What is the risk of new outbreaks of FMD, or findings of existing but undisclosed disease, outside the existing surveillance zone and enhanced surveillance areas, if once the current protection zone restrictions are lifted the Restricted Zone is reduced to an area including the current SZ and enhanced surveillance areas and an additional area within a 20 km radius from the Pirbright laboratory complex?

1. **Background**

1.1 There have been a total of eight infected holdings (IPs 1-8). All are in the county of Surrey. All animals at the infected holdings were killed. This includes all susceptible animals under the same ownership at separate locations from the diseased animals.

1.2 As a precaution, protection and surveillance zone restrictions were applied around those locations where disease was not confirmed by laboratory tests, in addition to those which were positive.

1.3 There have been two phases to the outbreak. First, two cases to the south of the Pirbright site, detected on 3 and 6 August. Second, a cluster of cases to the north of the Pirbright site, following detection of disease in cattle outside the original surveillance zone on 12 September. There was a short period (8 – 12 September) when movement restrictions were not in place after the first zones were found clear of disease. Known livestock movements in that period have been traced and no evidence of infection has been detected.

1.4 Dedicated central and field epidemiology teams have carried out detailed analysis of the outbreak to inform surveillance activities and the assessment of risk of further spread. The virus involved has been typed as O1 BFS, most likely originating from the Pirbright site. Biosecurity measures were put in place on 8 August to prevent the further transmission of virus from the Pirbright site. The latest Defra epidemiology report is available at http://defraweb/animalh/diseases/fmd/pdf/epidreport300907.pdf.

1.5 Animals on four additional holdings were killed on 1 October following an epidemiological assessment that they were at high risk of infection from known infected holdings. Laboratory results did not confirm disease.

1.6 Strict national restrictions on the movement of susceptible animals were applied immediately disease was confirmed. These are reviewed and amended on the basis of veterinary risk assessments of the remaining risk of spread outside the risk area around the confirmed cases.

1.7 Protection and surveillance zone controls and surveillance have been applied as required by the FMD Directive (Council Directive 2003/85/EC). On the basis of epidemiological analysis, additional surveillance has been in place from 1 October to look for undisclosed infection in cattle and in an area at risk of lorry spread from the Pirbright site. This work is well advanced. Overall, more than 12,000 blood samples collected from susceptible species have been tested with negative results.
1.8 All movements of live animals from the infected holdings, PZ and SZ have been traced and no evidence of infection has been detected.

1.9 All other identified risk movements (e.g. vehicles, fomites, personnel) from the infected holdings have been traced and no evidence of infection has been detected. Investigations suggest that it is unlikely that meat, milk or other products originating in the area subject to PZ or SZ restrictions are in circulation.

1.10 Nationwide monitoring through investigation of report cases, intensified inspection at slaughter and inspections prior to licensed movements have not shown any further cases.

1.11 If there are no further outbreaks then the earliest date at which the PZ can be collapsed into the SZ is 17 October.

1.12 Work in the Intensive Patrol Area (IPA) and the suite of Enhanced Surveillance Areas agreed by the NEEG and Animal Health is likely to be concluded in mid October.

2. Hazard and Risk

2.1 The hazard is that foot and mouth disease virus remains undetected within or outside the reduced restricted zone such that normal, pre 3 August 2007, movement restrictions outside that zone may allow an increased risk of disease spread.

2.2 The risk is that live foot and mouth disease virus will enter FMD susceptible animals outside the reduced restricted zone in sufficient quantities to cause new cases of disease.

3. Probability description

3.1 This assessment uses terms to describe the probability of risk outcomes in line with those used in European Food Safety Authority (EFSA) risk assessments:

<table>
<thead>
<tr>
<th>Probability</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negligible</td>
<td>So rare that it does not merit to be considered;</td>
</tr>
<tr>
<td>Very low</td>
<td>Very rare but cannot be excluded;</td>
</tr>
<tr>
<td>Low</td>
<td>Rare but does occur;</td>
</tr>
<tr>
<td>Medium</td>
<td>Occurs regularly;</td>
</tr>
<tr>
<td>High</td>
<td>Occurs very often.</td>
</tr>
</tbody>
</table>

4. Summary of significant risk factors

Undetected disease linked to most recent infected holdings

4.1 Subject to no further cases being found, on 17 October it will be 17 days since the last confirmed case of FMD in the PZ; there remains the possibility that spread from this case has not yet been detected and that this could act as a focus for new cases.
Undetected disease in surveillance areas leading to undetected disease outside the reduced RZ

4.2 Work continues to ensure that all premises in the surveillance zone have been found. Old disease and/or further tracings may be found in the SZ.

Illegal movements leading to undetected disease outside the reduced RZ

4.3 Illegal movements. Movement of animals in the RZ, SZ and PZ is controlled by licences which contain conditions which must be complied with. Non-compliance increases the risk of disease spread from the risk area and the impact of undetected disease.

Remaining environmental contamination or undisclosed disease outside the current surveillance areas due to that contamination

4.4 Remaining environmental contamination with FMD virus may lead to new cases. It is possible – as a consequence of infrequent or inadequate inspection of cattle – that the disease may have been missed outside the SZ.

5. Risk mitigation

General mitigating factors

5.1 The density of FMD susceptible livestock in the north eastern part of Surrey is low.

5.2 Within the Low Risk and Risk Areas, awareness and vigilance levels amongst the owners of FMD susceptible livestock and their owners is reported to be high. This has been underpinned by increased vigilance for presence of Bluetongue, not just in East Anglia but nationwide (as judged from the current volume of potential incidents reported for investigation).

5.3 As a consequence of the requirement in certain licences for veterinary inspection of livestock, abattoir ante and post mortem inspection, and farm and market welfare inspections, it is estimated that around 2 million FMD susceptible animals have been inspected nationwide within the last 6 weeks and that there have been no grounds for concern arising from these inspections.

Risk specific mitigating factors

Undetected disease linked to most recent infected holdings

5.4 Extensive planned surveillance has been carried out already in the PZ, and this has been augmented by additional detailed work in the IPA and the group of ESAs. Taking the PZ, SZ, IPA and ESA work together, more than 12,000 blood samples have been collected from FMD susceptible species and tested with negative results. There has been only one sero-positive holding (sheep on IP5).
5.5 All FMD susceptible livestock on four premises with cattle were slaughtered out as DCs following declaration of IP8. This, together with the slaughter of cattle on separate parcels of land under the same ownership as the infected cattle, reduced even further the density of livestock in this area. Laboratory results did not confirm infection or disease.

5.6 All work to investigate spread tracings from premises in both the PZ and SZ have been completed and have given no cause for concern that FMD virus has been transmitted from these areas.

5.7 Disease can be difficult to detect in sheep, late detection in cattle has been a feature of this outbreak and on one premises (IP5) the clinical disease went unnoticed. However surveillance in the areas of highest risk has been intensive. There has been repeated clinical inspection and blood sampling of animals in the highest risk areas, commencing 1 October. Before the PZ is lifted all cattle and sheep within it will have been blood tested at least once. The risk of undetected disease is very low.

5.8 There have been no confirmed cases of disease in pigs which could have given rise to high levels of environmental contamination and risk of airborne spread.

5.9 Epidemiological analysis supports the contention that the September phase of the outbreak has the characteristics normally expected from FMD, with local spread, within 3Km, in the PZ. Given the surveillance already completed in the PZ, the risk of spread beyond a standard 10km surveillance zone is therefore very low.

Undetected disease in surveillance areas leading to undetected disease outside the reduced RZ

5.10 There is a low risk of undetected disease in the current surveillance areas or any new additional surveillance area.

5.11 For this to lead to an increased risk outside a reduced RZ, there must also have been a movement of infected animals or fomites or airborne spread (local or plume). Undetected disease in pigs, which might have excreted high levels of virus in aerosol leading to long distance spread, is unlikely. Short distance aerosol spread from other species is very unlikely to be beyond the SZ boundary. Work to date has shown that there were few movements of animals (the highest risk) from this area. The most recent period that risk movements could have legally occurred was 8-12 September. All known movements have been traced and there is no evidence of disease spread. By 17 October there will have been several incubation periods since this risk period with no reports of disease outside the current protection zone. This risk is therefore very low.
Illegal movements of susceptible animals leading to undetected disease outside the reduced RZ

5.12 As above, work to date has shown that there were few movements of animals (the highest risk) from this area, indicating a low pressure for movement outside the area. There is no direct or indirect evidence of illegal movements since surveillance commenced. The level of confirmed disease in the zone remains low and restricted to a small area of 6 km radius so that the risk that any animals moved were diseased is very low. In addition the census in the PZs is complete and Animal Health visit frequently, reducing the risk of recent illegal movements and making detection more likely. This risk is therefore very low.

Remaining environmental contamination or undisclosed disease outside the current surveillance areas due to that contamination

5.13 There is a risk that environmental contamination may have occurred over a larger distance or different direction, before 8 August when measures were put in place to prevent further transmission from the Pirbright site, than indicated by the geographical distribution of IPs observed to date.

5.14 ESA 4 has been designed to explore the identified risk that lorry movements from Pirbright to a premises in Hampshire could have given rise to undisclosed cases. It has been agreed with the Commission that further work will be done in a radius of 20km from Pirbright to demonstrate that there is no undisclosed disease as a result of the original release of the FMD virus from the Pirbright site. On the evidence of spread in this outbreak, the area of additional surveillance should include a radius of 14km (the distance from Pirbright to IP5) or 18km (the distance from IP1 to IP5). 20km provides a margin to allow for further local spread.

5.15 It is over two months since measures were put in place to prevent further release of virus from the Pirbright site. The risk that live virus remains in fomites in sufficient quantity to give rise to infection is negligible. Undisclosed disease due to earlier fomite infection cannot be ruled out. Given the period of time which has elapsed in which initial infected animals or subsequent spread could have been detected and reported that risk is very low.

5.16 Experts were divided as to whether long distance fomite transmission from IPs 3-8 should be considered. Long distance fomite spread from IP1 or IP2 to IP5 is a possible source for the September phase of the outbreak. However, on the basis of evidence to date about the spread of disease in the September phase of the outbreak and historical experience of the spread of FMD (on which current protection and surveillance requirements are based) the risk of fomite spread from infected holdings beyond the surveillance zone boundary is very low.
6. Conclusion

6.1 A great deal of surveillance activity has been carried out since 3 August. This increases confidence that there are no undetected cases of FMD outside the current PZ.

6.2 As a precaution, to address the very low risk of long distance fomite spread from the September infected holdings the reduced RZ described in paragraph 1 should be expanded to include the area within a 20km radius of those holdings.

6.3 The overall level of risk of FMD in the area of GB outside the reduced RZ described in paragraph 1 and 6.2 is now very low, although it cannot be considered to have returned to levels which applied before 3 August 2007 until all the remaining surveillance has been completed with negative results.

6.4 However, given the risk mitigating measures in place or proposed, the risk of returning the area of GB outside that reduced RZ to the baseline levels of biosecurity and the movement standstill regime applicable before 3 August 2007 is acceptable.

FMD Expert Group

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