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FOOT AND MOUTH DISEASE: CONTINGENCY PLANNING FOR THE DISPOSAL OF ANIMAL CARCASSES

Issue: **Contingency planning for the safe disposal of animal carcasses**

Recommendation: **Executive to agree to:-**

- **clarification of use of existing lined sites;**
- **further work on developing contingency plans for additional burial sites**

Introduction

1. Following a request from the Interdepartmental Group (IDG), a Working Group of officials from DARD, DoE, DRD, DETI, DHSSPS, MoD and OFMDFM have worked on preparing contingency plans in relation to additional burial capacity in case increasing numbers of FMD cases or testing of the sheep flock demonstrates a need for significant culls.

Overall environmental and health issues

2. In carrying forward this work the Group has worked on the premise that public health and environmental issues need to be effectively addressed. They have taken as the basis of their work the analysis of environmental issues by the Environment and Heritage Service of the DoE, the importance of which has been emphasised by Mr Foster in his minute of 24 April, and the health advice from the DHSSPS. These are summarised

in Annexes A and B, though it is noted that this is subject to ongoing review. The main messages are set out in the rest of this section.

3. DHSSPS note that carcasses should be disposed of within 3 days before significant decomposition occurs.

4. In the case of a clinical outbreak of FMD, the preferred method of disposal is to burn the infected animals on site and bury the ashes, thereby minimising the risk of disease transmission. While there are no issues of specific licensing controls DoE advise that relevant Council(s) should be consulted in advance and that EHS has provided guidance to DARD on the siting of pyres to minimise the risk of water pollution. In addition the DRD Water Service notes that it needs to be consulted in relation to drinking water supplies.

5. However in relation to pyres the issue of air pollution needs to be considered carefully. DHSSPS advice points to the use of small pyres i.e. pyres of less than 250 cattle or their equivalent in weight.

6. For cattle born before 1 August 1996, disposal by rendering or incineration is the preferred option, with burning the next best option, provided they can be burnt before decay has set in. These cattle must not be disposed of in landfill sites or buried. Ash remaining after burning such cattle must be collected for ultimate disposal.

7. At present, rendering has been used for animals that have had to be removed in precautionary culls but there is a limited capacity for such

rendering at Duncrue Street and in Lisburn. If there was a significant increase in the size of the cull, and if rendering needed to focus on older cattle, the capacity of this solution for precautionary culls would become exhausted. Rendered animals, apart from remains derived from older cattle, can go to landfill, while at present rendered remains of older cattle have to be stored.

8. DARD is preparing models of the size of culls to give a better sense of when either small pyres on site or rendering would become exhausted as the full solution to disposal and when burial, landfill or the use of large pyres might have to be considered.

9. While the use of larger pyres cannot be ruled out, this is seen as raising significant health and environmental issues and for sheep in particular mass burial appears to provide the best solution when very large numbers are involved in precautionary culls.

Use of existing landfill sites

10. On the basis that the option of burial needs to be considered as a significant part of any future strategy the Working Group examined the existing provision. There are across Northern Ireland a number of engineered and operational landfill sites. These containment facilities are provided with systems for the extraction of leachate and gas which are the main products of decay. The sites are fully monitored and have the potential to receive animal carcasses which are not infected with FMD or considered a BSE risk. Five sites located near Cookstown, Tandragee,

Coleraine, Newry and Aughnacloy are considered to offer possible capacity. Four are owned by Councils and one by the private sector.

11. Urgent work is in place to confirm the capacity they have to take carcasses and to examine the consents in place for these sites. The preliminary conclusion is that these facilities may be able to take up to 25,000 kilo tonnes of culled carcasses – approximately 500,000 sheep.

12. These sites have the potential to provide a regulated means of addressing the need. In GB this method has been approved as a solution. Animal carcasses would be mixed with other waste. It would appear that Northern Ireland does not have the same regulation, but that there is the potential to approach the owners to examine the use of these sites. Planning issues would also need to be considered.

13. Since these sites have been specifically engineered, it appears appropriate to examine this option in greater detail. Even if only a limited number of carcasses could be taken, these sites would provide valuable time if a lined site has to be constructed from new. It is recommended by the Working Group that the Executive's agreement is given to allow DARD to explore with the owners the potential of using these sites. In addition DARD will need to consider how disease control issues related to the development of leachate from carcasses in such sites can be handled. This is an issue on which the consultants referred to below could provide advice.

Creation of additional landfill sites

14. On the advice that existing landfill sites might be insufficient for the volume of carcasses that a major cull requires, and on the basis that experience in GB has demonstrated that several weeks' work might be required to provide access to and enable the development of a properly constructed new landfill site, the Working Group also decided to proceed urgently to seek to determine how such a site might be identified and prepared.

15. The Group took as its basis the need to ensure full environmental and health protection while fitting in to the tight time-table that might be faced. It therefore concluded that it had to find solutions which:-

(i) presented suitable geology, namely finding locations in impermeable clays and where ground water and aquifers would be least likely to become contaminated. There needs likewise to be sufficient depth of clay, of at least 4 metres, for the pits and to allow at least 2 metres of land-cover. Hydrological surveys will be required;

(ii) were within public land, allowing the use of Crown immunity or the use of a Special Development Order, to avoid the delays that would arise from planning and other requirements that would need to be addressed in a private site;

(iii) had access roads to allow both the construction but also the use of 40 ton lorries to access the site and reach the edge of the pit;

(iv) were away from significant centres of population, on the basis of potential public concerns about health issues and about the blight to future urban development; and

(v) avoid significant economic and social impact e.g. damage to tourist amenities

16. The Group was advised by DARD that the main concentrations of the sheep flock were in the Sperrins and Glens, with a significantly smaller concentration in the Mournes. On the basis that public health and environmental issues had to be paramount, that what was being buried were largely to be sheep from precautionary culls, and that the main centres of appropriate geology lay to the south of Northern Ireland, the Group concluded that it had to look for safe sites throughout Northern Ireland.

17. Using geological maps, Departments were asked to come forward with land that they owned within designated areas. DARD, DSD, DETI and DHSSPS came forward with sites, but the DETI and DHSSPS sites were immediately removed because of criteria 15 (iv) above, and only 1 DSD site was left being a parcel of land at the development limit of Craigavon.

18. The main sites left were therefore 7 in the DARD forestry estate and the Craigavon site. More detailed desk analysis was then carried out by

geologists and experts on water quality, while engineering teams have examined the access roads working with DARD colleagues. Their conclusions are set out in Annex C.

19. The Working Group noted that none of the sites offered by departments were close to the Glens since the forested areas did not coincide with favourable geological conditions. Geologists advised that it was possible that smaller suitable areas might be found, within existing DARD forests in the north and this has provided the possibility of one further site that may have potential. More work is now being carried out to see if the geology would be appropriate.

The Next Stage

20. In the light of the DARD risk analysis of the potential culls that may be required, the Working Group has indicated that the Executive needs to agree that further work is carried out and possible decisions regarding contingency plans for the disposal of carcasses be made in the light of this.

21. Key to this is the need for more detailed environmental risk analysis and analysis of sites to be carried out. This cannot be carried out by the EHS of DoE since the latter has a policing role nor by any arm of government. The solution that the Working Group proposes, which is similar to that used in Scotland, is the use of a consultant to plan and ensure the necessary environmental risk analysis and operational planning for any potential site(s).

22. A contract is being drawn up and preliminary investigations made so that a consultant can be engaged immediately on this work, who would provide detailed analysis for the Executive and advice on those sites which the Executive feels should be considered in the final stages. If agreement is reached it is hoped that this could be achieved in the next weeks. During this time the use of existing landfill sites can be examined.

23. The Working Group concludes that such an approach should allow detailed issues of environmental and public health concern to be addressed. It notes however that public concerns will need to be addressed and a clear media strategy developed to explain that the proposed solution of an additional site or sites does not pose a public health issue. A working draft is attached at Annex D.

Conclusion

24.

It is recommended by the Working Group that

the Executive's agreement is given to allow DARD to explore with the owners of the identified existing engineered landfill sites the potential for their use to dispose of carcasses; the future management of these sites if used should also be reviewed with the operators;

DOE should consider the current permits for the existing sites and review planning and permit issues for any potential sites given the emergency nature of the situation; and

DARD should appoint consultants to review the site assessment process to date, to undertake a risk assessment of sites identified by the working group including a comparison with the use of existing landfill sites, to identify any other possible sites and to carry out necessary environmental impact assessments. The contract should also include the design and oversight of the operation of any burial pits as a second stage to the contract. This would include necessary environmental monitoring and aftercare.

25 The disposal of large numbers of animals either in existing landfill sites or in newly developed pits is a significant undertaking with long term monitoring requirements after the initial disposal process.

26 The lead time to develop a new site(s) may be in the order of 4 weeks and the appointment of consultants to undertake the work above should proceed immediately. If the Executive agrees to the proposals it should be possible for consultants to be appointed early next week following a short tendering process.

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FOOT AND MOUTH DISEASE - PUBLIC HEALTH EFFECTS OF DISPOSAL OF CARCASSES

Introduction

1. This paper sets out the public health risks of the different methods of disposing of carcasses associated with the Foot and Mouth outbreak. It is based on the risk assessments commissioned by the Spongiform Encephalopathy Advisory Committee (SEAC), the Department of Environment, Transport and the Regions and the Environment Agency.

Public health risks

2. The risk of human infection from the foot and mouth disease virus is extremely small and the symptoms are mild and self-limiting. There have been very few reported cases world wide. There is no evidence of human to human transmission or of transmission through the consumption of food.

3. The risks from sheep and pig carcasses differ from those associated with bovine carcasses because of BSE. The main BSE risk comes from older cattle born before 1 August 1996 (the date of introduction of the comprehensive feed ban). SEAC estimated that the risk from burning or burying cattle born after 1 August 1996 would be at least 400 times less than the risk from burning or burying a similar number of cattle born before this date.

4. Based on the advice of SEAC:

- Carcasses of cattle born on or after 1 August 1996 may be disposed of in the same ways as sheep and pigs.

- Carcasses of cattle born before 1 August 1996 must not be landfilled or buried. The only disposal options for these older animals are rendering, incineration or burning on pyres.

  Although younger animals pose a lower risk from burial, this relies on a strict separation of older animals at the time of slaughter.

Disposal routes and potential public health risks

Rendering and incineration

5. Rendering and incineration are the safest methods of disposal and are suitable for all types of carcasses. In particular, they remove the risk of BSE. If carried out in accordance with laid down standards, there should be no other significant risks to human health.

Burial

6. Burial of carcasses poses a number of potential risks to human health, primarily through leaching into surface water of:

- **The BSE agent** which is not destroyed by water treatment.

- **Water-borne bacteria** such as *Campylobacter*, *E. Coli (E.Coli* 0157*)*, *Salmonella* and *Leptospira* . These organisms are killed by chlorination, but problems may arise if they get into untreated private water supplies.

- **Water-borne protozoa** (*Cryptosporidium* and *Giardia*) are not killed by chlorination. They could therefore contaminate the public water supply and cause an outbreak.

Burial in approved landfill sites

7. The risks are substantially reduced in approved, lined landfill sites, where any leachate is contained and properly disposed of. Sheep and pig carcasses may go to licensed landfill facilities. For carcasses of cattle born on or after 1 August 1996, a risk assessment must be made for the licensed landfill that is proposed for disposal operations. Carcasses of cattle born before 1 August 1996 must not go to licensed landfill.

Burial in other approved sites

8. Sheep, cattle born after 1 August 1996 and other animals can be buried, but only in sites approved by DoE Planning Service and Environmental Heritage Service on a case by case basis. Informal or impromptu burial of carcasses is not permitted. Older cattle must not be buried under any circumstances (see para. 4 above). A risk assessment will be required for each burial site prior to their use to ensure that groundwater will not be put at risk by the proposed use of the site. The monitoring and treatment of public water supplies should be robust enough to deal with any pathogens or chemicals that might enter the water supply source. The majority of

private water supplies are not subject to water treatment and are therefore vulnerable to contamination by surface water run off from carcasses left lying on the ground and from animals buried in unlined sites.

Pyres

9. The burn achieved in a pyre is likely to be variable and less effective than controlled incineration. Whilst burning on pyres does not achieve the risk reduction of rendering and incineration, it is more satisfactory than burial even in approved landfill sites.

10. The potential public health risks from pyres are from:

- Air pollution – the pollutants of particular concern are particles, sulphur dioxide and nitrogen dioxide. These are all capable of damaging health if people are exposed to sufficiently high concentrations. Individuals suffering from asthma or who have heart and lung disorders are at greater risk than other people. Other potential pollutants include dioxins and polycyclic aromatic hydrocarbons (PAH).

- Leachate from ash remaining after burning - most of the potential from BSE hazard attaches to ash rather than the smoke plume. SEAC has made the assumption that 10% of BSE infectivity would remain after pyre burning. Ash remaining after burning cattle born before 1 August 1996 must be collected and later incinerated.

11. The air pollution risks have been modelled on two scenarios, 250 cattle or their equivalent in weight burning over three days, representing a small pyre and 1000 cattle or the equivalent in weight burning over three days. The figures below indicate the distance of the pyre beyond which health risks are considered to be low.

Small pyres

Small pyres (250 cattle, or their equivalents, burning over 3 days) should be built according to current advice, generally more than 2km from local communities, such as a village. Closer to the pyre, those suffering from asthma may experience a temporary worsening of their condition. Such effects should be reversed using standard medication. People less than 0.5km from pyres will be exposed to high concentrations of irritants

including sulphur dioxide and particles. Members of the public should be advised to avoid such exposure.

Large pyres

Larger pyres (1000 or more cattle, or their equivalents, burning over 3 days) should generally be 3km or more from local communities, such as a village, and built according to current advice. Closer to the pyre, those suffering from asthma may experience a temporary worsening of their condition. Such effects should be reversed using standard medication. Members of the public should be advised to avoid sustained exposure within the vicinity of large pyres. Workers should take precautions according to the local risk assessment.

Risks from carcasses waiting disposal left on the ground

12. Carcasses left on the ground will start to decompose significantly over a period of 3 to 5 days, depending on the weather conditions and the size of the pile. The risks from carcasses awaiting disposal and which have reached the stage of decay will depend on a number of factors, such as whether or not there are older cattle and the proximity to private water supplies. Leaving carcasses of cattle over five years of age decomposing over a period of several days is the most serious risk because there is no way to ensure that the BSE agent will not run off into surface water or contaminate surrounding land.

Health and safety for workers

13. Carcasses awaiting disposal will not pose any significant health risks other than those normally associated with animal contact. Handling of the carcasses for removal purposes should be done with protective clothing and careful attention to hand washing after contact with carcasses or contaminated environments.

14. The Health and Safety Executive is responsible for providing advice on generic and specific health and safety issues; ranging from the conduct of risk and COSHH assessments, through site safety management arrangements and health risks from approved disinfectants to the use of protective clothing and equipment in the cull, disposal and post-disposal phases of the outbreak.

Monitoring

15. The relevant government departments and agencies will need to give consideration to putting in place a monitoring programme. Depending on the disposal routes used, the monitoring may need to cover:

- the air quality in specific locations;
- leachate from burial and landfill sites;
- private and public water supplies;
- personnel working on disposal;
- local populations; and
- dioxin levels on grazing land.

Recommended risk reduction measures

16. The following measures should reduce the public health risks:

- Carcasses should be disposed of before significant decomposition occurs, i.e. 3 days.

- There should be rigorous separation of older cattle from younger cattle at slaughter. Where doubt exists, the animals should be assumed to be old.

- For cattle born before 1 August 1996 disposal by rendering or incineration is the preferred option. Burning is the next best option, provided they can be burnt before decay has set in.

- Younger cattle may be disposed of by burning or burial in approved landfill sites.

- Pyre sites should, where possible, be chosen on high ground. The distance from local populations should be determined by the size of the fire (as set out above). Lighting fires on days when the wind is away from populations would reduce the effects. Sensitive sites such as near to hospitals and schools should be avoided.

- Ash from all pyre sites should be disposed of in an approved manner.

- Grazing should not take place around the sites of the pyres until deemed safe.