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Mrs Sheila Voas, Chief Veterinary Officer, Scottish Government
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17 September 2013

Dear Ms McDonough, Mrs Voas and Dr Glossop,

FAWC advice on space and headroom allowances for transport of farm animals

Introduction

1. This letter provides the Farm Animal Welfare Committee's (FAWC)¹ advice to Government² on the European Food Safety Authority's (EFSA) 'Scientific Opinion Concerning the Welfare of Animals during Transport' (EFSA, 2011). It is in response to Defra's request for advice in relation to possible EU negotiations on new regulations.
2. EFSA's activities in the area of animal welfare are carried out by the Panel on animal health and welfare (AHAW). The Panel provides independent scientific advice to the European Commission, European Parliament and Member States on all aspects of animal health and animal welfare, chiefly for food producing animals.
3. This advice comments on (i) the use of allometric principles (see Section 3) for determining space allowances for farm animals during transport; (ii) headroom allowances for animals during transport; and (iii) other issues concerning the welfare of farm animals during transport which may be related to these.
4. Unless otherwise stated, this advice refers to transport of farm animals by road (i.e. rather than rail, sea or air) and to live animals fit for transport,

¹ The Farm Animal Welfare Committee (FAWC) is an expert committee of the Department for Environment, Food and Rural Affairs and the Devolved Administrations in Scotland and Wales.

² Where we refer to Government we are addressing ourselves to the Department for Environment, Food and Rural Affairs in England, the Scottish Government, the Welsh Government and other responsible Government Departments and Agencies.

although some considerations are also relevant for other forms of transport. The advice mostly concerns mammals, as poultry are transported in crates with specific requirements and constraints, but some considerations are relevant to the transport of poultry.

Section 1 - Welfare principles and animal transport

5. As a statement of general principle of animal welfare, FAWC believes that a farm animal's welfare, whether on farm, in transit, at market or at a place of killing, can usefully be considered in terms of the Five Freedoms. These freedoms form a logical and comprehensive framework for analysis of welfare within any system or during any episode:

- a. Freedom from hunger and thirst – by ready access to fresh water and a diet to maintain full health and vigour.
- b. Freedom from discomfort – by providing an appropriate environment including shelter and a comfortable resting area.
- c. Freedom from pain, injury or disease – by prevention or rapid diagnosis and treatment.
- d. Freedom to express normal behaviour – by providing sufficient space, proper facilities and company of the animal's own kind.
- e. Freedom from fear and distress – by ensuring conditions and treatment which avoid mental suffering.

6. Any of these freedoms can be compromised during transport. Transport comprises gathering, handling, loading, travel, unloading, interim housing and other processes such as mixing of unfamiliar animals, and all these can have negative impacts on welfare (Grandin, 2007).

7. Freedom to express normal behaviour can be prevented for animals being transported in many ways. In relation to space allowance, some compromise on this is necessary, as large space allowances may cause other welfare problems, such as animals falling down.

8. While these compromises to animals' freedoms during transport may sometimes be short-lived, they may on other occasions be of long duration, and they may also be severe. Mortality during transport sometimes occurs and will usually be preceded by serious welfare problems for the animals concerned. Conversely, it is possible for transport to be associated with good welfare: animals that are habituated to the procedure and rewarded when it is complete (for example, by feeding) may react to it as a positive experience. This can apply, at least in theory, to transport of some farm animals.

9. FAWC believes that all animals should have 'a life worth living' and that as many as possible should have 'a good life.' A life worth living is simply one where the animal would not be better off dead. In its 2009 report *Farm Animal Welfare in Great Britain: Past, Present and Future*, FAWC states, "Giving an animal a life worth living requires good husbandry, considerate handling and

transport, humane slaughter and, above all else, skilled and conscientious stockmen” (p15). A good life is defined less precisely but FAWC (2009) says, “The notion of a good life can be considered in terms of the Five Freedoms” (p.16). Clearly, welfare problems (or their lack) during transport contribute to the lifetime experiences of an animal and therefore to whether overall it has a life worth living or a good life.

10. Using the categories mentioned in the Five Freedoms, physical welfare problems that can be caused by transport include injury, disease and physical stress. Stress may be detected from behaviour, from physical effects such as failure to grow, or from physiological measurements. In the worst cases, animals die. Mortality may be increased, for example, by high or low temperatures and by transporting very young animals.

11. Evidence about mental aspects of welfare is mainly of two sorts: whether animals’ preferences are met and whether they are suffering (or have positive experiences, but there is little evidence on positive experiences in transported farm animals). Many preferences of animals may be frustrated by transport, both to express normal behaviour as already mentioned and to avoid conditions such as vibration and noise. Forms of suffering that may be caused by transport, especially on journeys involving non-compliance with the regulations, include those with physical causes that impact animals directly, such as hunger, thirst, discomfort and pain. Other negative feelings which may be associated with some journeys, such as frustration, fear and distress, may also constitute suffering.

Section 2 - Current situation

The legal context

12. The welfare of animals during transport is protected by EU legislation, namely Council Regulation (EC) No. 1/2005 on the protection of animals during transport and related operations. This sets out legal standards for the welfare of animals during transport, and applies to all those involved with the transport of live vertebrates in connection with an economic activity, i.e. a business or trade. The legislation attempts to address the potential animal welfare issues associated with transport outlined in Section 1. It should be acknowledged that EU animal welfare legislation is made within the context of wider concerns such as the elimination (or reduction) of technical barriers to trade and the efficient operation of markets as well as the satisfactory protection of animals.

13. The current EU legislation sets space allowances during transport for all the major livestock species in Chapter VII to Annex I of Regulation 1/2005 (see Table 2). EFSA (2011) has recommended that, in future, allometric calculations be used to determine the space allowances for most livestock species (except horses).

14. The Regulation is implemented in England by The Welfare of Animals (Transport) (England) Order 2006 (WATEO), and by parallel legislation in

Scotland, Wales and Northern Ireland. Defra has produced a number of publications to clarify the requirements of the legislation and to set down best practice, including guidance on the “Welfare of Animals during Transport” and “Road Vehicle (and Container) Certification in the UK”.³ The national legislation extends certain provisions relating to the protection of animals during transport to all animal transport, irrespective of whether the intention is for a commercial or private activity. Local authorities are responsible for enforcement of the EU and domestic legislation including the investigation of alleged infringements which may lead to prosecution.

15. The provisions of the EU legislation and the offences created by the relevant domestic implementing legislation are designed to deal with most criminal offences detected during the transport of animals. Regulation 5 of WATEO lists the provisions of the EU legislation where a failure to comply represents an offence. However, offences under sections 4 and 9 of the Animal Welfare Act 2006 (AWA 2006) can also be used if considered appropriate by local authorities when considering a case for prosecution. [Similar legislation exists in Scotland: The Animal Health and Welfare (Scotland) Act 2006.]

16. EU legislation provides extra safeguards for long journeys (over 8 hours). The two main safeguards are the need to complete a journey log for each long journey (which amongst other things includes a declaration by the transporter of any injuries or fatalities discovered during the course of the journey) and the use of satellite tracking systems which, although compulsory on long journeys, arguably, have yet to be used to their full potential. The legislation also sets higher standards for various means of transport used over long journeys, though Member States can derogate against the imposition of some of these stricter standards in their national implementing legislation.

Industry practice

17. The number of food animals transported within, into and from the UK, and the frequency and effectiveness of inspection and enforcement, provide an important context in relation to the determination of space allowances. There are surprisingly few logistical data recorded on animal movements other than total numbers. According to Defra’s return to the EC (DG Health and Consumers), 6 million cattle, 15 million pigs and 40 million sheep were transported by road in the UK in 2011.

18. The transport of animals is carried out by a range of operators, and there is commercial pressure (including for abattoir throughput) for loading near maximum capacity to minimise transport costs per head. Farmers themselves transport relatively small numbers of animals in their own vehicles, usually locally. The economies of moving their own stock mean farmers do not normally use hauliers under these circumstances.

³ Available at <http://www.gov.uk/farm-animal-welfare-during-transportation>

19. Despite many studies⁴ modelling the effects of transport on animal health and welfare, the impact of the many factors combined is particularly difficult to estimate⁵. Limited data are kept on the condition of animals during transport.

Enforcement

20. The Animal Health and Veterinary Laboratories Agency (AHVLA) is the competent authority in the UK for the EU transport regulation, and is responsible for regulatory action (from an animal health and welfare perspective) at markets, at the roadside and for imports and exports. However, responsibility under WATEO for enforcement during transport rests with local authorities and their Trading Standards Officers.

21. The authorities take a risk-based approach to enforcement as required by EU legislation. Table 1 shows the approximate number of inspections made and enforcement actions taken by local authorities and the AHVLA during 2011. Information on animal health and welfare outcomes found at inspections is limited. However, the seriousness of the action taken reflects the severity of those outcomes.

Table 1: Inspection and enforcement action, 2011

	Cattle	Pigs	Sheep
Total no of animals moved	6 million	15 million	40 million
No of on the road (vehicle) inspections	351	51	223
No of on the road infringements	49 (14%)	11 (22%)	38 (17%)
No of inspections at 'other' sites	30,600	3,000	49,000
No of 'other' site infringements	494 (2%)	119 (4%)	825 (2%)
Action taken:			
Total statutory notices	36	2	46
Written warnings	168	35	128
Oral warnings	229	53	485
Home Office cautions	5	0	2
Prosecutions	6	0	1

Source: Defra return to the EC on controls performed during 2011 relating to welfare during transport⁶

⁴ A number of such studies are listed in the references.

⁵ http://ec.europa.eu/food/animal/welfare/transport/index_en.htm

⁶ http://ec.europa.eu/food/animal/welfare/transport/inspections_reports_reg_1_2005_en.htm

22. In terms of inspections, the current space allowance requirements during transport are enforced through shared responsibility by local authorities and the AHVLA.

23. EU legislation requires that inspections must be carried out on an adequate proportion of the animals transported each year within each Member State, and may be carried out at the same time as checks for other purposes. The total number of inspections appears to cover approximately 2.2 million or 3.6% of all animals transported.

24. Recorded infringements will result in the appropriate regulatory action (statutory notice, written warning, oral warning, Home Office caution or prosecution) being taken by the local authority, the AHVLA or the police.

25. There is substantial variation in frequency of inspections, by species and by geographical region. This is related to the priorities of the enforcing authority, the Defra national risk-driven assessments, and the logistics of animal movements to slaughter.

26. Given that the responsibility for inspections falls to a number of authorities, it is important that the AHVLA ensures that risk-based approaches are appropriately targeted and based on sound evidence.

Section 3 - Determination of space allowances for farm animals

27. As inadequate space allowances during transport may cause suffering, as well as economic problems, it is appropriate to specify the space allowances that should be provided for animals of different type and size, to guide good practice and to allow prevention of unnecessary suffering. This specification has sometimes been done on an unsystematic basis, with poorly based recommendations.

28. Table 2 shows the space allowances required under current EU regulations for transport by road. There are no specific figures given for pigs, apart from the requirement that “the loading density for pigs of around 100kg must not exceed 235 kg/m²”. Space allowances required by the Red Tractor and RSPCA’s Freedom Food programmes are almost identical to these, although the RSPCA also lists requirements for small pigs. The boundaries of weight categories within a species are not given and many of the requirements are imprecise. As such, these figures only provide a flexible guide for practice. They do not define clear, enforceable requirements for many animal journeys.

Table 2: Space allowance requirements under Council Regulation (EC) No. 1/2005 for transport by road

Category of animal	Approximate weight in kg	Area in m ² per animal
Small calves	50	0.3 - 0.4
Medium sized calves	110	0.4 – 0.7
Heavy calves	200	0.7 – 0.95
Medium sized cattle	325	0.95 – 1.3
Heavy cattle	550	1.3 – 1.6
Very heavy cattle	>700	>1.6
Shorn sheep and lambs of 26 kg and over	<55	0.2 – 0.3
	>55	>0.3
Unshorn sheep	<55	0.3 – 0.4
	>55	>0.4
Heavily pregnant ewes	<55	0.4 – 0.5
	>55	>0.5
Goats	<35	0.2 – 0.3
	35 – 55	0.3 – 0.4
	>55	0.4 – 0.75
Heavily pregnant goats	<55	0.4 – 0.5
	>55	>0.5
Poultry	Day-old chicks	21-25cm ² per chick
	Poultry other than day-old chicks: weight in kg	Area in cm ² per kg
	<1.6	180 - 200
	1.6 to <3	160
	3 to <5	115
	>5	105

29. There is increasing scientific evidence to inform the specification of space allowances, including allometric principles, as recommended by EFSA (2011)⁷. In the explanation that follows, the aim is to specify minimum (rather than target) space allowances for different types of animals, including different weight categories. It should be borne in mind, though, that providing too much space may also cause welfare problems (for example, increasing the risk of animals falling down). One implication is that if weight categories are too large, a space allowance sufficient for the heaviest animals in a category may be too much for the lightest. The number of categories is addressed under Practicalities and Conclusions.

⁷ Previously, the Farm Animal Welfare Council has recommended that the use of the allometric method for determining space allowances should be further developed (Report on the European Commission Proposals on the Transport of Animals, 1991) and recommended the use of allometric principles to calculate space allowances (Report on the welfare of turkeys, 1995). Available at <http://www.fawc.org.uk/pdf/old/animals-transport-report-sep1991.pdf> and <http://www.fawc.org.uk/reports/turkeys/turkrtoc.htm>.

Allometrics

30. The area occupied by an animal (i.e. the area of its plan view seen from above) does not change linearly as it grows in weight. This means that if one animal is twice the weight of another it does not take up twice the area. The relationship can be described by the equation:

$$\text{area} = K \text{ multiplied by weight}^{0.67}$$

This is a mathematical expression of the fact that area is related to the square of an animal's length and volume (or weight) to the cube, so the exponent is approximately 0.67 or, to be precise, 2/3. The term 'weight^{0.67}' is called Metabolic Weight and is used widely in growth studies. The constant K is discussed below⁸.

31. A relationship like this in which the exponent is not equal to one is called allometric. Most animal growth is allometric, with proportional measurements of body parts changing with growth (as distinct from isometric growth, with body parts staying proportionally the same, which is rare in animals).

32. According to that equation, one animal twice the weight of another actually takes up 1.59 times the area, i.e. 59% more space. The inverse of that is that one animal half the weight of another takes up 0.63 times the area, i.e. 63% of the space.

33. This equation can be used to estimate the space requirement for animals of different weight. Thus if a group of animals each weighing 60kg is to be transported, 59% more space per animal will be required than for animals weighing 30kg.

34. The non-linear relationship is important: an area just large enough for 10 animals each weighing 60kg will not be large enough for 20 animals each weighing 30kg, even though the total weight is the same at 600kg. Each 30kg animal needs 0.63 as much space as each 60kg animal, so the group needs 1.26 times as much, i.e. 26% more.

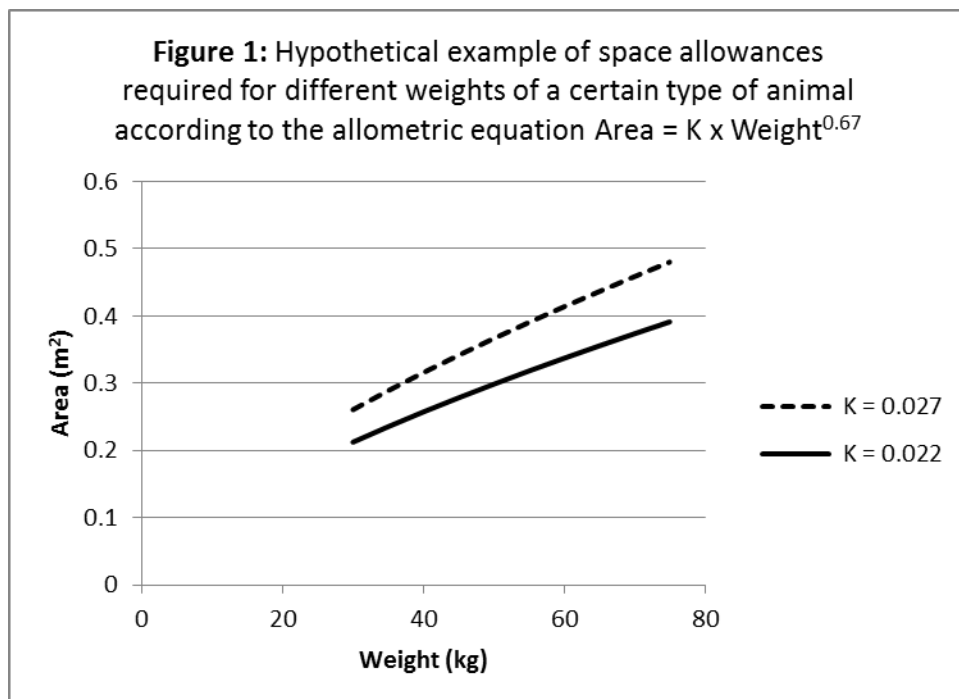
35. Using an exponent of 0.67 across all species makes the assumption that they have similar shape. Although different farm animals are obviously not identical in shape, in practice the assumption provides satisfactory results for the commonly transported farmed species.

36. The other important component in estimating space requirements is choice of the constant K. There are three main factors in this choice. First, the value of K may be affected by the type of animal. For example, K for fully fleeced sheep will be greater than that for shorn sheep, as shorn sheep of the

⁸ The value of K is affected by the units of measurement of weight and area. Here we use kilograms and square metres. Using other units (e.g. pounds and square feet) would require different values of K.

same weight can occupy slightly less area than those with thick fleeces. Second, the value of K chosen for each type of animal will determine the extent to which they are actually 'packed.' The extent of 'packing' that is acceptable has to be based upon research evidence, observation and judgement. Choosing a lower value of K will result in more 'packing,' while a higher value will give larger space allowances (remembering, as already mentioned, that large space allowances or 'under stocking' sometimes cause welfare problems). Third, different values of K may be appropriate for different types of journey. For example, it might be more important for animals to lie down on a long journey than on a short one, requiring more space and a higher value of K.

37. Figure 1 gives a hypothetical example for an unspecified type of animal. A value for K of 0.022 produces the values shown by the lower curve on the graph, and might be appropriate for standing animals; it would require 0.21 m² for each 30kg animal and 0.39 m² for each 75kg animal. A K value of 0.027 (upper curve) might allow all animals to lie down simultaneously; it would require 0.26 and 0.48 m² respectively.



38. Once an acceptable value of K has been chosen for a given type of animal and journey, the equation then gives recommended space allowances for any weight of that type of animal. A worked example of space allowances for cattle based on allometric principles is given at Appendix 1; this is included as an example only and does not constitute a recommendation by FAWC.

39. Making recommendations for space allowances is only straightforward when all the animals in a group are of approximately the same weight. This is the case with the majority of farm animals transported in groups, but not all.

For example, untamed ponies are commonly transported in their established groups, which contain animals of a wide range of ages and sizes.

40. FAWC recognises the benefit of the allometric approach for scaling recommended space allowances across different weights of a given type of animal, supported by the scientific literature. However, the value of K is critical for an acceptable level of welfare under specific conditions of transport (e.g. environmental conditions), and at present recommendations for K only exist for a limited number of combinations of animal and journey type. Research is urgently required to identify acceptable values of K for other combinations.

Practicalities for farmers and hauliers

41. Farmers and hauliers would not be expected to calculate space allowances using allometric equations. Rather, the approach should be used to produce tables of recommended space allowances for each type of animal over appropriate weight ranges. These tables would in most respects be similar to those currently used, but more soundly based. The number of weight categories needs consideration to achieve the best balance between maintaining animal welfare and being practical in use. With a smaller number of weight categories it is likely that welfare problems will arise near the category boundaries. However, a larger number of categories would make compliance and enforcement challenging.

42. Farmers and hauliers already need to know the weight of the stock they are transporting under current legislation, which uses weight bands (as well as the area available to the animals in the vehicle). If more categories are to be defined, though, questions will arise about how precisely they can be expected to know live weights, and about the techniques or machinery they will need to obtain or confirm that information.

Practicalities for enforcement

43. Similarly, if overstocking during transport is suspected by the authorities, enforcement officers will need the following to determine whether an offence has been committed under the transport regulations:

- a) The area available to the animals,
- b) An estimate or measure of live weights,
- c) A count of the animals.

While (c) seems straightforward, it can be very difficult to obtain in a vehicle that is crowded, with low headroom and limited view of the animals. Indeed, for journeys in progress, it is often necessary to arrange for both (b) and (c) to be obtained on unloading.

44. There are several methods of weighing animals. A weighbridge may be used to obtain the net weight of the whole load, some livestock vehicles made and used in continental Europe have weighscale backlifts, and if animals are disembarked at slaughterhouses they may be weighed there. Otherwise weighing machines are not generally available.

45. So estimating liveweight is often necessary at least in the first instance, and may need to be more precise than previously, especially if the number of categories increases. The use of girth tapes is one method that may improve the accuracy of estimation, but their application may require training and facilities for safe use (e.g. penning an animal individually rather than trying to measure it in a group).

Conclusions on allometrics

46. The allometric approach provides a common, scientific basis on which to recommend minimum space allowances for different weights of a given type of animal and type of journey. The approach could allow increased precision and hence improvement of animal welfare. However, choice of K value is critical, and appropriate values are yet to be determined for many combinations of animal and journey type.

47. Farmers, hauliers and enforcement officers would be provided with tables similar to those used under current legislation. However, the number of weight categories would need careful consideration, as it determines the precision with which farmers, hauliers and enforcement officers would need to know or to estimate the weight of the animals transported. Weight categories should be appropriate for the types of animals normally transported, for example sheep up to 40kg, sheep between 40 and 55kg, etc.

48. The allometric approach is most appropriate when animals within a group are of similar weight. When there is variation in weight, it is to be expected that the same approach would be taken as currently: that the weight of the heaviest animals would determine which weight band is used. Similarly, if types of animals with different space requirements are mixed, those with the highest space requirement should set the standard. For example, a mixed flock of shorn and unshorn sheep should be given as much space as if they were all fully fleeced. As noted, however, excess space can also cause problems.

Animals penned individually

49. Where animals need to be penned individually (e.g. most equidae, rams and boars for breeding), it is not appropriate to specify space allowance in terms of square metres. Rather, the length and width of the pen need to be specified, by allowing sufficient extra to the length and width of the animal.

Section 4 - Headroom requirements

50. In order to protect their welfare, animals in transit should be able to stand in their natural position with space above them for both freedom of movement to avoid injury or discomfort and to ensure adequate ventilation. There have been reports of animals being transported in the EU with severely insufficient headroom. As with space allowance, the following discussion

mainly concerns minimum requirements, but unrestricted headroom may also contribute to welfare problems if it results in animals mounting each other.

51. Council Regulation (EC) 1/2005 (Chapter II, 1.2) states: "Sufficient space shall be provided inside the animals' compartment and at each of its levels to ensure that there is adequate ventilation above the animals when they are in a naturally standing position, without on any account hindering their natural movement". However, the term "sufficient" is not quantified. Legal compliance is based on this Regulation.

52. Moreover, the 'natural' standing positions and movements of animals vary greatly depending on a number of interacting factors. These factors include the type of animal being transported (i.e. determined by species, breed, age, sex, conformation, horn growth, social groupings, behaviour, etc) and the nature of the journey (journey time, road quality, environmental conditions such as temperature, design of transporter, etc). In addition, there may be interactions between animal space allowances and headroom, for example, in terms of ventilation.

53. There has been relatively little research into optimum headroom allowances for animals during transport. Defra (2011) identified only 16 publications of relevance. Empirical data for headroom requirements of animals during transport are very limited. In addition, some of the empirical studies relate to height allowances above the withers of animals and fail to take into account variations in head size and position or animal behaviours.

54. Recommendations for headroom allowances from the research literature include, for example; greater than 20 cm above the withers of the tallest animal for dairy cattle (Lambooij et al, 2010); approximately 30 cm above the withers (18 cm to allow for head up position plus a 10 cm further allowance) for cattle and 9 cm (including a 5 cm additional allowance) above the back for pigs (Jones et al, 2003); and 22 cm (including a 5 cm additional allowance) above the withers for ewes (Jones et al, 2002).

55. Recommendations for headroom allowances from various official sources include "20 cm above the withers" (EFSA, 2011) and "20 cm above the top of the head of each animal when it is standing in a comfortable position" (SCAHAW, 2002). Previously, guidance from GB Governments (2004) on the Welfare of Animals Transport Order 1997 indicated specific space allowances for headroom whereby animals should be able to stand in their natural position with space for air circulation, and that the space above the highest part of cattle should be at least 10 cm and at least 5 cm for calves, pigs, sheep and goats. For horses, the guidance was for a clear height of not less than 1.98 metres in a vehicle and must be more than this if necessary for the horse to stand in its natural position.

56. Ideally, all animals should be able to raise their heads during transport to prevent injury, pain or distress from not being able to do so. Bearing in mind the commercial implications, further studies are needed to investigate optimum headroom allowances robustly for each animal type and the

interaction between space allowances and headroom, for example in terms of effects on ventilation. The likely impact on the haulage industry of any proposed changes in specified headroom legal requirements will need to be assessed.

57. Legal requirements need to be specified appropriately to facilitate monitoring of compliance and enforcement.

Section 5 – Other aspects of transport

58. While space and headroom are important with respect to the welfare of transported animals, and are the specific focus of this advice, other aspects of transport also have significant impacts on the welfare of the animals concerned. These often interact with space and headroom allowances in affecting the welfare of animals being transported.

59. EU legislation requires that transporters of live animals “provide water, feed and rest as necessary” while specific rules apply to journeys of different length. Farm animals can become dehydrated during transport and, in hot weather, suffer from heat stress, a major cause of mortality. Adequacy of drinking facilities during transport depends upon the type of animal, the distance transported and other factors such as whether the animals are familiar with the types of drinkers provided, and access to drinkers is also affected by space allowance and by influences such as whether the journey is smooth or rough (which is affected by road quality). The same applies to access to feed when this is provided in the vehicle, either in transit or during stops. Space allowance also clearly affects ability to rest, particularly to lie down, as already mentioned in discussion of allometrics.

60. Acknowledging the considerable opportunity for poor transportation to cause suffocation, stress, exhaustion and injury, the Food and Agriculture Organization of the United Nations (FAO) states (2001) that all vehicles should have “adequate ventilation, have a non-slip floor with proper drainage and provide protection from the sun and rain ... The surfaces of the sides should be smooth and there should be no protrusions or sharp edges.” The need for and effects of ventilation in vehicles are strongly affected by both space allowance and headroom; these also have implications for the design of ventilation, for example whether vents provide air inflow at head height or at some other level. Protection from cold (as well as rain) is often needed, as cold stress can cause suffering and sometimes death, so ventilation may need to be limited, which may require space allowances greater than the minimum. The importance of the other factors listed by the FAO is influenced by space allowance too, for example in the ability of animals to keep their balance (which also affects nausea) and in the frequency and force with which they contact the sides of the vehicle.

61. Similarly, when Broom (2005, p687) points out that “the way the vehicle is driven can have great effects upon the welfare on the animals being transported”, those effects – including loss of balance by standing animals – will be affected by the space available to them.

62. Lastly, journey times are a major consideration for the welfare of transported animals, with longer journeys offering greater opportunities for welfare problems to develop. As pointed out above, it may be more important for animals to lie down on long than short journeys, requiring more space. Yet some animals avoid lying, because of the risk of others standing on them. For standing animals, the importance of headroom may also increase on long journeys, as any constraint may have a cumulative effect on discomfort.

63. Most of these considerations apply when lorries are standing still as well as when they are moving. Some of them are more of a risk in static vehicles, such as heat stress.

Section 6 – Economic considerations

64. Legislation requiring specific space and headroom allowances for animals being transported, and appropriate enforcement across the EU, have important economic implications for the haulier and livestock industries in terms of costs and, potentially, for consumers through the price of livestock products in food stores. Relatively small changes to the requirements can have relatively large impacts on transport costs. For example, an increase in headroom allowance could result in specific transporter vehicles being able to transport fewer decks of animals, reducing the number that could be transported by up to a half. Thus, the economic implications of changes to requirements need to be carefully evaluated.

65. The application of allometric principles to the determination of space allowances would incur additional costs if the chosen values of K resulted in increases in space allowances in relation to those currently practised. Additional costs incurred due to the use of allometric principles would be associated with the necessary information and guidance supplied to hauliers, enforcement officers and others regarding the new application of allometrics to space allowances for animal transport. There would also be additional costs associated with the research that would need to be undertaken to determine the K values to be applied to different animals and contexts.

66. Better weighing facilities and a move towards a situation where all farmers and hauliers can weigh animals will also incur some additional costs for farmers and hauliers, although the use of equipment such as girth tapes to estimate animal weights would mean that these additional costs may be modest.

67. Improved enforcement may also have increased costs associated with it, particularly if it involves a greater number of inspections.

Recommendations

68. On welfare grounds, and as recommended in the European Food Safety Authority Opinion (2011), there should be a move at EU level towards a more scientific determination of categories for space allowances, using allometric principles.

69. Government should work with other Member States and stakeholders to undertake research into appropriate values for K, for different animal categories and journey types (including, for example, environmental conditions and journey lengths, which affect whether animals need to lie down).

70. Stakeholders should move towards a situation in which it is possible to weigh all animals, for example by the increased availability of weighing crates and trucks with weighscale backlifts. Where this is not possible, better methods are needed for estimating weights, such as the appropriate use of girth tapes.

71. Ideally, all animals should be able to raise their heads during transport, bearing in mind the need to avoid animals mounting each other.

72. Further research is needed on specific headroom allowances for different types of animal, with a view to providing guidance backed by legislation, bearing in mind the commercial implications.

73. The competent authorities should ensure that risk-based approaches are appropriately targeted and based on sound evidence. If a problem with overloading is suspected, the vehicle should be checked before and during off loading, for example by the Official Veterinarian at the slaughterhouse.

74. Government should ensure that the Animal Health and Welfare Management and Enforcement System (AMES), or an equivalent enforcement database, records adequate information on welfare outcomes, to monitor the welfare of animals during transport and help improve transport practices.

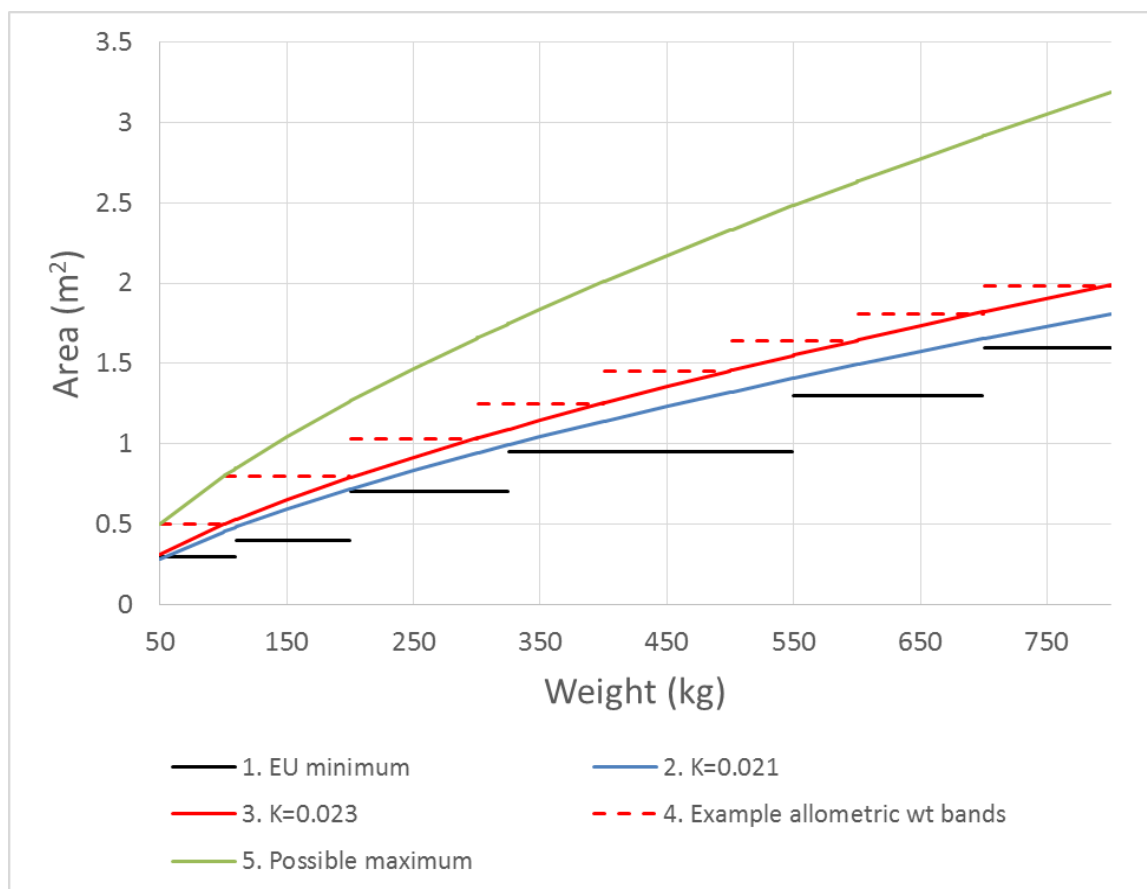
Yours sincerely

A handwritten signature in black ink on a light blue background. The signature is cursive and appears to read 'Peter Jinman'.

Peter Jinman
Chairman, Farm Animal Welfare Committee

Appendix 1: An example of space allowances based on allometric principles

This graph compares current EU minimum space allowances for cattle with alternatives calculated on an allometric basis.



1. Current minimum allowances for cattle, the requirements in EC 1/2005 (Table 2), are shown as black, solid horizontal lines. Weight is divided into bands with the 'approximate weight' from the table as the lower limit of each band, to give the minimum that could be required by an enforcement officer. In fact the table gives a range of recommended space allowances for each band (e.g. 0.3 – 0.4m² for the smallest band) but only the minima are shown here for clarity.
2. An allometric, minimum area per animal is shown as the lowest, blue curve. This uses the value of K=0.021 suggested as a minimum for cattle for journeys under 8 hours by FAWC (1991). The requirement is more than the EU minimum for any animals in the middle or at the heavier end of a weight band.
3. The middle, red curve uses the value K=0.023, giving 10% increase in area for journeys when the external temperature is over 27°C. EU regulations (EC 1/2005) suggest an increase in area but are not specific for cattle.
4. Possible, practical requirements based on the curve for K=0.023 are shown as red, dashed, horizontal lines. For this illustration, weight is divided into 100kg bands, with the requirement that of the heaviest animals in each band. As discussed in the text, larger or smaller bands could be used.
5. A possible maximum space allowance with K=0.037 is also shown for illustrative purposes, as the upper, green curve. No specific values have been published for maximum space allowance.

The graph is included as an example only and does not constitute recommendations by FAWC. FAWC gratefully acknowledges the assistance of Anastasija Popova, University of Bristol, in providing this example.

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