



Stamping-out during foot and mouth disease- emergency situations and animal welfare

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3RD-4TH OCTOBER 2018 –
RIGA

OIE Definition of “Stamping Out”

- ❑ means a policy designed to eliminate an outbreak by carrying out under the authority of the Veterinary Authority the following:
 - ❑ the killing of the animals which are affected and those suspected of being affected in the herd or flock and, where appropriate, those in other herds or flocks which have been exposed to infection by direct animal to animal contact, or by indirect contact with the causal pathogenic agent;
 - ❑ the disposal of carcasses and, where relevant, animal products by rendering, burning or burial;
 - ❑ the cleansing and disinfection of establishments



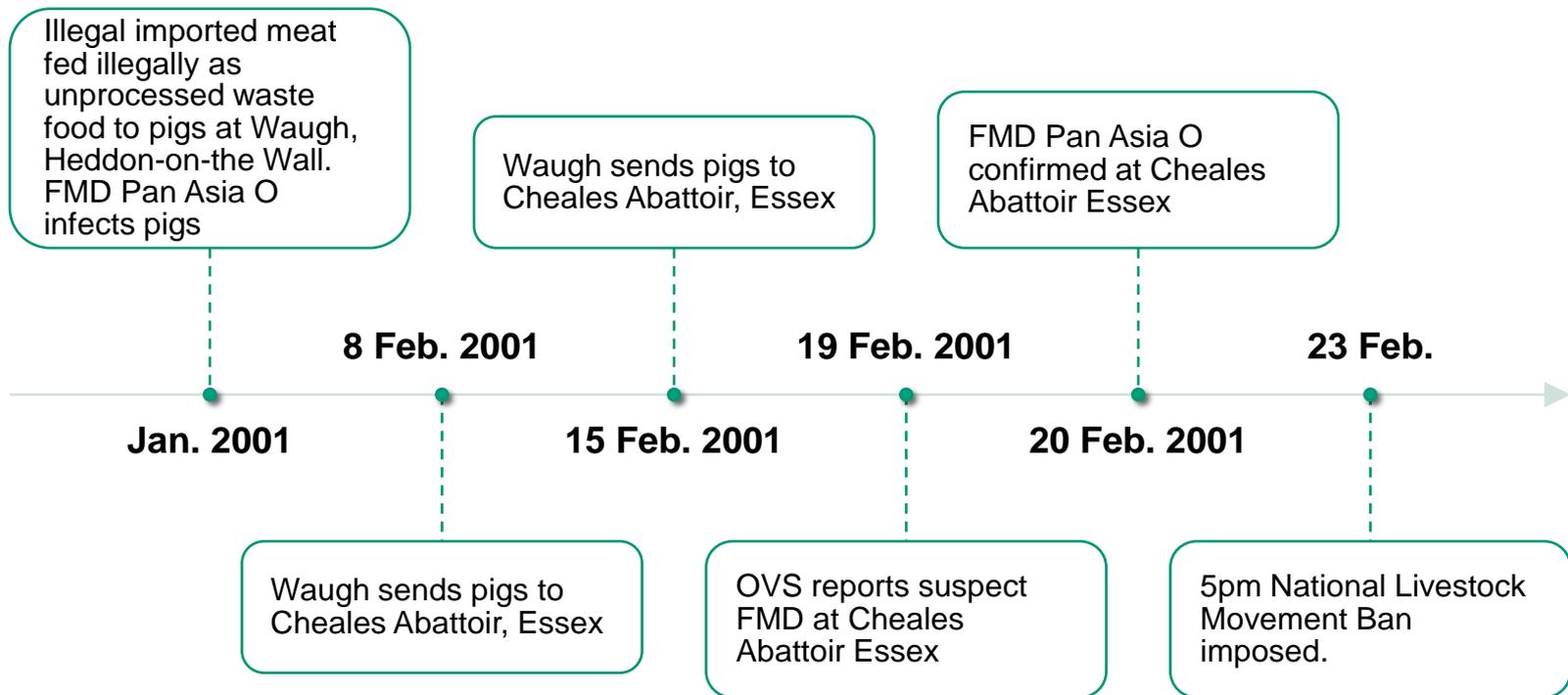


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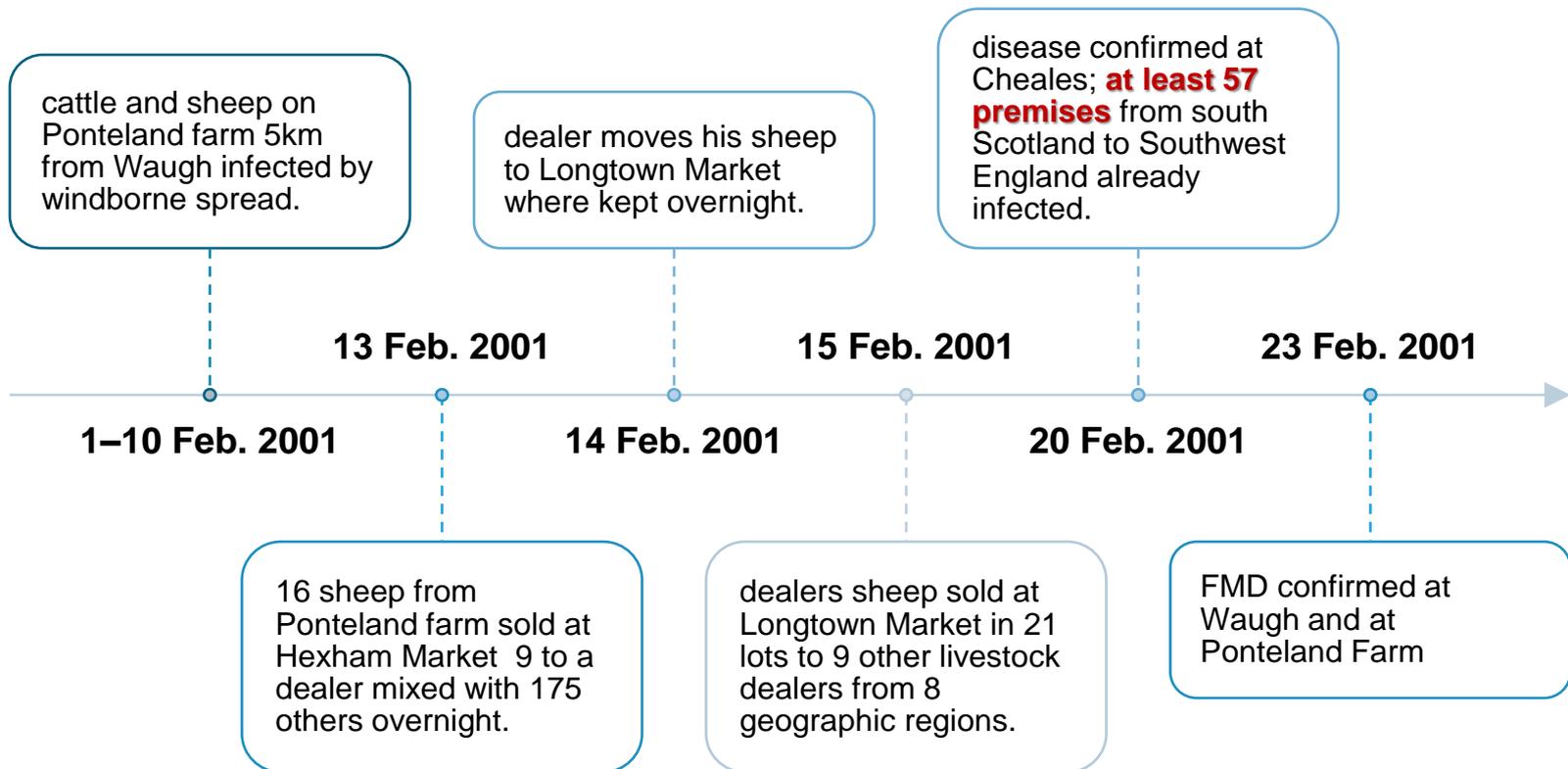
Epidemiology

EPIDEMIOLOGY OF FMD 2001
DEMONSTRATES FAILURES OF
BIOSECURITY

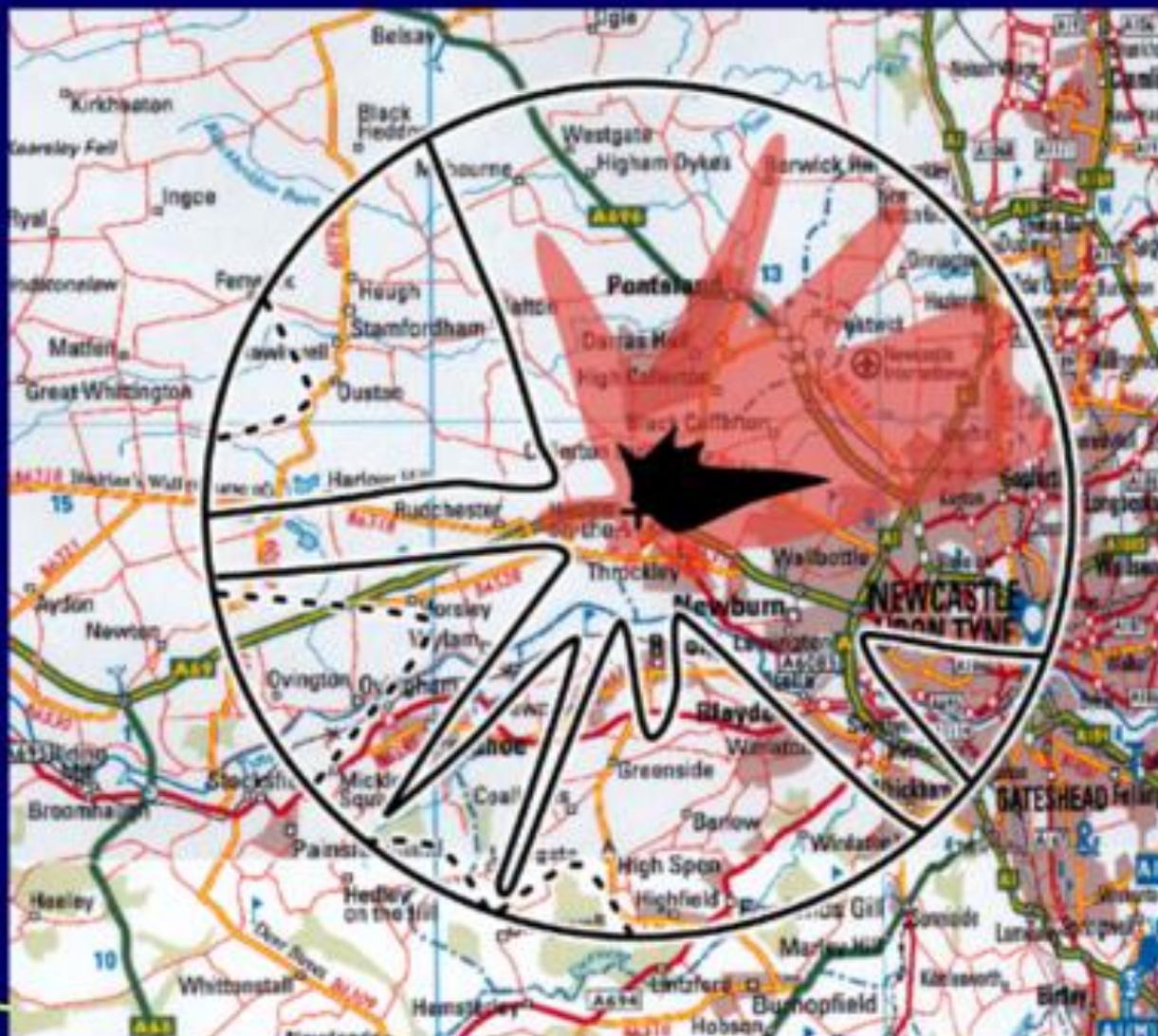
Timeline initial infection



Timeline silent spread



FMD04 Heddon-on-the-wall



Key:

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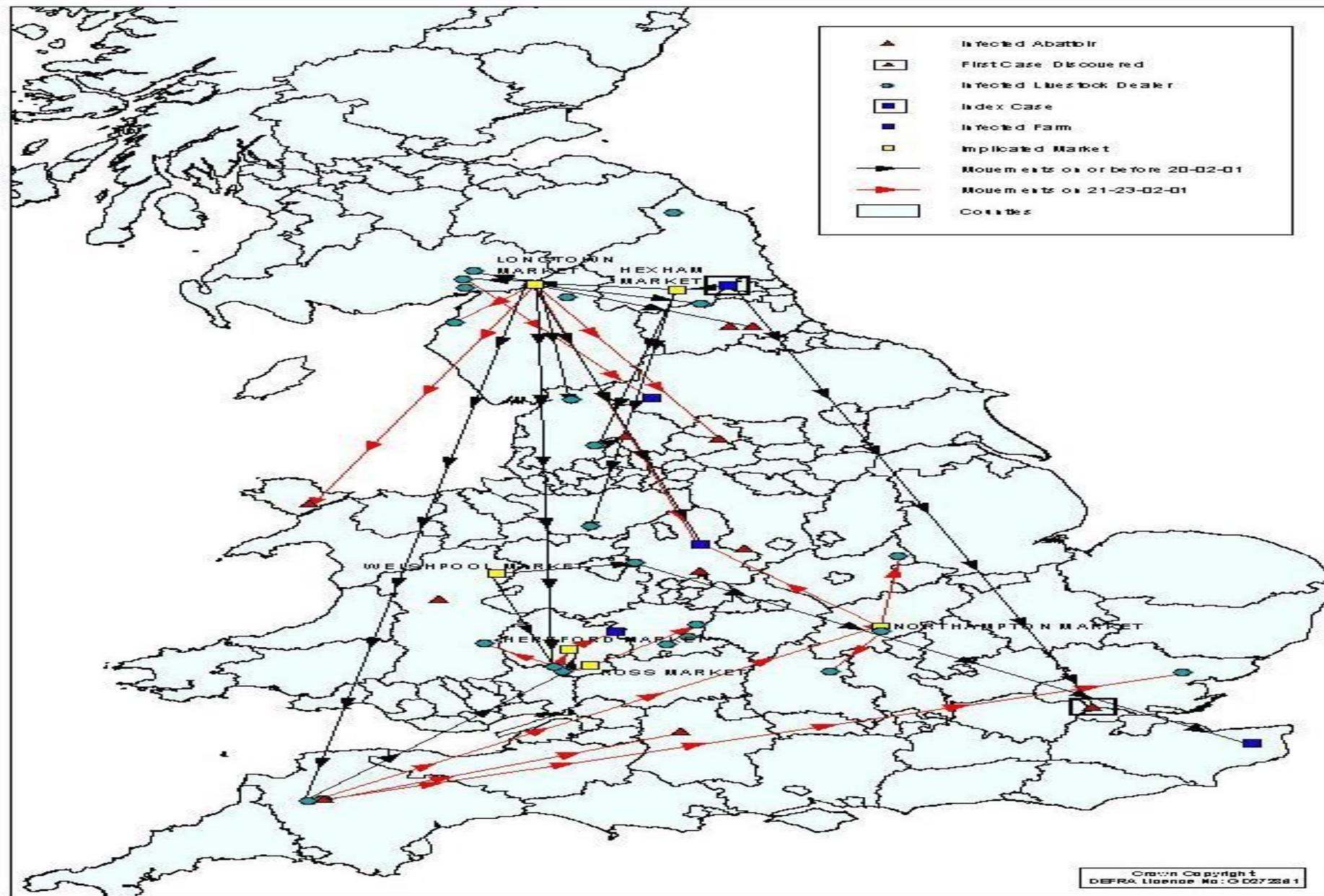
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1.0 ————

5.0 ————

Scale 10 km

Movement of FMD infected animals before 23rd February 2001 and location of implicated markets, abattoirs and dealers



Animal Welfare – Stamping Out

❑ **Legislation - Council Regulation (EC) No 1099/2009 Protection of Animals at the Time of Killing**

❑ **Article 2 ‘depopulation’** means the process of killing animals for public health, animal health, animal welfare or environmental reasons under the supervision of the competent authority;

❑ **Article 18** CA to take any appropriate action to safeguard the welfare of the animals in the best available conditions when depopulating farm premises.

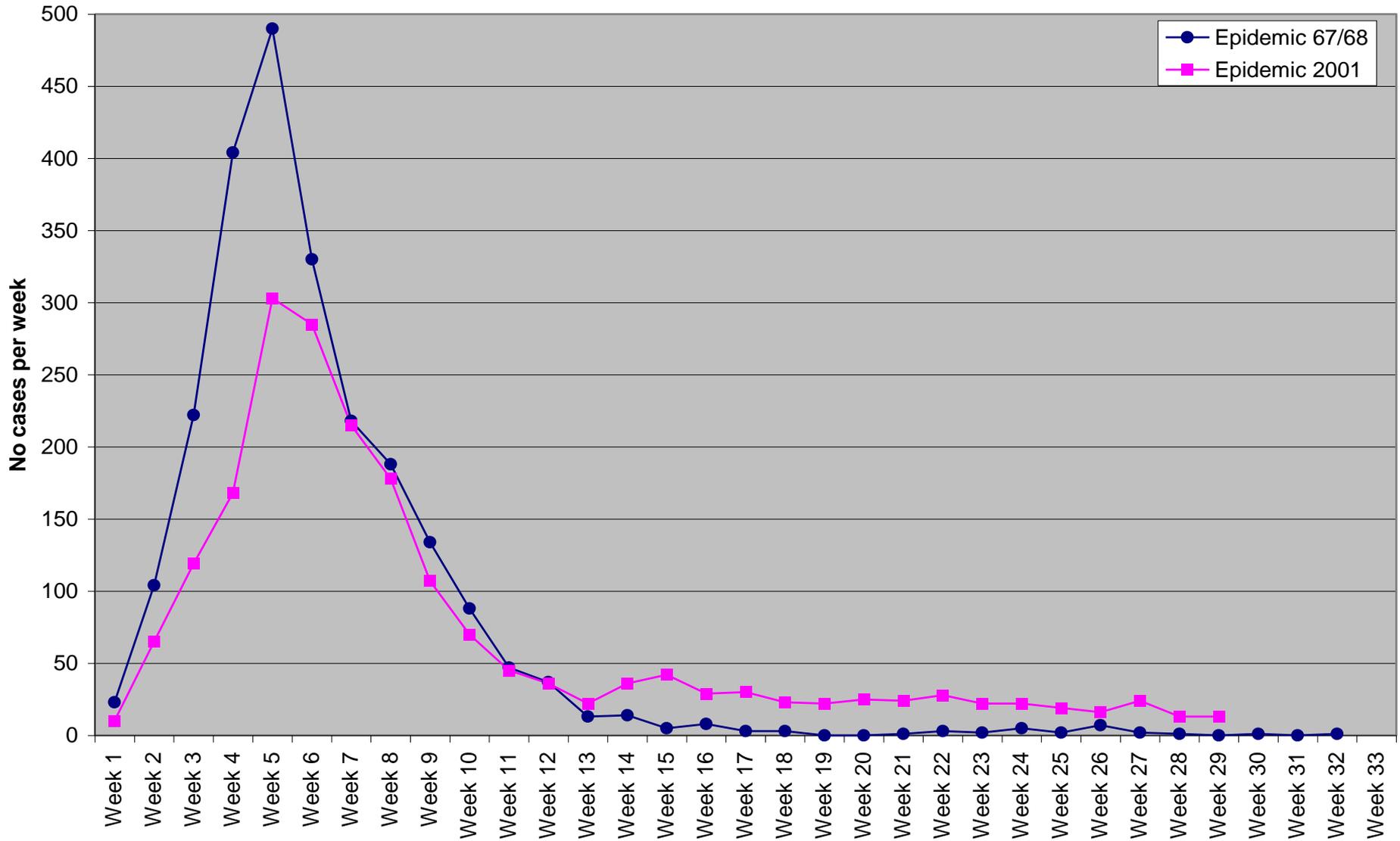
Animal Movement Controls

WHOLE OF GREAT BRITAIN DECLARED A
CONTROL AREA UNDER DOMESTIC
LEGISLATION – NO MOVEMENTS PERMITTED
INITIALLY

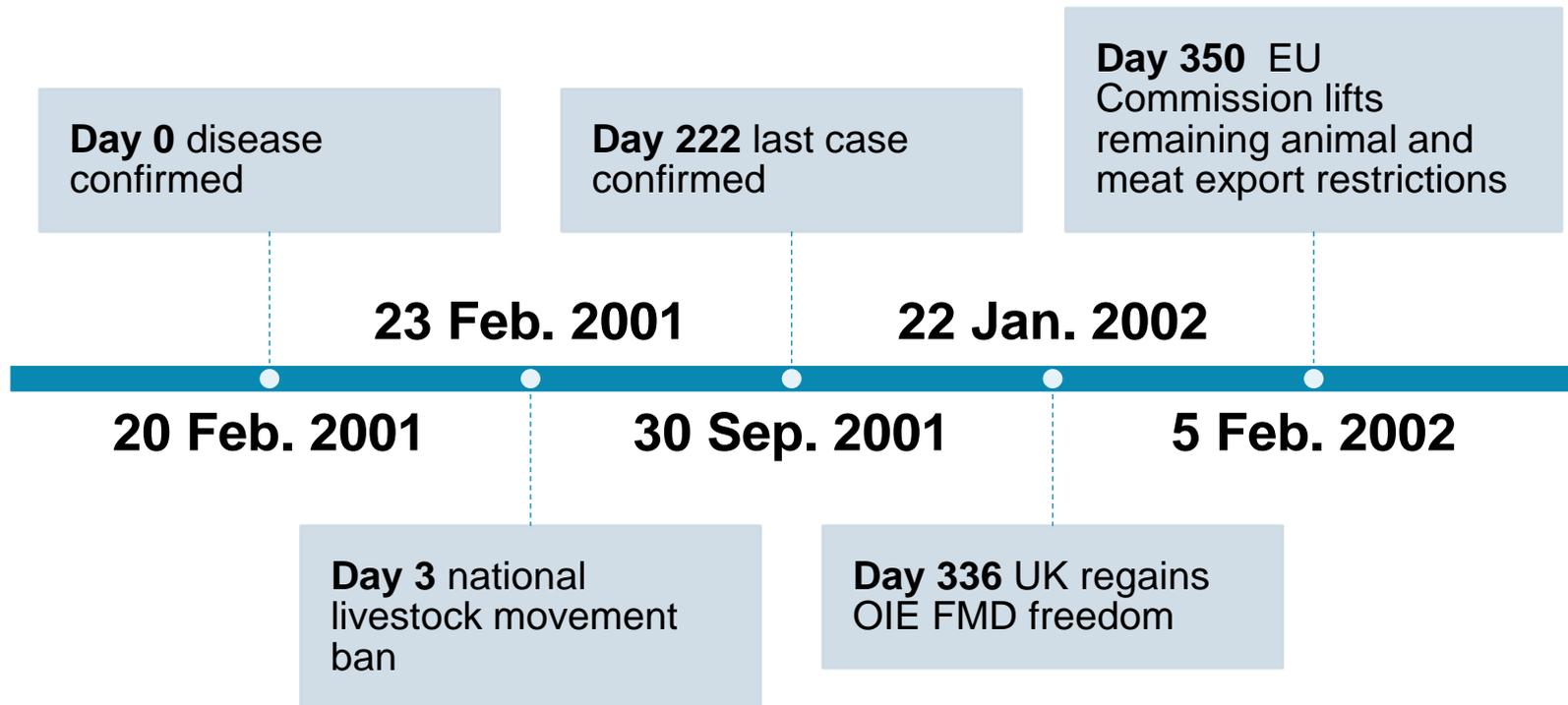
Animal Movement Controls

- ❑ Protection and Surveillance zones - none - initially
- ❑ Whole of Great Britain declared a Control Area under domestic legislation
- ❑ All animal movements stopped through out whole of Great Britain initially

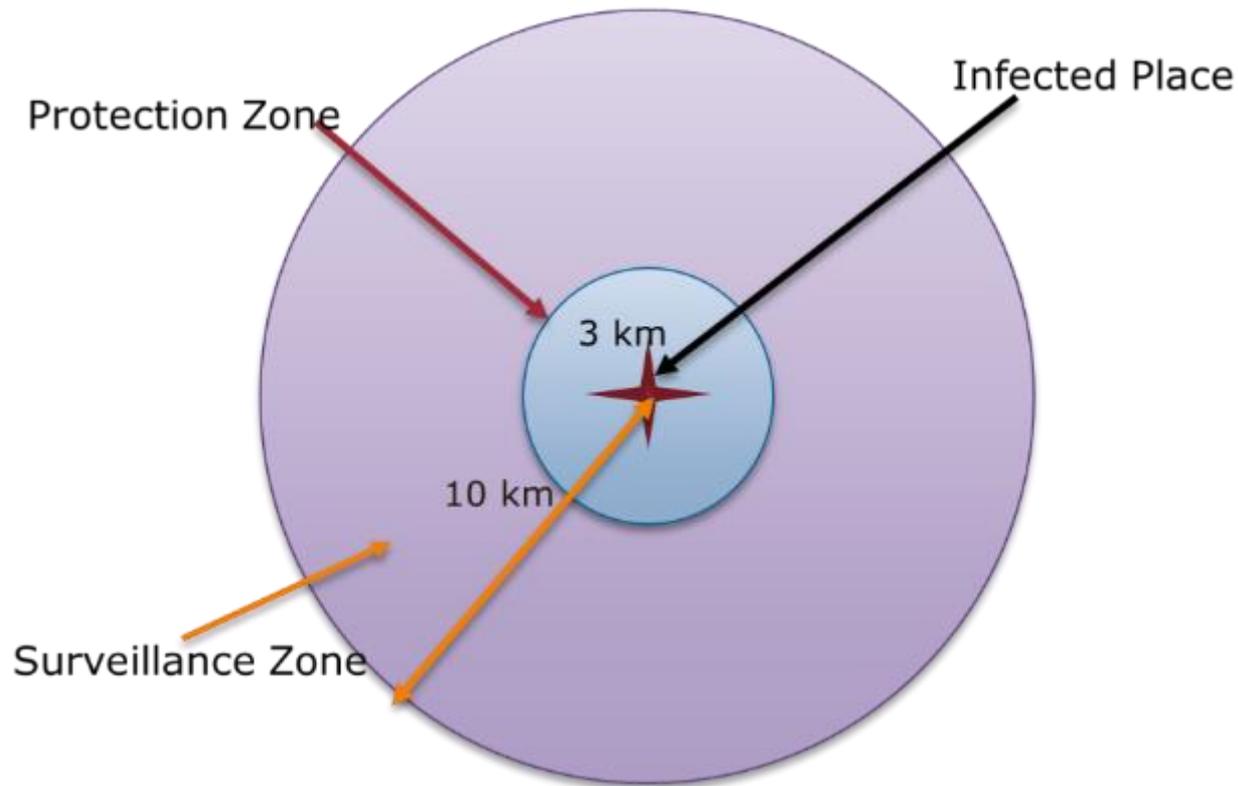
Comparison of Epidemics



Duration of controls



Minimum Area Controls – on confirmation of disease



Severe Animal Welfare Problems

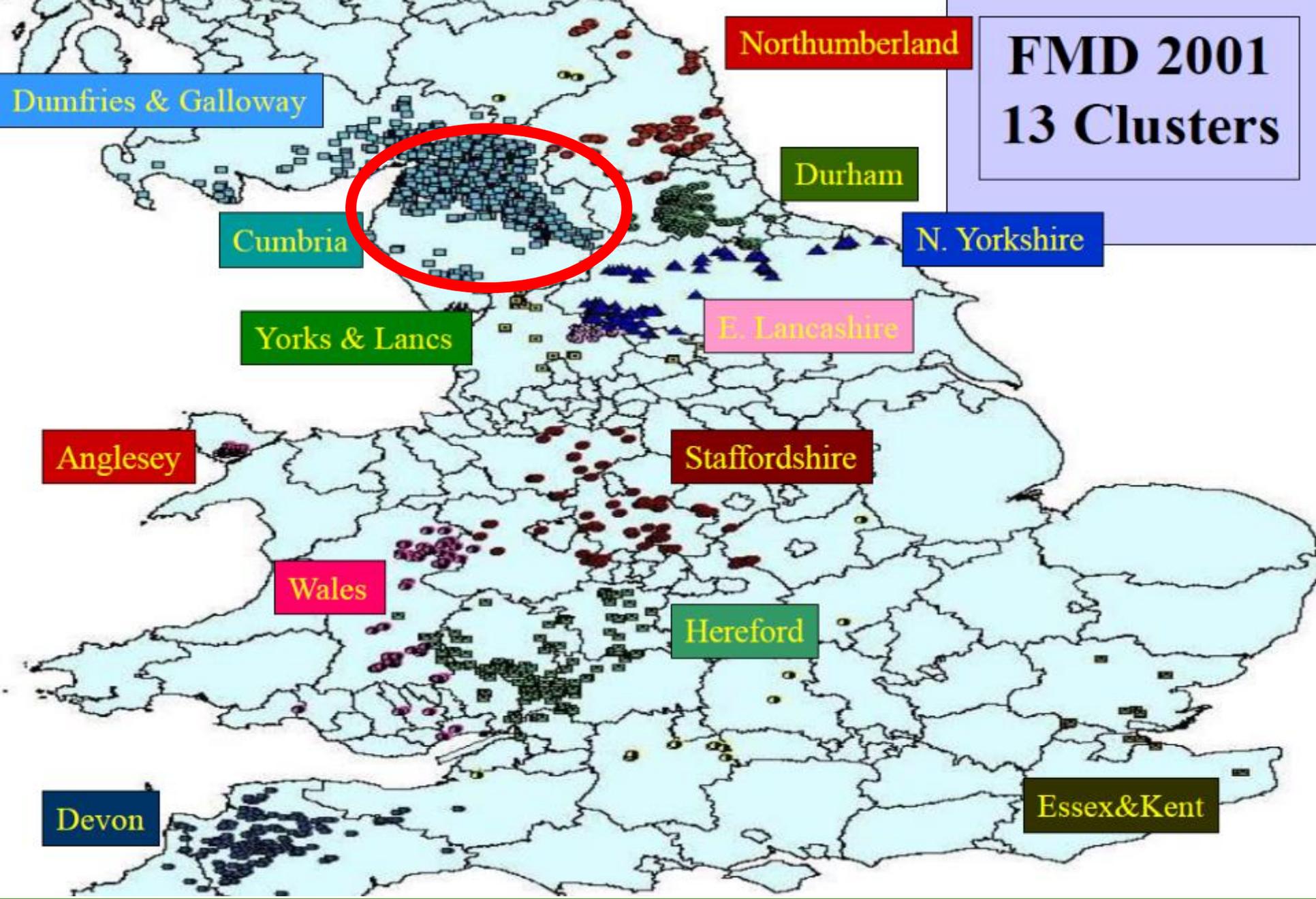
Due to movement restrictions:-

Large areas of the country with coalesced protection and surveillance zones (infected areas)

Duration of controls in infected areas with spread of disease preventing the lifting of controls

Surveillance after last case in an area may be prolonged depending on size of area and expensive in staff and laboratory costs and must be completed before restrictions may be lifted completely.

FMD 2001 13 Clusters



Clusters of Disease

Administrative Area	Cases	Days
Northumberland & Durham	190	218
Cumbria	891	214
Wales	101	165
North Yorkshire	140	164
Staffordshire	72	146
Yorks and Lancs	55	140
Devon	172	112
Dumfries Scotland	177	83
Hereford	79	73
Essex and Kent	11	51
Anglesey	13	25

Impacts of movement restrictions

- ❑ Some examples:
 - ❑ Dairy – moving animals to milking parlour – grazing
 - ❑ Pigs – weaners to finishing premises - overcrowding
 - ❑ Fragmented farms – movement to land parcels
 - ❑ Common grazing
 - ❑ Management services shearing – foot trimming
 - ❑ Calves and Heifers to rearing premises – over crowding
 - ❑ Sheep from highland to lowland winter grazing

Permitted Movements

Based on Areas

- Infected Areas** - Coalesced Protection and Surveillance Zones

- At Risk Areas** - outbreaks of FMD - Stamped out and Infected Area lifted.

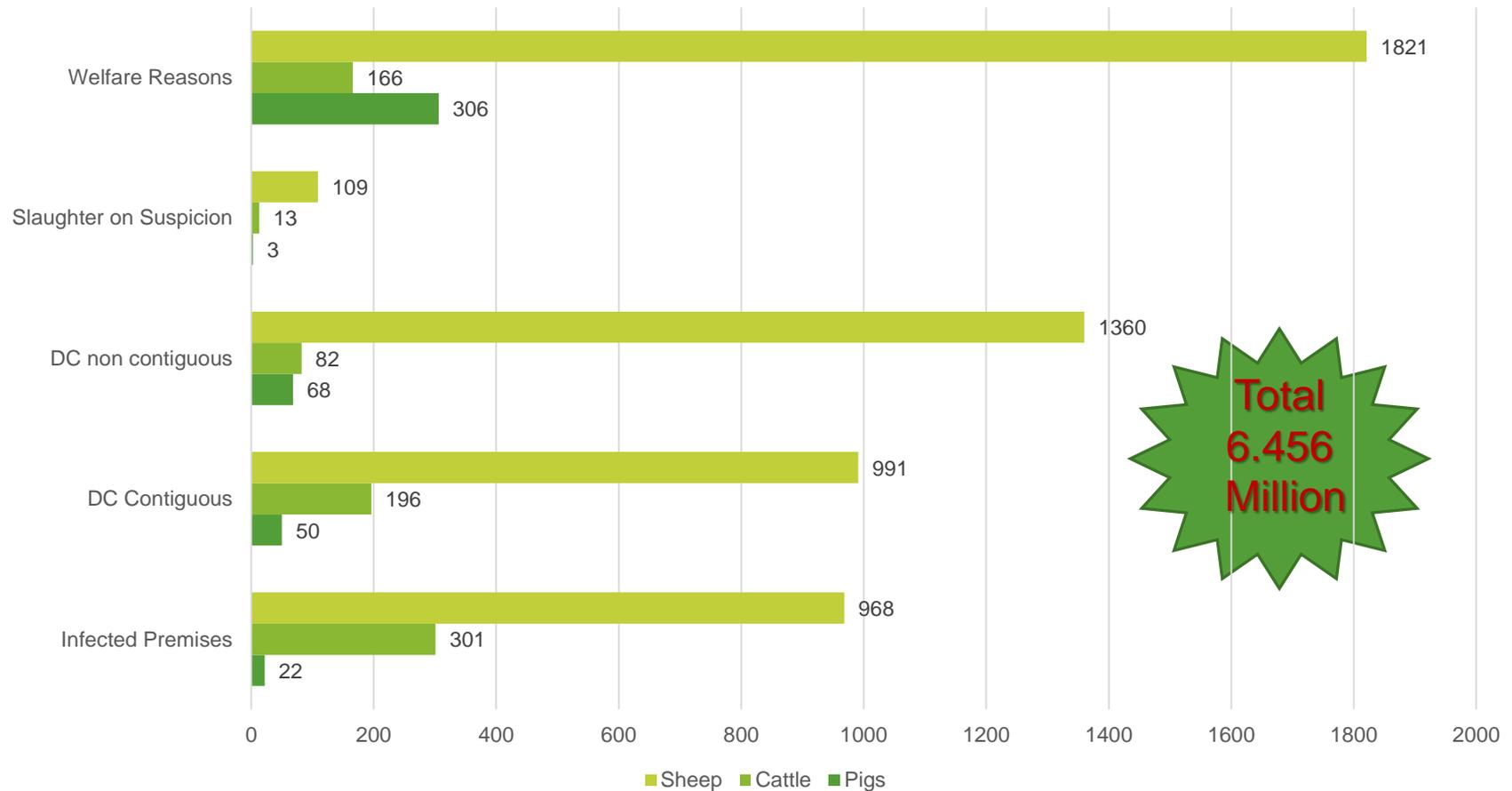
- Provisionally Free** - never been an outbreak of FMD

Permitted Movements

- Movement to slaughter for human consumption UK - Health Marked
- Occupational Licences - local
- Local movement licences - premises same ownership 5-10 kilometres
- Long Distance welfare and breeding males
- Animal Treatment Licence
- Movement to Common Grazing

Animals Killed FMD 2001

'000s



Animals Killed for Disease Control and Welfare Reasons 2001

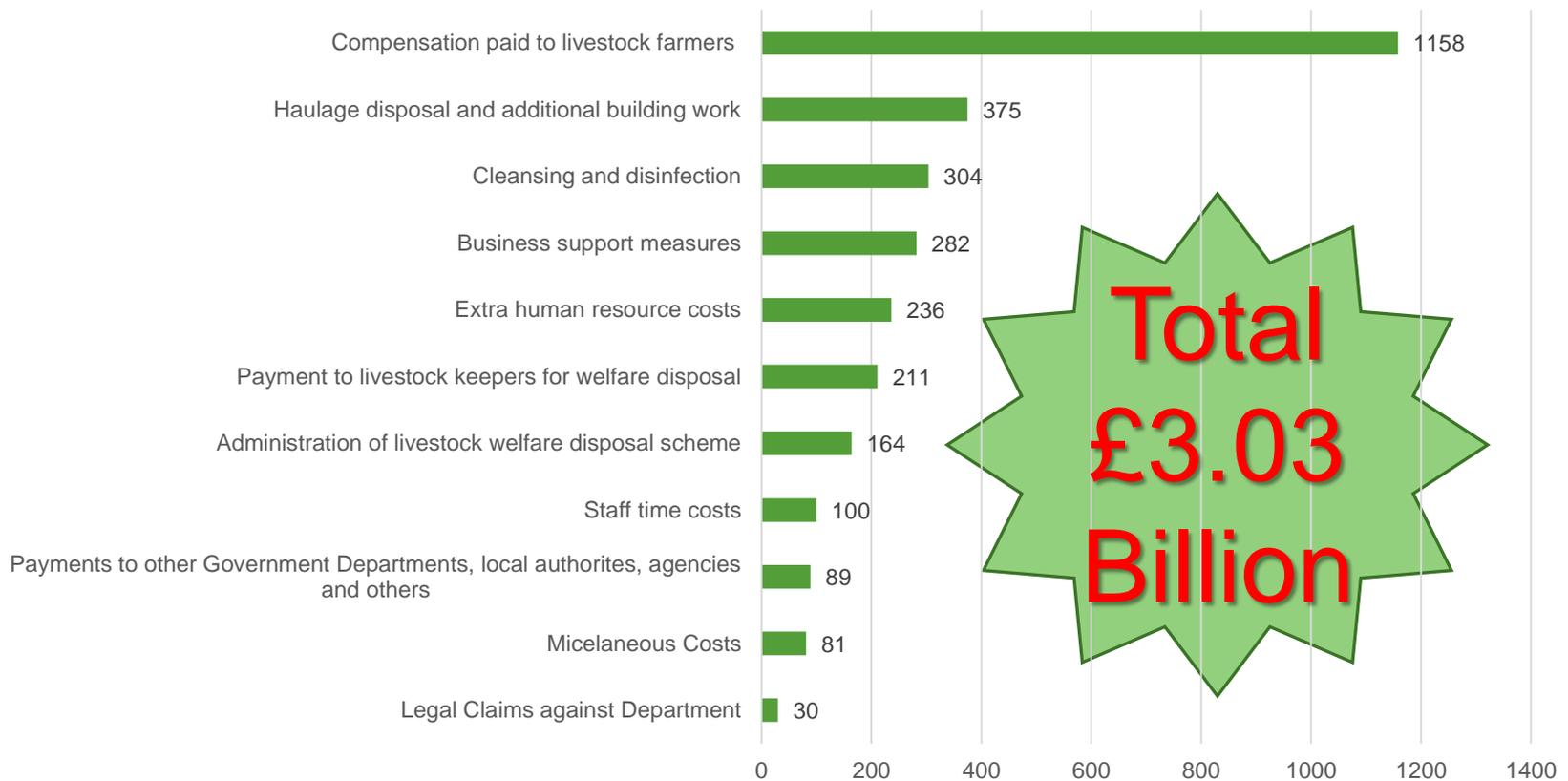
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	Infected Premises	DC* Contiguous	DC* non contiguous	Slaughter on Suspicion	Welfare Reasons	Total
Other	4				3	7
Pigs	22	50	68	3	306	449
Cattle	301	196	82	13	166	758
Sheep	968	991	1360	109	1821	5249
Total	1295	1237	1510	125	2296	6463

*DC = Dangerous Contact

Other Animals = Goats, Camillids

Estimated Direct Costs to the Public Sector FMD 2001 - £m's

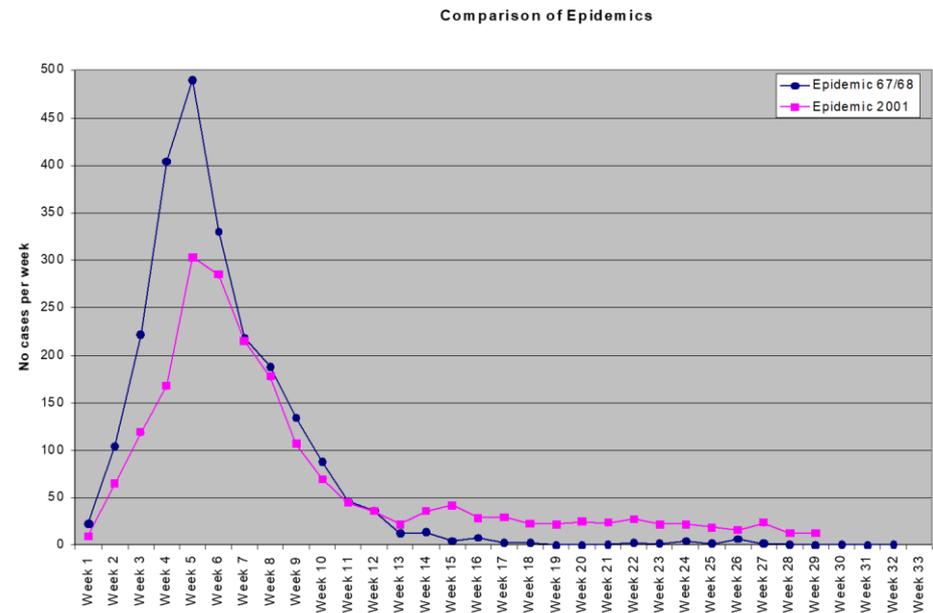


National Audit Office

Spread during tail of epidemic

– livestock keepers failing to take biosecurity measures

- ❑ Fragmented livestock premises
- ❑ Common grazing
- ❑ Stock outside at grass
- ❑ Seasonal activities – shearing, foot trimming by contractors
- ❑ Loss of confidence in controls
- ❑ Fatigue after months of restrictions
- ❑ Age of livestock keepers



Alternatives to Stamping Out?

NOT WITH CURRENT TECHNOLOGIES

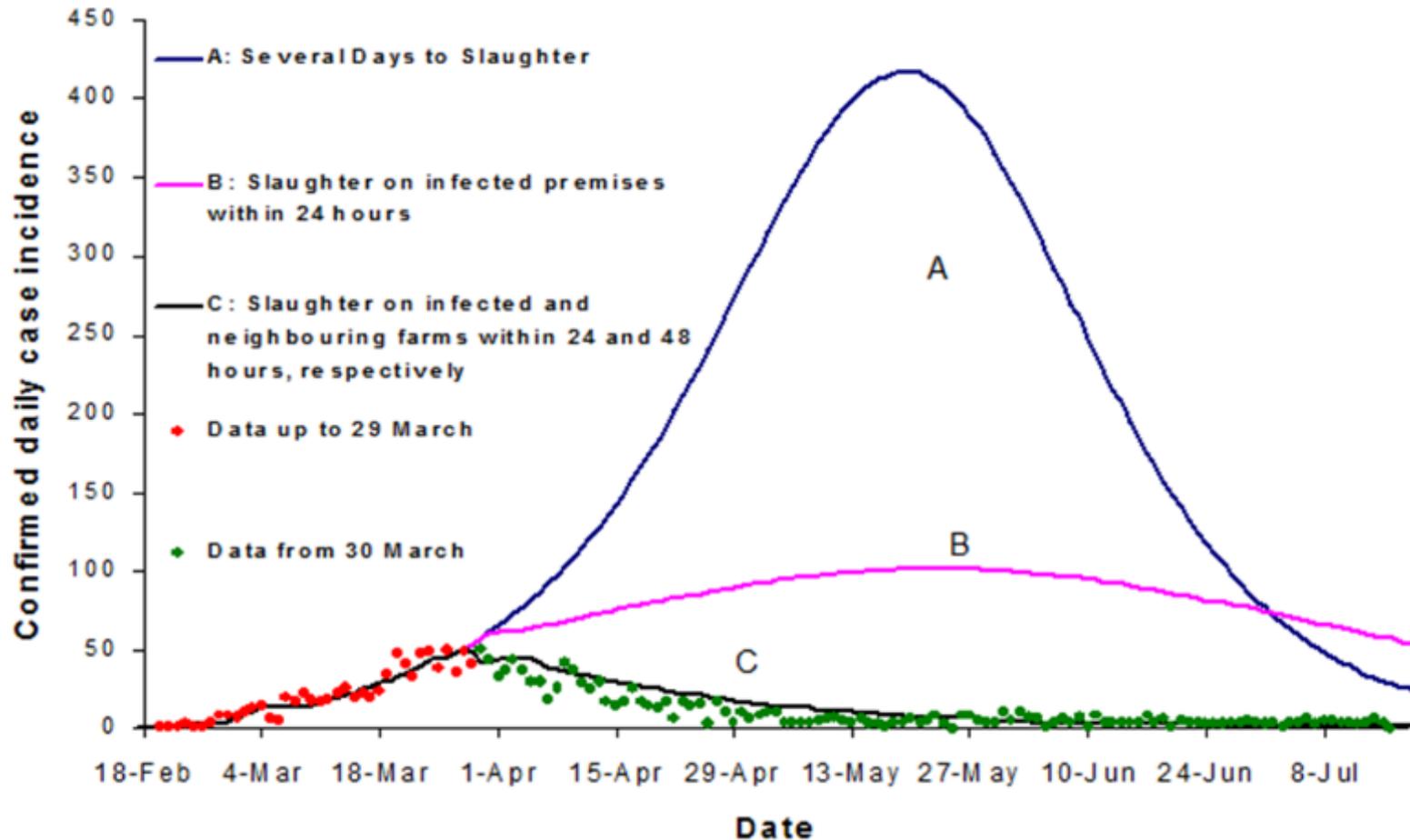
Pre-emptive culling

Pre-emptive culling is the killing of animals if, following a veterinary risk assessment, it is believed they have been exposed to such a weight of infection either through direct or indirect contact are likely to develop infection.

Pre-emptive culling is an important adjunct to control to prevent propagation and spread of virus.

Imperial College Contiguous Cull Model 29 March 2001

Unnecessary Pre-emptive Killing



Prophylactic Vaccination

- ❑ **Prophylactic vaccination** is prohibited within the EU.
 - ❑ Current vaccines are cannot cover all know serotypes subtypes of fmd
 - ❑ Vaccination may not completely protect masking the introduction of disease leading to silent spread.
 - ❑ Not cost effective

Emergency Vaccination

- ❑ **Protective vaccination** or “vaccinate to live”.
Vaccinated animals are allowed to live but must be marked and tested with a DIVA test to identify any vaccinate that has become infected.
- ❑ For fmd the DIVA test is the Non-Structural Protein (NSP) test.
- ❑ NSP tests detect antibodies developed in response to NSP which is produced as the virus replicates in a naturally infected animal.
- ❑ Permitted fmd vaccines are manufactured from purified fmd antigens which are virtually free of NSP so the vaccinated animal does not produce antibodies to it.
- ❑ Complex rules around treatment and marketing of vaccinated animals and their products.



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Emergency Vaccination

- ❑ **Suppressive vaccination** is used to assist stamping out by vaccinating animals in the protection zone in order to suppress the propagation of virus. All vaccinates are then killed.
- ❑ Complex rules on treatment of products from vaccinated animals
- ❑ Proving foot and mouth disease freedom following vaccination is more onerous.

Regaining FMD free Status

□ 2003/85/EC condensed summary (OIE Code)

□ **Without Vaccination** at least three months have elapsed after the last recorded outbreak of foot-and-mouth disease and clinical and laboratory surveillance has confirmed the absence of infection with the foot-and-mouth disease virus in the Member State or region concerned.

□ **Suppressive Vaccination** at least three months have elapsed since the slaughter of the last vaccinated animal and serological surveillance has been carried out.

□ **Protective Vaccination** at least six months have elapsed since the last outbreak of foot-and-mouth disease or the completion of emergency vaccination, what ever event occurred later, and a serological survey based on the detection of antibodies against non-structural proteins of the foot and mouth disease virus has demonstrated the absence of infection in vaccinated animals.

Vaccination Decision - Problematic

- ❑ The decision to use vaccination in the face of an outbreak is problematic.
- ❑ Epidemiology unknown at start of outbreak
- ❑ But need to consider economics of exit strategy
- ❑ Where? When? What? Extent? Protective? Suppressive? NSP tests? Resources? Public acceptance?
- ❑ Modelling may provide decision support.
- ❑ Politics



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Vaccination Annex X 2003/85

Criteria for the decision to apply protective vaccination (*)

Criteria	Decision	
	For vaccination	Against vaccination
Population density of susceptible animals	High	Low
Predominant species clinically affected	pigs	ruminants
Movement of potentially infected animals or products out of the protection zone	Evidence	No evidence
Predicted airborne spread of virus from infected holdings	High	Low or absent
Suitable vaccine	Available	Not available
Origin of outbreaks (traceability)	Unknown	Known
Incidence slope of outbreaks	Rising rapidly	Shallow or slow rise
Distribution of outbreaks	Widespread	Restricted
Public reaction to total stamping out policy	Strong	Weak
Acceptance of regionalisation after vaccination	Yes	No



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Prevention is Better Than Cure

- ❑ Contingency Plan to implement a national ban on the movement of susceptible livestock as soon as foot and mouth disease is confirmed.
- ❑ Total ban on the feeding of waste food to pigs (UK 2001, EU wide 2002). [African Swine fever]
- ❑ Six day standstill for ruminants and 20 day standstill for pigs.
 - ❑ if ruminants are moved on to a premises no ruminants can be moved off for six days (20 days in the case of pigs) exceptions permitted.
 - ❑ stops silent spread of disease – it is estimated that if the six day standstill had been in place in 2001 the spread through markets would have been stopped and the outbreak would have been limited to less than 100 infected premises.
- ❑ Still at risk from illegal imports of meat and animal products and illegal feeding of waste food to pigs particularly hobby/pet sector.

Research

Feeding food waste to pigs could save vast swathes of threatened forest and savannah

- Research
- News
- Feeding food waste to pigs could save vast swathes of threatened forest and savannah**



New research suggests that feeding our food waste, or swill, to pigs (currently banned under EU law) could save 1.8 million hectares of global agricultural land – an area roughly half the size of Switzerland, including hundreds of thousands of acres of South America’s biodiverse forests and savannahs – and provide a use for the 100 million tonnes of food wasted in the EU each year.

A new study shows that if the European Union lifted the pigswill ban imposed following 2001’s foot-and-mouth disease epidemic, and harnessed technologies

“It is time to reassess whether the EU’s blanket ban on the use

Published

10 Dec 2015

Image

Pigs eating swill at Stepney City Farm
Credit: © Chris King / Food Is...

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Food

Waste

Top chefs campaign for feeding pigs on food waste

Hugh Fearnley-Whittingstall cooks free meals in Trafalgar Square using pork from pigs fed on food waste

Rebecca Smithers, consumer affairs correspondent
Thu 21 Nov 2013 13:27 GMT



This article is 4 years old

163 9



The future?

- ❑ Improvements in vaccine technology and diva tests
- ❑ For example, synthetic shell based vaccine
 - ❑ Proof of principle
 - ❑ Safer
 - ❑ More Stable
 - ❑ Many years before products come to market also need OIE approval
- ❑ Global eradication?



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Conclusions

- ❑ Currently Stamping out is the only viable policy to deal with incursions of foot and mouth disease.
- ❑ The welfare of animals killed on farm is protected by Council Regulation (EC) No 1099/2009 - Protection of Animals at the Time of Killing.
- ❑ Prolonged and extensive animal movement controls generate severe animal welfare problems and are costly to deal with.
- ❑ Whether to use emergency vaccination is problematic.
- ❑ Preventative biosecurity measures are essential to prevent the introduction of foot and mouth disease and limit the silent spread of disease.
- ❑ New vaccine and DIVA technologies may offer better control.
- ❑ The public memory is short and there are always pressures to limit, remove or circumvent biosecurity measures

Thank you for your attention

References

National Audit Office – The 2001 Outbreak of Foot and Mouth Disease – ISBN 0-10-291645-4

Gibbens & Wilesmith (2002) Vet Rec 151, 407-412

Thrusfield et al (2005) Vet Rec 156, 269-278

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