

1 **G. Species-specific provisions for farm animals and mini-pigs**

2

3 **a. General considerations**

4

5 **1. Introduction**

6 For the purposes of this document the term “farm animals” includes cattle,
7 sheep, goats, pigs, mini-pigs and equines, including horses, ponies, donkeys
8 and mules.

9

10 The use of farm animals in research varies from applied experiments under
11 farm conditions to more fundamental studies in agricultural, veterinary or
12 biomedical research carried out under laboratory conditions. In the former
13 case, it is important that the housing and management conditions, whilst
14 taking due account of animal health and welfare, produce information which
15 can be reliably applied to commercial farm conditions. In the latter case,
16 where more invasive procedures are frequently involved, a different type of
17 housing and management is necessary. The precise nature of the housing
18 adopted should be suitable to yield information of relevance to the
19 experimental question and appropriate for the procedures involved.

20

21 Management systems for all farm animals should accommodate their natural
22 behaviour, in particular the need to graze or forage, exercise and socialise.
23 Farm animals are held in a number of different types of enclosure, often
24 dependent on experimental requirements. For example, farm animals may be
25 held on pasture, in open-sided buildings with access to open yards, in
26 enclosed buildings with natural ventilation or in specialised buildings for
27 quarantine and biocontainment with natural or forced ventilation.

28

29 During agricultural research, when the aim of the research requires that the
30 animals are kept under similar conditions to those under which commercial
31 farm animals are kept, the keeping of the animals should at least conform with
32 the standards laid down in the [European Convention for the Protection of](#)
33 [Animals kept for Farming Purposes \(ETS No. 87\)](#) and in relevant national
34 recommendations and guidelines.

35

36 **2. The environment and its control**

37

38 Under natural conditions farm animals are exposed to, and will tolerate, a
39 wide range of temperatures, although there is some variation in the degree of
40 tolerance between species and breeds. They will seek shelter against driving
41 rain and strong wind, and protection from intense sun. Where they are kept in
42 enclosures exposed to outdoor conditions, shelter and shade and a
43 reasonably dry lying area should be provided. Shelters should be carefully
44 positioned taking these factors into consideration. Sufficient shelter should be
45 provided to protect all animals from adverse climatic conditions.

46

47 Animals held outdoors or in buildings with natural ventilation will be exposed
48 to ambient environmental conditions. Animals should not be restricted to such
49 areas under climatic conditions which may cause the animals distress.

50

51 Environmental parameters, in particular temperature and humidity, are strictly
52 interrelated and should not be considered in isolation.

53

54 2.1. Ventilation

55 All farm animals are sensitive to respiratory problems. In the absence of
56 mechanical ventilation, as is the case in a significant number of farm animal
57 buildings, it is important to ensure that suitable air quality is provided by
58 natural ventilation (see paragraph 2.1.1. of the General section). Ventilation
59 systems should be designed to avoid or at least minimise drafts.

60

61 Dust levels in the air from feed and bedding should be minimised.

62

63 2.2. Temperature

64 The thermoneutral zones of farm species vary considerably, depending on the
65 conditions to which the animals are acclimatised. Farm animals living
66 outdoors can, given time, develop a thick layer of hair/wool during the winter
67 months to help them to tolerate low temperatures. They may acclimatise to
68 lower temperatures indoors even without the growth of winter coats, provided

69 the relative humidity is low, draughts are avoided and they have a lying area
70 with sufficient dry bedding material. In indoor enclosures it is therefore
71 important to avoid wide fluctuations and sudden changes in temperature,
72 particularly when moving animals between indoor and outdoor
73 accommodation. As farm animals may suffer from heat stress, during periods
74 of high temperature it is important to ensure that appropriate measures, for
75 example the shearing of sheep and provision of shaded lying areas, are in
76 place to avoid welfare problems if forced ventilation or fans are not available
77 or not adequate.

78
79 Appropriate temperature ranges are dependent on a number of factors
80 including, for example, breed, age, caloric intake, weight, stage of lactation
81 and type of environment.

82

83 2.3. Humidity

84 Under natural conditions, farm animals are exposed to, and tolerate well, a
85 wide range of relative humidities. In controlled environments extremes and
86 sudden wide fluctuations of humidity should be avoided, as both high and low
87 humidity can predispose animals to disease (e.g. respiratory disease).

88

89 In indoor enclosures, buildings should be designed with sufficient ventilation to
90 prevent prolonged periods of high humidity, as this may cause excessive
91 dampness in the animal enclosures, predisposing the animals to diseases
92 such as respiratory disease, foot-rot and other infectious conditions.

93

94 2.4. Lighting

95 Farm species have evolved to live in different conditions; for example
96 ruminants graze and rest during daylight in open grassland, whereas pigs
97 show crepuscular activity in woodland areas. Provision of adequate light is
98 important for all farm animal species, and natural light is preferred where
99 possible. Where this is not provided, the light part of the photoperiod should
100 be within a range of eight to twelve hours daily, or should reproduce natural
101 light cycles. A controlled photoperiod may be needed for breeding and for

102 some experimental procedures. Sufficient natural or artificial light should also
103 be available for inspection of groups and individuals.

104

105 Where windows are provided, breakable glass should be screened using a
106 protective physical barrier or be situated out of reach of the animals.

107

108 2.5. Noise

109 Unavoidable background noise from, for example, ventilation equipment,
110 should be minimised, and sudden noises should be avoided. Handling and
111 restraint facilities should be designed and operated to minimise noise during
112 use.

113

114 2.6. Alarm systems

115 (See paragraph 2.6. of the General section)

116

117 **3. Health**

118

119 3.1. Disease control

120 As farm animals are often sourced from commercial farms, it is important that
121 measures are taken to ensure that animals of a suitable health status are
122 obtained. Mixing animals from different sources is a particular risk.

123

124 Preventive medicine programmes should be developed on the basis of
125 veterinary advice for all farm species, and appropriate vaccination regimes
126 adopted as necessary.

127

128 Foot care management, parasite control measures and nutritional
129 management are essential parts of all farm-animal health programmes.

130 Regular dental examinations and respiratory disease preventive measures are
131 of particular importance in equine programmes.

132

133 Regular review of production indices and condition scoring should also be
134 included. Care is needed to ensure that any substrate provided does not
135 introduce or promote growth of infectious agents or parasites.

136

137 3.2. Behavioural abnormalities

138 Behavioural abnormalities such as tail, ear or flank chewing or biting, wool
139 pulling, navel sucking, weaving and crib biting can occur as a consequence of
140 poor husbandry or environmental conditions, social isolation, or from boredom
141 due to long periods of inactivity. If such abnormalities occur, measures should
142 be taken immediately to rectify these deficiencies including, for example, a
143 review of environmental factors and management practices.

144

145 3.3. Husbandry

146 Disbudding, dehorning of adult animals, castration and tail docking should not
147 be done unless justified on welfare or veterinary grounds. When such
148 techniques are carried out, appropriate veterinary advice and anaesthesia and
149 analgesia should be provided.

150

151 3.4. Neonatal care

152 High standards of stockmanship and care are necessary for successful
153 rearing of farm animals during the neonatal period.

154

155 Suitable accommodation, with a dry clean area, should be provided for peri-
156 parturient and neonatal animals. Facilities should be designed to facilitate
157 observation and be maintained to high hygiene standards, as young animals
158 are particularly susceptible to infections.

159

160 All neonates should receive adequate amounts of colostrum as soon as
161 possible after birth, and preferably within four hours. Adequate supplies of
162 colostrum should be available for use in emergencies.

163

164 Suitable feeding practices should be in place to allow normal growth and
165 development, with access to roughage provided to ruminants from two weeks
166 of age.

167

168 As neonatal animals have poor thermo-regulatory control, particular care is
169 needed to ensure that suitable temperatures are provided and maintained. A

170 supplementary local heat source may be required, although care is needed to
171 avoid the risk of injury, such as burns, and accidental fires.

172

173 To reduce the risk of mis-mothering or rejection, it is important that a strong
174 maternal bond is allowed to develop during the first few days of life. During
175 this period it is important to minimise handling or management procedures,
176 such as transport, castration or tagging that may disrupt this relationship or
177 prevent the young animals accessing sufficient amounts of colostrum or milk.

178

179 Weaning strategies should be given due consideration to minimise stress in
180 the mother and offspring. Weaning into groups of animals of similar ages
181 facilitates the development of compatible and stable social structures.

182

183 Naturally reared pigs and mini-pigs should not be weaned before four weeks
184 of age, lambs, kids and beef calves before six weeks of age and equines
185 before twenty weeks of age, unless there is justification on veterinary or
186 welfare grounds.

187

188 For animals which are artificially reared, commonly dairy calves or lambs,
189 appropriate feeding regimes should be provided to satisfy nutritional
190 requirements, and in the case of ruminants, to promote normal rumen
191 development.

192

193 Early weaning from the dam on experimental or veterinary grounds should be
194 determined in consultation with the animal technician and with the competent
195 person charged with advisory duties in relation to the well-being of the
196 animals. In such circumstances, additional attention and means should be
197 targeted to the welfare and care of these animals.

198

199 **4. Housing, enrichment and care**

200

201 4.1. Housing

202 Farm animals should be housed in socially harmonious groups within the
203 animal enclosure, and husbandry practices designed to minimise social

204 disruption, unless the scientific procedures or welfare requirements make this
205 impossible.

206

207 When kept in groups, a defined hierarchy is quickly established. Some
208 aggressive interaction may be encountered during initial grouping while
209 relative rankings in the social hierarchy are established.

210

211 Special care is needed to minimise aggression and potential injury when
212 grouping, regrouping, or introducing an unfamiliar animal to a group. In all
213 cases, animals should be grouped according to size and age and monitored
214 for social compatibility on an ongoing basis.

215

216 Separation from a group and the single-housing of farm animals for even short
217 periods can be a significant stress factor. Therefore, farm animals should not
218 be single-housed unless justified on welfare or veterinary grounds. The
219 exceptions, where animals may prefer to be housed singly include females
220 about to give birth, and adult boars, which can be solitary under natural
221 conditions.

222

223 Single-housing, justified on experimental grounds, should be determined in
224 consultation with the animal technician and with the competent person
225 charged with advisory duties in relation to the well-being of the animals.

226 Factors to be taken into consideration should include the nature of the
227 individual animals, their likely reaction to separation from the group and the
228 need for and duration of an habituation period. Where individual housing is
229 necessary, animals should have visual, auditory and olfactory contact with
230 conspecifics.

231

232 4.2. Enrichment

233 As a stimulating environment is an important contributing factor to farm animal
234 welfare, environmental enrichment should be provided to prevent boredom and
235 stereotypic behaviour. All farm animal species naturally spend a large amount
236 of time each day grazing, browsing or rooting for food, and in social
237 interaction. Suitable opportunities should be provided to meet these

238 behaviours, by for example access to pasture, the provision of hay or straw or
239 manipulable objects such as chains or balls.

240

241 Enrichment materials and devices should be changed at regular intervals
242 since animals, in particular pigs, tend to lose interest in materials to which
243 they have become accustomed. Sufficient enrichment devices should be
244 provided to minimise aggressive behaviour

245

246 4.3. Enclosures – dimensions and flooring

247 Appropriate design of farm-animal enclosures is essential to ensure that
248 suitable space is available within the enclosure to allow the animals to carry
249 out a range of normal behaviour. Floor type, drainage, provision of bedding
250 (and hence ease of maintaining hygiene) and the social circumstances (group
251 size and stability) will all impact on the space requirements for the animals.

252

253 All enclosures should be designed and maintained to ensure that animals
254 cannot be trapped or injured, for example in partitions or under feed troughs.

255

256 Animals should not be tethered, unless justified on scientific or veterinary
257 grounds, in which case this should be for the minimum time period necessary.

258

259 Sufficient space should be provided for each animal to stand up, lie
260 comfortably, stretch and groom themselves, with access to a communal lying
261 area and adequate room for feeding.

262

263 The lying area should allow all animals to lie in lateral recumbence
264 simultaneously, bearing in mind that whilst some farm animals, for example
265 pigs, generally prefer to lie in physical contact with other conspecifics, others,
266 such as equines prefer a degree of spatial separation. Under conditions of
267 high temperatures, where animals need to lie with complete spatial separation
268 to facilitate heat loss, a greater lying area should be allowed.

269

270 The lying area should be provided with bedding to enhance comfort and
271 reduce the incidence of pressure lesions. Where absence of bedding is

272 necessary for experimental reasons, the floor should be designed and
273 insulated to improve physical and, unless a suitable controlled environment is
274 provided, thermal comfort.

275

276 The height of enclosures should allow natural rearing and mounting
277 behaviour.

278

279 Enclosure flooring materials should be non-injurious and provide adequate
280 grip for unconstrained locomotion and posture change. Floors should be well
281 maintained and replaced when necessary, as surface damage will cause
282 injuries to develop over time.

283

284 4.4. Feeding

285 The diet should provide adequate nutrients to support the maintenance
286 energy requirements of each animal, given the environmental conditions
287 under which animals are kept. Additional energy will be needed to support
288 pregnancy, lactation and growth, and should be tailored to the needs of the
289 animals (for example, high genetic merit dairy cattle). Vitamin and mineral
290 levels in the diet should also be considered, for example to avoid copper
291 toxicity in sheep or the formation of urinary calculi in male castrated sheep,
292 and where necessary, mineral licks should be provided.

293

294 When grazed grass is used as forage, stocking densities should be controlled
295 to ensure adequate supplies are available to meet the nutritional requirements
296 of all the animals. Where grass supply is limited, provision of additional feed in
297 the field should be considered.

298

299 For ruminants and horses, sudden changes in diet should be avoided, and
300 new items introduced gradually, especially where high-energy feeds are
301 introduced, or during periods of high metabolic demand, for example around
302 parturition. Sufficient roughage should be provided.

303

304 In group-housing systems, there should be sufficient food provided in
305 sufficient numbers of sites for all individuals to access without risk of injury.

306

307 Forage forms a significant component of the diets of farm animals. Since the
308 amount of forage needed may preclude the use of bags for storage, forage
309 items, including hay, straw, silage and root crops, should be stored in a way
310 that minimises deterioration in quality and the risk of contamination. A pest-
311 control strategy should be in place in areas where forage and concentrates
312 are stored.

313

314 When grass is cut for feeding housed animals (for example, zero-grazing), it
315 should be done frequently, as cut grass heats up when stored and becomes
316 unpalatable.

317

318 4.5. Watering

319 Animals should have access at all times to fresh uncontaminated water, which
320 should be readily accessible to all individuals within the social group. The
321 number of drinking points or trough length should be sufficient to allow access
322 to water for all individuals within the social group. Flow rates should meet the
323 demands of the individual animal as these will vary depending on the feed,
324 physiological status and ambient temperature, for example, lactating animals
325 have much higher water demands than stock animals.

326

327 4.6. Substrate, litter, bedding and nesting material

328 (See paragraph 4.8. of the General section)

329

330 4.7. Cleaning

331 (See paragraph 4.9. of the General section)

332

333 4.8. Handling

334 If handling and restraint facilities are required, these should be of robust
335 construction and safe for animals and operators. In particular, a non-slip floor
336 should be provided.

337

338 Handling and restraint facilities can take the form of basic equipment provided
339 within the animal enclosure, or more complex, dedicated facilities serving the

340 needs of the whole establishment. Handling and restraint facilities can be
341 provided in the enclosure area, but care should be taken to ensure that these
342 do not compromise space allowances or create a potentially hazardous
343 physical obstruction in the enclosure.

344

345 The dedicated facilities should, where possible, incorporate races and pens
346 for separating animals; footbaths; special facilities for some species such as
347 plunge dip baths and shearing pens for sheep; and an area to allow animals
348 to recover after treatments. Ideally these facilities should be protected from
349 prevailing weather conditions for the comfort of both animals and operators.

350

351 Animals should be handled quietly and firmly and not be rushed along races
352 and passageways. These should be designed, taking account of the natural
353 behaviour of the animals, to facilitate ease of movement and minimise the risk
354 of injury. Immobilisation devices should not cause injury or unnecessary
355 distress. Aversive stimuli, physical or electrical, should not be used.

356

357 Passages and gates should be of sufficient width to permit two animals to
358 pass freely, whereas races should be only wide enough to permit one-way
359 movement.

360

361 Regular handling will allow habituation of animals to human contact. Where
362 frequent handling is required, a programme of training and positive rewards
363 should be considered to minimise fear and distress.

364

365 Animals should not be closely confined except for the duration of any
366 examination, treatment or sampling, whilst accommodation is being cleaned,
367 milking, or loading for transport.

368

369 4.9. Humane killing

370 All systems for the humane killing of farm animals should be designed to
371 ensure that animals are not caused unnecessary distress. Careful handling by
372 experience staff, with minimum disruption to normal practices, will minimise
373 distress to the animals, before they are humanely killed.

374

375 Killing should not be performed in areas where other animals are present,
376 unless in the case of euthanasia of a badly injured animal where additional
377 suffering may be caused by moving the animal and it is not otherwise possible
378 to separate the animal.

379

380 4.10. Records

381 (See paragraph 4.12. of the General section)

382

383 4.11. Identification

384 Animals should be individually identified by the appropriate use of
385 transponders, ear tags, plastic neck collars and/or rumen boluses. Freeze
386 branding and tattooing may be less suitable. Hot branding should not be used.

387

388 Identification devices should only be applied by trained personnel and at times
389 when the procedure is likely to have minimal adverse effects on the animal.

390 Tagged or tattooed ears should be checked regularly for signs of infection and
391 lost tags should be replaced using the original tag hole where possible.

392

393 If electronic identification devices are used, they should be of the correct size
394 and specification for the animal and should be checked regularly for function
395 and the absence of any adverse reactions, for example, injection site
396 reactions and rubbing or pharyngeal trauma as a result of improper bolus
397 administration.

398

399 **b. Additional provisions for housing and care of cattle**

400

401 **1. Introduction**

402

403 Cattle (*Bos taurus* and *Bos indicus*) are social animals forming hierarchies
404 based on dominance relationships among herd members. They will frequently
405 develop affinity relationships with conspecifics. As ruminants, cattle spend
406 much of the day foraging, followed by long rest periods. Cattle are normally
407 docile and are easily habituated to human contact.

408

409 **2. The environment and its control**

410 (See paragraph 2 of the General considerations for farm animals and mini-
411 pigs)

412

413 **3. Health**

414 (See paragraph 3 of the General considerations for farm animals and mini-
415 pigs)

416

417 **4. Housing, enrichment and care**

418

419 4.1. Housing

420 Horned and polled animals should not be mixed, except for young calves and
421 their mothers. Where horned cattle are housed together in groups, more
422 space will be required. Pens should be rectangular not square. The width of
423 the pen should be no less than the length of the animal from the nose to the
424 root of the tail.

425

426

427

428

429

430

431

432

433 4.2. Enclosures – dimensions and flooring434 **Table G.1. Cattle: Minimum enclosure dimensions and space allowances**

| Body weight (kg) | Minimum enclosure size (m ²) | Minimum floor area/animal (m ² /animal) | Trough space for ad-libitum feeding of polled cattle (m/animal) | Trough space for restricted feeding of polled cattle (m/animal) |
|------------------|------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|
| up to 100 | 2.50 | 2.30 | | |
| over 100 to 200 | 4.25 | 3.40 | | |
| over 200 to 400 | 6.00 | 4.80 | | |
| over 400 to 600 | 9.00 | 7.50 | | |
| over 600 to 800 | 11.00 | 8.75 | | |
| over 800 | 16.00 | 10.00 | | |

435

436 Where cattle are housed indoors, a bedded area sufficient to allow all of the
 437 animals to lie simultaneously will be provided. Where cubicles are not
 438 provided, this area will normally be approximately 70% of the minimum floor
 439 area shown in the above table. The remainder of the enclosure can be non-
 440 bedded for feeding and exercise.

441

442 If individual open-ended cubicles are provided as the bedded area, this area
 443 may be reduced in size, but the total number of cubicles should exceed
 444 animal numbers by 5% to reduce competition and permit all animals to lie
 445 simultaneously. The design of cubicles is critical to their comfort, and should
 446 include consideration of the body size of the animal, a surface sufficiently
 447 cushioned to prevent injury, adequate stall drainage, correctly positioned stall
 448 dividers and head rails, lateral and vertical freedom for head movement and
 449 adequate lunging space. The height of the rear step should prevent dung
 450 entering the cubicle during cleaning, but not be of such a height that it causes
 451 damage to the feet during entry and exit. The remainder of the enclosure can
 452 be non-bedded for feeding and exercise.

453

454 Cubicle length is primarily determined by the weight of the animals. Cubicle
 455 width will vary, depending on the type of division used, but must be sufficient

456 to allow the animals to lie comfortably without undue pressure being exerted
457 by the divisions on vulnerable parts of the body. Specialist advice should be
458 sought on the design and installation of cubicles.

459

460 4.3. Feeding

461 The trough space provided must be sufficient to allow all animals to feed at
462 the same time, unless the diet is available *ad libitum* (see above table).

463 Horned cattle require more trough space than polled animals, and allowance
464 should be made for this.

465

466 4.4. Watering

467 Water troughs: there should be sufficient linear trough space to allow 10% of
468 the animals to drink at one time. This equates to a minimum of 0.3 metres per
469 10 adult cattle. Lactating dairy cows will require 50% more space.

470

471 Water bowls: a minimum of two water bowls should be provided when cattle
472 are group-housed. For groups of over twenty cattle, at least one drinking bowl
473 for ten animals should be provided.

474

475 4.5. Handling

476 Where animals are milked by machine, equipment should be maintained to a
477 high standard to prevent diseases such as mastitis.

478

479 Horned cattle may present a danger to personnel in confined spaces. Under
480 these circumstances, it may be necessary to consider dehorning. Wherever
481 possible, this should be carried out on calves under the age of eight weeks.

482

483 **c. Additional provisions for housing and care of sheep and goats**

484

485 **1. Introduction**

486

487 Sheep (*Ovis aries*) are grazing animals which, because of breed differences,
488 for example fleece characteristics, will thrive in a wide range of climatic
489 conditions.

490

491 Under natural or farming conditions, sheep are very social, spending all their
492 lives close to other members of the flock whom they recognise individually. As
493 a species, they are therefore particularly disturbed by social isolation, a factor
494 which should be taken into account when designing animal accommodation.
495 However, in terms of social cohesion there are recognisable variations
496 between breeds as, for example, hill sheep tend not to flock closely together
497 when left undisturbed.

498

499 Goats (*Capra hircus*) are a naturally inquisitive species and generally interact
500 well with other animal species and humans. Like sheep, goats live in social
501 groups and are disturbed by social isolation. Goats obtain their food by
502 browsing more than by grazing and are best adapted to dry, firm ground. Their
503 ability to climb is considerable and this facilitates their browsing. They prefer
504 warm conditions and do not tolerate wet and windy conditions well.

505

506 **2. The environment and its control**

507

508 Under extreme conditions, sheep will require access to natural or artificial
509 wind-break shelter and shade, whilst different coat characteristics mean that
510 goats are less tolerant of prolonged rain and should have free access to
511 roofed shelter areas whilst outside.

512

513 Recently shorn animals may need higher environmental temperatures than
514 fleeced animals.

515

516

517 **3. Health**

518

519 Adult sheep and goats of wool breeds should be shorn at least once per year,
520 unless this would compromise their welfare.

521

522 **4. Housing, enrichment and care**

523

524 4.1. Housing

525 Entire adult males from both species can be more solitary than females and
526 young offspring. They may be aggressive, particularly during the breeding
527 season, requiring careful management to reduce the risks of fighting and
528 injury to handlers.

529

530 Horned and polled goats should not be housed together.

531

532 4.2. Enrichment

533 Sufficient raised areas of appropriate size and quantity to prevent dominant
534 animals impeding access should be provided for goats.

535

536 4.3. Enclosures – dimensions and flooring

537 **Table G.2. Sheep and Goats: Minimum enclosure dimensions and space**
538 **allowances**

| Body weight (kg) | Minimum enclosure size (m ²) | Minimum floor area/animal (m ² /animal) | Minimum partition height* (m) | Trough space for ad-libitum feeding (m/animal) | Trough space for restricted feeding (m/animal) |
|------------------|------------------------------------------|----------------------------------------------------|-------------------------------|------------------------------------------------|------------------------------------------------|
| less than 20 | | | | | |
| over 20 to 35 | | | | | |
| over 35 to 60 | | | | | |
| over 60 | | | | | |

539 * For adult goats, an increased minimum partition height may be required to prevent
540 escape.

541 The entire enclosure should have a solid floor with appropriate bedding
542 provided.

543

544 4.4. Watering

545 In indoor enclosures for sheep and goats at least one drinking point per
546 twenty animals should be provided.

547

548 4.5. Identification

549 In addition to legally required identification, dyeing the fleece or coat using
550 recognised non-toxic agricultural marker products may be used for short-term
551 experiments in short-wool breeds of sheep and in goats.

552

DRAFT

553 **d. Additional provisions for housing and care of pigs and mini-pigs**

554

555 **1. Introduction**

556

557 The domestic pig (*Sus scrofa*) is descended from the European wild boar.

558 Although subject to intensive selection pressure over many generations for

559 production characteristics of economic importance, domesticated pigs have

560 largely retained the same behavioural repertoire as their ancestors. Under

561 unrestricted conditions, they live in small family groups, show a crepuscular

562 diurnal rhythm and have strongly developed exploratory behaviour. They are

563 omnivorous and a large part of their active time is spent foraging for food. At

564 birth, sows farrow in social isolation and construct a nest prior to parturition.

565 Weaning is gradual and is completed at about four months of age, and piglets

566 integrate gradually into the social group with little aggression.

567

568 Mini-pigs differ from the farm pig in many significant respects. A number of

569 different mini-pig strains have been developed by conventional breeding

570 procedures in order to produce a small pig suitable for research purposes. For

571 the purpose of this document, the mini-pig is defined as a small pig breed for

572 use in experimental and for other scientific purposes and with an adult body

573 weight typically not exceeding 60 kg, but can be as high as 150 kg in some

574 strains. Because of this difference in body size at maturity, recommendations

575 for farm pigs cannot always be extrapolated on a simple weight basis.

576 Recommendations in this document apply to both types of pig, with specific

577 requirements of mini-pigs annotated where necessary.

578

579 **2. The environment and its control**

580

581 2.1. Temperature

582 Pigs and mini-pigs are highly sensitive to environmental temperature and

583 place a high behavioural priority on thermoregulation.

584

585 Pigs may be kept in a uniform, temperature-controlled environment, in which

586 case the whole room should be maintained within the thermoneutral zone.

587 Alternatively, they may be kept in an enclosure with different microclimates, by
 588 providing localised heating or kennelling of the lying area and provision of
 589 adequate bedding material. A temperature gradient within the enclosure is
 590 considered beneficial. Pigs provided with optimal temperature and
 591 temperature gradients will naturally divide their pen into feeding, sleeping and
 592 dunging areas. Outdoor pigs can compensate for lower ambient temperatures
 593 provided that adequate shelter, with plentiful dry bedding, and additional food
 594 is provided.

595

596 **Table G.3. Pigs and minipigs: Guideline temperature ranges for single-**
 597 **housed animals**

| Liveweight | Recommended temperature range (°C) |
|-------------------|------------------------------------|
| less than 3 kg | 30 to 36 |
| from 3 to 8 kg | 26 to 30 |
| over 8 to 30 kg | 22 to 26 |
| over 30 to 100 kg | 18 to 22 |
| over 100 kg | 15 to 20 |

598

599 In addition to body weight, suitable temperatures will vary according to sexual
 600 maturity, the presence or absence of bedding, group housing, and the caloric
 601 intake of the animal. Within the ranges given, animals of lower body weight,
 602 without bedding or with restricted caloric intake should be provided with the
 603 higher temperatures.

604

605 Piglets of low body weight are very sensitive to environmental temperature
 606 and should be provided with higher temperatures. Litters of newborn piglets
 607 should be offered a lying area minimum of 30°C, decreasing to 26°C at the
 608 age of two weeks. For farrowing/lactation rooms, the minimum room
 609 temperature necessary is that required to allow an adequate temperature to
 610 be maintained in the piglet lying area, taking account of any local heat supply.
 611 Because of their high metabolic activity, lactating sows are prone to heat
 612 stress and farrowing room temperatures should ideally not exceed 24°C.

613

614

615

616 **3. Health**

617 (See paragraph 3 of the general considerations for farm animals and mini-
618 pigs)

619

620 **4. Housing, enrichment and care**

621

622 4.1. Enrichment

623 Pigs show spatial separation of different behaviours such as lying, feeding
624 and excretion. Enclosures should therefore allow for the establishment of
625 separate functional areas by providing either plentiful space or appropriate
626 subdivision of the enclosure area.

627

628 Pigs have a high motivation to explore and should be provided with an
629 environment of sufficient complexity to allow expression of species-specific
630 exploratory behaviour. All pigs should at all times have access to adequate
631 amounts of materials for investigation and manipulation, including rooting, in
632 order to reduce the risk of behavioural disorders.

633

634 4.2. Enclosures – dimensions and flooring

635 Table G.4. details the minimum space requirement for an animal on the basis
636 of liveweight. Enclosures should be designed to accommodate the highest
637 liveweight that pigs will finally reach in any given circumstance. The number of
638 times an animal needs to be moved to a new enclosure should be minimised.

639

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648

649 **Table G.4. Pigs and Minipigs: Minimum enclosure dimensions and space**
 650 **allowances**

| Liveweight (kg) | Minimum enclosure size* (m ²) | Minimum floor area per animal (m ² /animal) | Minimum lying space per animal (in, thermoneutral conditions) (m ² /animal) |
|----------------------------|-------------------------------------------|--------------------------------------------------------|----------------------------------------------------------------------------------------|
| Up to 5 | | | |
| over 5 to 10 | | | |
| over 10 to 20 | | | |
| over 20 to 30 | | | |
| over 30 to 50 | | | |
| over 50 to 70 | | | |
| over 70 to 100 | | | |
| over 100 to 150 | | | |
| over 150 | | | |
| Adult (conventional) boars | | | |

651 * Pigs may be confined in smaller enclosures for short periods of time, for example
 652 by partitioning the main enclosure using dividers, when justified on veterinary or
 653 experimental grounds, for example where individual food consumption is required.
 654 Where pigs are housed individually or in small groups, greater space allowances
 655 per animal are required than for those in larger groups.

656

657 Pigs should not be tethered at any time, and should not be confined in stalls
 658 or crates except for short periods of time necessary for feeding, insemination,
 659 veterinary or experimental purposes. The accommodation for sows and
 660 piglets should enable the fulfilment of the special behaviour patterns of the
 661 sow before and after parturition, and those of the piglets after birth. Thus,
 662 although the use of farrowing crates can safeguard piglet survival and welfare
 663 under some conditions, the close confinement of sows during the perinatal
 664 and suckling periods should be limited as far as possible and loose housing
 665 systems should be aimed at. The most appropriate flooring material will
 666 depend on the size and weight of the pigs. To facilitate provision of
 667 rooting/nesting substrate, it is desirable to provide a solid floor in the lying
 668 area of the pen. Slatted floors can be of value in facilitating good hygiene, and
 669 when used the slat and void dimensions should be appropriate to the size of
 670 the pig to prevent foot injuries.

671

672 4.3. Feeding

673 Pigs kept for meat production are typically fed *ad libitum* until approaching
 674 maturity, after which restricted feeding practices are necessary to avoid
 675 obesity. Mini-pigs are prone to become obese on conventional pig diets.
 676 Special reduced calorie diets with increased fibre content help to prevent this
 677 problem. Where feed restriction is necessary, pigs will show increased
 678 foraging motivation which can be expressed as increased activity and
 679 aggression, and may precipitate stereotypic oral behaviours. To avoid these
 680 problems it is important to modify diets to enhance satiety, for example by
 681 providing increased dietary fibre in conjunction with an appropriate foraging
 682 substrate such as straw.

683

684 With restricted feeding practices, young growing animals should be fed at
 685 least twice daily, whereas mature animals should be fed once daily, as an
 686 adequate meal size is important for the animal to reach satiety, and will
 687 minimise aggression. Where feeding is restricted, all individuals within the
 688 social group should have access to feed without causing aggression.
 689 Adequate trough space should be provided to ensure that animals can feed
 690 simultaneously. **Recommended requirements are given in Table G.5.** Where
 691 animals are housed singly or in small groups, the minimum trough space
 692 should be that for restricted feeding. When animals are housed in larger
 693 groups and fed *ad libitum*, trough space can be shared and a lower total
 694 space is required.

695

696 **Table G.5. Pigs and minipigs: Minimum feeding trough space allowances**

| Liveweight (kg) | Minimum trough space (cm) (<i>ad-libitum</i> and restricted feeding*) | Minimum trough space per animal on <i>ad-libitum</i> feeding (cm/animal) |
|-----------------|------------------------------------------------------------------------|--------------------------------------------------------------------------|
| up to 10 | | |
| over 10 to 20 | | |
| over 20 to 30 | | |
| over 30 to 50 | | |
| over 50 to 70 | | |
| over 70 to 100 | | |
| over 100 to 150 | | |
| over 150 | | |

697 * Each animal on restricted feeding should be provided with at least the minimum
698 trough space allowance.

699

700 4.4. Watering

701 As pigs are particularly sensitive to the consequences of water deprivation, in
702 cases where they are group-housed, at least two drinking points per unit – or
703 a large bowl allowing more than one pig to drink at the same time – should be
704 provided to prevent dominant animals impeding access to the drinking point.
705 To achieve this, the following drinking space allowances are recommended.

706

707 **Table G.6. Pigs and minipigs: Minimum drinking point allowances**

| Drinker type | No. of pigs per drinking point |
|-------------------------------------------------------------------------------|--------------------------------|
| Nipple or bite drinkers | 10 |
| Large bowl drinkers (which allow at least two pigs to drink at the same time) | 20 |

708

709 Where pigs housed in larger groups are watered from an open trough, the
710 minimum length of trough perimeter with access to water should be that
711 allowing a single pig unimpeded access (as indicated in Table G.5. for
712 restricted feeding space), or 12.5 mm of trough length per pig, whichever is
713 the greater.

714

715 **Table G.7. Pigs and minipigs: minimum drinking water flow rates for**
716 **pigs**

| Type of pig | Minimum water flow rate (ml/min) |
|--------------------|----------------------------------|
| Weaners | |
| Growers | |
| Dry sows and boars | |
| Lactating sows | |

717

718 4.5. Substrate, litter, bedding and nesting material

719 Bedding contributes to pig welfare in many ways. It enhances physical and
720 thermal comfort (except in hot environmental conditions), can be eaten to
721 provide gut fill and enhance satiety, and provides a substrate for foraging and
722 nest-building behaviours. The extent to which each of these different benefits
723 can be provided will depend on the nature of the bedding, with long straw

724 providing the best overall material but alternatives such as chopped straw,
725 sawdust, wood shavings and shredded paper conferring some benefits.
726 Bedding should be non-toxic and, where possible, provide structural diversity
727 to stimulate exploratory behaviour. Bedding should be provided for all pigs,
728 unless precluded for experimental reasons, and is particularly important for
729 farrowing sows, which have a strong motivation to perform nest-building
730 behaviour, and for pigs on restricted feeding regimes, which have a strong
731 motivation to express foraging behaviour.
732

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733 **e. Additional provisions for housing and care of equines, including**
734 **horses, ponies, donkeys and mules**

735

736 **1. Introduction**

737

738 Equines evolved as grazers of open grasslands, and domestic horses and
739 ponies (*Equus caballus*) and donkeys (*Equus asinus*) have retained the
740 behavioural repertoire of their ancestors. In the feral or free-ranging state,
741 equines live in herds separated into small family groups or bands typically
742 comprising one stallion, with several mares, foals and yearlings. The social
743 structure develops as a clearly defined hierarchy, and individual animals
744 within a group often form close pair bonds which it is important to recognise
745 and maintain if possible. Mutual body care is a particularly important element
746 in their social life.

747

748 Unlike ruminants, equines may graze continuously for many hours and under
749 natural conditions they will spend fourteen to sixteen hours daily at this
750 activity. Although their natural food is grass, herbs, and leaves, they are very
751 selective regarding their choice of grass species and which part of the plant to
752 eat. Their normal daily pattern is to graze, move a few steps and graze again.
753 In this way they exercise as well as feed, and can cover long distances in a
754 twenty-four hour period.

755

756 Ideally, management systems for equines should accommodate their natural
757 behaviour, in particular the need to graze, exercise, and socialise. They are
758 flight animals and hence easily startled and this should also be taken into
759 account.

760

761 **2. The environment and its control**

762

763 Rugs can be used in cool conditions, especially if hair has been clipped.
764 Rugs should be removed when horses undergo their daily check.

765

766 The mane and tail of equines provide protection from adverse weather
767 conditions and from flies and should not be removed or cut short. Where
768 manes and tails need to be shortened or tidied this should be achieved by
769 trimming rather than by pulling.

770

771 **3. Health**

772 (See paragraph 3 of the General considerations for farm animals and mini-
773 pigs)

774

775 **4. Housing, enrichment and care**

776

777 4.1. Enclosures – dimensions and flooring

778 Ideally, equines should be kept at pasture or have access to pasture for at
779 least six hours a day. Where equines are kept with minimal or no access to
780 grazing then additional roughage should be provided to extend the time spent
781 feeding and reduce boredom.

782

783 In indoor enclosures, group-housing systems are preferred since these
784 provide opportunities for socialisation and exercise. For horses it is essential
785 that great care is taken to ensure social compatibility of groups

786

787 The total space requirement for indoor enclosures will depend on whether
788 animals also have daily access to additional areas for grazing and/or other
789 forms of exercise. The figures below assume that such additional areas will be
790 provided. If not, then space allowances should be increased significantly.

791

792

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800 **Table G.8. Equines: Minimum enclosure dimensions and space**
 801 **allowances**

| Wither height (m) | Minimum floor area/animal (m ² /animal) | | | Minimum enclosure height (m) |
|-------------------|-------------------------------------------------------------|-----------------------------------------------------|------------------------------|------------------------------|
| | For each animal held singly or in groups of up to 3 animals | For each animal held in groups of 4 or more animals | Foaling box / mare with foal | |
| 1.00 to 1.40 | | 6.0 | 16 | 3.00 |
| over 1.40 to 1.60 | | 9.0 | 20 | 3.00 |
| over 1.60 | | (2 x WH) ² * | 20 | 3.00 |

802

803 * To ensure adequate space is provided, space allowances for each individual animal
 804 should be based on height to withers (WH).

805

806 The shortest side should be a minimum of 1.5 x the wither height of the
 807 animal.

808

809 The height of indoor enclosures should allow animals to rear to their full height
 810 to safeguard the welfare of the animals.

811

812 Slatted floors should not be used for equines.

813

814 4.2. Feeding

815 Incorrect feeding of equines can have very serious welfare implications,
 816 causing illnesses such as colic and laminitis.

817

818 Since they naturally graze for long periods, they should ideally have constant
 819 access to forage in the form of fresh grass, hay, silage or straw. Where they
 820 are not given the opportunity to graze, they should be provided with a suitable
 821 quantity of long fibre/roughage every day. Where possible roughage should
 822 be fed on the ground or in suitably designed round bale feeders. Hay nets and
 823 racks should be designed and positioned to minimise risk of injury.

824

825 If "hard" (concentrate) feed is offered to animals, particularly where the
 826 animals are housed in groups the feeding order should, where possible, follow
 827 the herd order of dominance. Where possible, individuals should be fed

828 separately. If this is not possible feeding points should be spaced at least 2.4
829 m apart and there should be at least one point per animal. Horses fed with
830 concentrates need to be given small amounts of feed frequently.

831

832 4.3. Watering

833 Horses prefer to drink from an open water surface, and this should be
834 provided where possible. If automatic water nipple drinkers are used, animals
835 may need to be trained to use them.

836

837 4.4. Identification

838 Ear tags and tattooing should not be used in equines. If identification other
839 than coat colour is required then transponders should be used. Numbered
840 head-collars and hanging tags for halters have also been used successfully
841 for identification.

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