disinfectants are the most effective when residual organic matter or biofilms are present. All surfaces should be thoroughly sprayed to saturation point with disinfectant and special attention should be given to floor surfaces, slave hoppers and reservoirs, nest boxes, dwarf walls, partitions, ventilation ducting and high beams, platforms and pipes. Ancillary rooms and the outside areas surrounding doors and ventilation ducts should also be disinfected.

In houses which are repeatedly infected it is advisable to commission a specialist contractor who is equipped to apply 10% formalin by high pressure power wash as this is much more effective than routine disinfection procedures.

9.8 Assembly and Check of Equipment

After it has been cleaned and disinfected equipment should be reassembled and replaced in the buildings. It is advisable to also include as much equipment as possible in the house disinfection to avoid recontamination (e.g. by wild bird droppings, splashes from pressure washing etc.) All equipment should be checked to ensure that it functioning correctly. Drinkers should remain empty until after fogging or fumigation.

9.9 Fogging and Fumigation

Fogging with formaldehyde or a formaldehyde based product is the most effective method for secondary disinfection, but is not necessary when the main disinfection is carried out correctly. All doors and hatches should be kept closed and fans turned off for as long as possible during fogging. Surfaces should be allowed to dry as much as possible after disinfection before fogging. Careful attention should be given to health and safety considerations during fogging. It is also possible to repeat fogging after laying new litter and final setting up of the house but this is not fully effective and should not be seen as a substitute for high standards of prior disinfection.

Changes in disinfection programmes should only be made after seeking specialist veterinary advice. In large turkey companies an in-house field trial of any new disinfectants under consideration would be appropriate.

9.10 Vehicles

Vehicles used for transporting birds and removal of manure and feed during cleaning should be cleaned and disinfected before use on another site. Farm vehicles used for serving poultry houses or handling wastes should be cleaned and disinfected as part of the routine site programme before repopulation. When necessary other vehicles used on the farm, including the inside floor and boot of private cars, should be cleaned.

9.11 Microbiological Assessment after Cleaning and Disinfection

The purpose of this is to ensure that, if *Salmonella* was detected in the house before depopulation, the cleaning and disinfection procedures have been effective. Ideally if

Salmonella is detected after disinfection the process should be repeated but in some cases there will be insufficient time to allow this before restocking and positive results may signal the need for a higher standard of disinfection in future.

For reasons of safety buildings which have been treated with formaldehyde-based products should be thoroughly ventilated before they are entered for sampling. Ideally disinfectants should have had time to dry before samples are taken. It is recommended that the following samples are taken: floor swabs or sweepings, litter trapped in holes and cracks in dwarf walls, swabs (large gauze or cotton wool swabs in all cases taken over a large surface area of at least 1m2, until there is visible soiling of the swab) from high fittings (i.e. beams, pipes, header tank platforms, roof extractors), bases of wooden support posts and partitions, wall mounted fan boxes and mobile stir fans, slave feed hoppers and reservoirs, brooder feed and water pans and floors and fittings in ante-rooms. If appropriate, any dead rodents or droppings found in the house should also be tested for *Salmonella*. On breeding farms nest boxes and associated ramps and egg collection equipment should also be sampled.

Samples should be taken after drying of disinfectants - ideally directly into pre-enrichment medium - and tested as soon as possible after collection in a Defra approved lab, ideally on the same day. Additional tests to determine surface coliform counts may also be useful to assess the effectiveness of cleaning and disinfection in the absence of *Salmonella*.

10. RESTOCKING

10.1 Rodent Control

Baiting should be resumed as soon as possible after completion of washing and disinfection as this is a key time to attract rodents to bait when no feed is present. In heavily infested houses contact rodenticides and traps can be used on rodent runs which are out of reach of the birds, to supplement feed based baiting points placed in safe positions inside and outside the building and around the perimeter of the site. The take of bait should be regularly checked to ensure that there are no issues of poor palatability and that bait is replaced or refreshed as necessary. Whole wheat based bait is often used and is normally attractive to rats but not mice. A range of granular or sachet formulations are available and the most acceptable choice for local rodent populations should be determined empirically. Baiting should be suitably thorough and intensive when rodent populations have built up to avoid the development of bait-averse descendants of rodents which evade the baiting programme.

10.2 Transport

Equipment and vehicles used for transporting poults from the hatchery should be dedicated to that purpose and should be cleaned and disinfected with a Defra approved disinfectant at General Orders Concentration before each occasion on which it is used.

10.3 Aids to *Salmonella* Control

In a situation where *Salmonella* has become prevalent within a turkey company the chance of acquiring infection or the prevalence of positive birds within the flock may be reduced by the adoption of additional measures including flock treatment with competitive exclusion products (CE) or treatment of feed or water with certain organic acid products. CE should be applied as soon after hatching as possible, preferably at the hatchery. Acidic feed additives containing the highest level of free acids are generally the most effective for protection of feed but specific blends of different organic acids may be more effective in the gut of the birds. You should consult your veterinary surgeon or a Defra Salmonella specialist for detailed advice on Salmonella control and the measures most applicable to an individual site problem.

In breeding flocks vaccination of birds with live or killed vaccines for *S.*Typhimurium may provide additional protection where there is a high risk of exposure or persistent infection on the farm. Detailed veterinary advice is required to design a suitable vaccination programme for the farm and to ensure correct delivery of the vaccines.

ANNEX

Additional Points Relating Particularly to Turkey Breeding Flocks and Hatcheries

- As turkey pedigree breeding stock and multiplier breeding flocks are sometimes housed on the same site a high standard of disease security and hygiene, appropriate to the elite status of the birds should be maintained for the whole site.

- Maximum control of *Salmonella* originating from feed for primary breeding flocks may require heat treatment in combination with acid treatment.

- Siting of breeding flocks on mixed livestock farms should be avoided as it can be more difficult to control the introduction of *Salmonella* to the farm and infection from wild birds, rodents and feral cats in the area. This is particularly relevant to the control of *S.*Typhimurium which may be associated with cattle herds.

- Turkey breeder housing is usually naturally ventilated and therefore sometimes difficult to make fully wild bird and rodent proof. Deterrent and control programmes for these pests should therefore be intensified to reflect these difficulties.

- Monitoring of turkey breeding flocks for *Salmonella* may be difficult as the level of excretion of the organism wanes and latent carriers, which begin to excrete *Salmonella* again after the onset of lay, are more important. Low level excretion can be difficult to detect by standard faecal or litter monitoring, particularly if the house is subdivided into numerous separate pens. Dust samples are the most sensitive indicators of infection in the house and particularly floor level dust swept from unbedded service corridors on top of nest boxes. In controlled environment houses dust from fan exhausts and on ledges, beams and partitions is also useful for sampling. Addition of dust can therefore increase the sensitivity of detection compared with bootswabs alone.

- Monitoring for *Salmonella* in breeding flocks by testing pooled meconium from a limited number of poults taken during sexing and/or dead in shell or cull poults is suitable for *S.*Enteritidis, which is rare in turkeys, and less sensitive for other salmonellas. If the flocks supplying eggs to the hatchery are thought to be free of *Salmonella* then the best indication of the appearance of *Salmonella* in a hatchery is testing of macerated waste, pooled fluff and shell debris from the hatcher incubators. Large swabs of fresh meconium and fluff contamination on and below poult handling equipment before cleaning and liners or swabs from returned delivery boxes are also sensitive areas to sample.

- If eggs from pedigree/elite flocks are hatched in the same hatchery as eggs from multiplier flocks the whole hatchery should be run to elite hatchery disease security and hygiene standards.

- As some turkey company policies do not now allow the use of formaldehyde for fumigation of eggs in hatcheries good disinfection procedures for eggs and hatcher incubators are required. Synthetic phenolic disinfectants applied in an automated egg wash machine or as a dip after washing on entry to the hatchery are most suitable for egg disinfection. In hatchers a higher concentration of this disinfectant applied by high pressure and volume power wash, with the hatcher ventilation system in operation, should be used after cleaning. Where safety considerations allow, evaporation of concentrated formalin solution. There are Defra approved methods of disinfection of eggs for the purposes of export health certification if they comply with the guidelines of

the OIE Terrestrial Animal Health Code (2003 Edition), Section 3.4.1. (Hygiene and disease security procedures in poultry breeding flocks and hatcheries) during hatching helps to reduce liberation of *Salmonella* during hatching and persistence of *Salmonella* in hatchers.

- Long term hatchery refurbishment planning should include considerations of improved physical separation of operations, single stage setter incubators, closed air extraction for individual setter and hatcher incubators and hatcher ventilators which are easily dismantled for cleaning and disinfection.

- Effective disinfectants at General Orders Concentration should also be used in wash machines for hatcher baskets and delivery baskets.

- Specialist advice on disease control should be sought at an early stage of planning of any new poultry buildings for hatcheries.

- New EC Regulations forbid the use of antibiotic treatment of parents, eggs or progeny to control *Salmonella* which is subject to control legislation, unless clinical disease can justify such treatment on welfare grounds.