

AUSTRALIAN PORK LIMITED

Companion Handbook to the Model Code of
Practice for the Welfare of Pigs (3rd ed.)

FIRST EDITION

2010



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PROJECT TITLE:

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Introduction to the Handbook

Purpose of the Handbook

This handbook has been produced by Australian Pork Limited (APL), with the assistance of the APL Animal Welfare Technical Reference Group. The overall purpose is to provide a practical guide for producers, Government regulators and industry stakeholders to interpret and implement pig welfare standards, and good pig welfare practices, on commercial pork production enterprises in Australia.

It also contains references to other useful supporting information and technical references.

The intention of this handbook is not to duplicate other information published on the subject, but rather, clarify how to practically apply this information on-farm.

By following this handbook, producers and industry stakeholders will:

- comply with legal requirements
- apply current knowledge on good practices more effectively in their enterprises
- demonstrate that good practices are being applied.

Two key references used in the development of this handbook include:

- The *Model Code of Practice for the Welfare of Animals: Pigs*. Third Edition. (PISC Report 92), also referred to as the 'Code'.
- The Australian Pork Industry Animal Care Strategy (APL internal publication).

This handbook will be revised and updated periodically, as significant industry developments occur. It will be available electronically on the APL website and also on CD.

How to use the Handbook

Chapter one broadly follows the Code and is designed to provide context and explanatory notes. Therefore, it is recommended to be read in conjunction with the Code.

A copy of the Code is provided with this handbook, and further copies are available from APL or CSIRO Publishing¹.

The section numbering in chapter one is in line with the Code. Where the content relates to specific sections of the Code, a reference to the clause is given in square brackets.

Chapters two, three and four provide supplementary information on stockperson competency, facilities and quality assurance.

¹ <http://www.publish.csiro.au/books/download.cfm?ID=5698>

Principles of Good Animal Care

The overall principles of good animal care are:

Use of an **Animal-centric** Approach to the Management of Pig Welfare

Under this approach, the key requirement is to better understand how pigs perceive their environment, and to manage that environment so the pig's needs are adequately met. From a pig welfare point of view, the provision of the key resources to ensure the comfort and welfare of the animal is more important than other aspects, such as human aesthetics.

Recognition of the Food Industry Context and Animal Domestication

The purpose of commercial pork production is to produce safe, healthy, affordable food for consumers. Pigs have been domesticated by humans, and kept as food animals for many thousands of years. As a consequence, both the characteristics of the animals farmed today, and the modern management systems used, have evolved. With this in mind, the handbook aims to interpret pig welfare requirements for commercial pig production, accordingly.

Recognition that the Role of the Stock-person is the Key for Maintaining and Managing Pig Welfare.

Regardless of the physical environment provided, the stock-person is responsible for the welfare of animals in their care, and needs to have the necessary skills, knowledge and facilities to provide this care.

From an overall management perspective, good facilities are important for running an efficient commercial operation that promotes and maintains a healthy pig living environment.

Recognition of the Role of Quality Systems

There is a wide range of farm systems and production types in the Australian pork industry. Some are small owner-operated units, while others are larger enterprises employing significant numbers of staff, across multiple sites. Quality management principles are required to manage pig welfare well, regardless of the operation's scale. For smaller owner-operated farms, quality management principles are likely to be conducted by the owner-operator, through the day-to-day supervision of the pig sheds. Larger operations rely on more formal administration systems, involving various levels of staff delegation, to conduct quality management principles.

In all cases, the competence of stock-persons, and record keeping, are important. However, on the smaller owner-operated units, demonstration of competency through experience (recognition of prior learning), and results, determines quality pig welfare outcomes. In comparison, on larger units, documented standard operating procedures (SOPs), checklists and records, allow managers to conduct internal audits on their operations, while also providing external auditors with information to make assessments.

Chapter One

Interpreting the Model Code of Practice
for the Welfare of Animals—Pigs



I Introduction

The Science and Practice of Animal Welfare Assessment

See Paragraph 1.4 in the Code

Defining the scope of **animal welfare**, and methods to assess it, are still controversial areas of science. Nonetheless, a common definition that is widely used, and referred to in this handbook, comes from Broom 1986; “*The welfare of an individual is its state as regards its attempts to cope with its environment.*”

Using this definition, welfare can be assessed in terms of how much the animal has to do to cope with a particular environmental imposition. Secondly, the extent to which the animal’s coping attempts are succeeding. Attempts to cope can be described in terms of the functioning of body repair systems, physical responses and behavioural responses. The risks to animal welfare can then be determined from the degree of the response, and the resulting cost of the response to the animal. For example, cost from a physiological stress response may include reduced reproductive function and reduced growth. Whereas, the cost from a behavioural stress response may include abnormal behaviours.

This approach is useful, as the ability of an animal to be healthy, grow and reproduce, are all considered measures of biological fitness and well being. These factors have obvious acute and chronic effects on the welfare of an animal, which can be measured to a large extent by production data. Credibility for this approach is further supported by the use of accepted veterinary and other criteria, related to measures of health, immunology, injuries, mortality, growth and reproduction rates.

If it is accepted that those conditions that create biological dysfunction are the most serious for animals, then it follows that these issues are the most important to be promptly addressed.



Applying the Science On-farm

See Paragraphs 1.1 and 1.4 in the Code

In practice, a combination of methods is incorporated on-farm by the use of two practical methods of pig welfare assessment:

- a. visual observation of pigs (by a competent stock-person)
- b. assessment of records, including performance data.

1.1

The Code states that the basic needs of pigs include:

- readily accessible, appropriate and sufficient food and water, or other wholesome liquid
- adequate shelter to protect from climatic extremes
- opportunity to display appropriate patterns of behaviour
- physical handling in a manner which minimises the likelihood of unreasonable or unnecessary pain or distress
- protection from, and/or rapid diagnosis and correct treatment of injury or disease
- freedom for necessary movement, including to stand, stretch and lie down
- visual and social contact with other pigs.

These are mostly directly measurable parameters, except for “*opportunity to display appropriate patterns of behaviour*” and “*physical handling in a manner which minimises the likelihood of unreasonable or unnecessary pain or distress*”, both of which need further clarification/interpretation on-farm.

In order to ensure these two needs, in particular, are fulfilled, stock-person training needs to cover these key aspects:

- a. Recognition of signs of pain and distress in the pig, as well as an understanding of the difference and how to manage them.
- b. Social behaviour of pigs and, in particular, the dominance hierarchy, including signs of aggression/submission.
- c. How to handle pigs and manage them in ways that avert or minimise fear, pain and distress.

ProHand is a multi-media training resource developed by APL, available from APL or the Animal Welfare Science Centre in Victoria². It is designed to provide people handling pigs with the necessary skills and knowledge in a practically applicable way, and is recommended for all pig handlers.

With regard to handling compromised pigs, a reference is Jackowiak, J. (2000). *A producers guide to on-farm ante-mortem inspection of pigs* (ISBN 0 6427 6003 9). Note that this document is currently under revision and is to be combined with the euthanasia review and guidelines.

² AWSC - awsc-info@unimelb.edu.au, phone (03) 8344 8933

1.4

The Code also refers to **industry standards** for growth, reproductive performance, disease levels, injuries and death rates. While the Australian pork industry does not have *standards*, as such, for these parameters, there are production targets that may be used as benchmarks and guidelines. For example, according to APL's *The Good Health Manual* and *Weaning to Sale Manual*, the target mortalities, over which the farm should develop intervention strategies are:

- % of mortalities in farrowing shed – average-10%
- % of mortalities in weaner shed – average-3%
- % of mortalities in grower shed – average-below 0.5-1.5%
- % of mortalities in finisher shed – average-below 0.5%
- % of transport and lairage deaths – average below 0.1%

References that provide information about production targets include:

- *The Good Health Manual* (APL)
- *Weaning to Sale Manual* (APL)
- The APL *Measure to Manage* program, which breaks down the production process into four profit centres. For example, breeder, weaner, grower and feed milling sheds, allowing managers and operating staff to rapidly identify weaknesses in their systems.

Contact the APL Library for more information about these resources.
Phone: 1800 789 099 (Toll free).

2 Competence of the Stock-person

Use Task Lists to Make Sure the Stock-person Carries out Key Maintenance Tasks Daily

See Standard 2.1 in the Code

Simple task lists, that are checked off by staff and audited by supervisors, are recommended as a useful means for ensuring key tasks, essential for maintaining the welfare of pigs, as well as other operational requirements, are covered on a daily basis, especially on larger units.

Stock-person must be suitably qualified

See Standard 2.2 in the Code

Establishing competency levels may be undertaken in a range of ways, which are covered later in this Handbook [*See chapter three*].

From March 2011, in each state, a producer must ensure that a stock-person is:

- a suitably qualified person, or
- acting under the supervision of a suitably qualified person.

The industry defines a **competent stock-person** as a person who:

- is a veterinary practitioner, or
- holds a Certificate III in Agriculture (Pig Production), or an equivalent qualification, or
- has been assessed by a Registered Training Organisation, either through formal training or Recognition of Prior Learning (RPL), to have successfully completed units of competence in at least the following areas:
 - move and handle pigs
 - care for the health and welfare of pigs
 - comply with industry animal welfare requirements
 - administer medication to livestock
 - comply with enterprise quality assurance requirements
 - note that the skill set includes an additional unit 'Contribute to OHS Processes'. APL also recommends that at least one stock-person on each property complete the unit 'Euthanase Livestock', but this is not part of the skill set.

- has for a period of at least 12 months, cared for pigs in a commercial pig establishment³, and had on-the-job training and experience in at least the following areas:
 - moving and handling pigs
 - inspecting and assessing the health and well-being of pigs
 - carrying out vaccinations, health treatments and elective husbandry procedures
 - humane destruction of pigs suffering an incurable disease, untreatable injury or painful deformity
 - maintaining records of inspections and assessments of pigs.

The industry defines **direct supervision** to be where a suitably qualified person (supervisor):

- provides instructions and guidance to the supervised person, in relation to the subject activity
- oversees and evaluates the performance of the subject activity by the supervised person, including conducting regular personal progress checks on the performance of the supervised person
- is on the same premises (building) as the supervised person while the subject activity is being undertaken
- is able to render assistance immediately to the supervised person, if required, at any time during which the subject activity is being undertaken.

For smaller owner-operated units, competency of the operator may be demonstrated through RPL, by external assessment, through an approved industry assessor. Such assessment would include reviewing the résumé or *curriculum vitae* (portfolio of relevant experiences) of the operator; records (if available) of production targets achieved, as well as oral and practical demonstration of knowledge and skills.

This requirement is intended to be enforceable under state and territory legislation from 1st March 2011.

Give the Stock-person Both Theoretical and Practical Formal Instruction


See Standard 2.3 in the Code

Instructing personnel on how their actions may affect a pig's welfare, should include both theory and practice. This instruction could be undertaken through completion of the pig industry animal welfare stock-person skill set.

The industry defines **appropriately instructed** as meaning there has been formal (in-house or external) training and records kept as evidence of the training undertaken.

Personnel undergoing training are to be directly supervised by an **experienced**

³ Note that South Australian regulations add that the farm needs to be accredited to an approved quality assurance program.



supervisor. The industry defines an **experienced supervisor** as a person who has completed a Certificate III in Agriculture (Pig Production), or equivalent level of qualification, and has experience in managing staff.

Provide Ongoing Training for the Stock-person

See Recommended Practice 2.4 in the Code

After initial training and a competence assessment has been conducted, regular (in-service) training and skills/knowledge updates may be conducted by attending relevant industry seminars (such as the APL Roadshows, Pork CRC seminars and workshops run by State Farming Organisations), or training courses and/or membership of professional societies. These should be documented by the producer as evidence of training and skills updates.

3 Food and water

See Standards 3.1.1–3.1.5 and 3.2.1–3.2.3 in the Code

3.1 Food

Understand Pig Social Behaviour to Manage Persistent Bullying Effectively

See Standard 3.1.2 in the Code

The recommended remedial action for persistent bullying/aggression is to remove the pig from its environment and put it in an environment where it can no longer be bullied, for example, an individual stall/pen or with compatible herd mates. An understanding of how to manage this problem effectively relies on the stock-person's knowledge of pig social behaviour, which is a core competency for stock-person training.

Check Automatic Feeders Daily

See Standard 3.1.3 in the Code

Correct operation of automated feeding systems relies on following the specifications provided by the supplier, in relation to number of pigs to be serviced by each feeder, form of the feed to be put through the feeder and technical functioning. The APL *Weaning to Sale Manual* contains useful information on feeder space required for grower pigs.

Automated feeding equipment may require technical assessment by a person competent to do so, if pigs are not thriving, there is no other obvious cause and feed rations do not appear to be delivered in quantities that would be reasonably expected.

Recognise Poor Body Condition in Pigs and Take Action

See Standard 3.1.5 in the Code

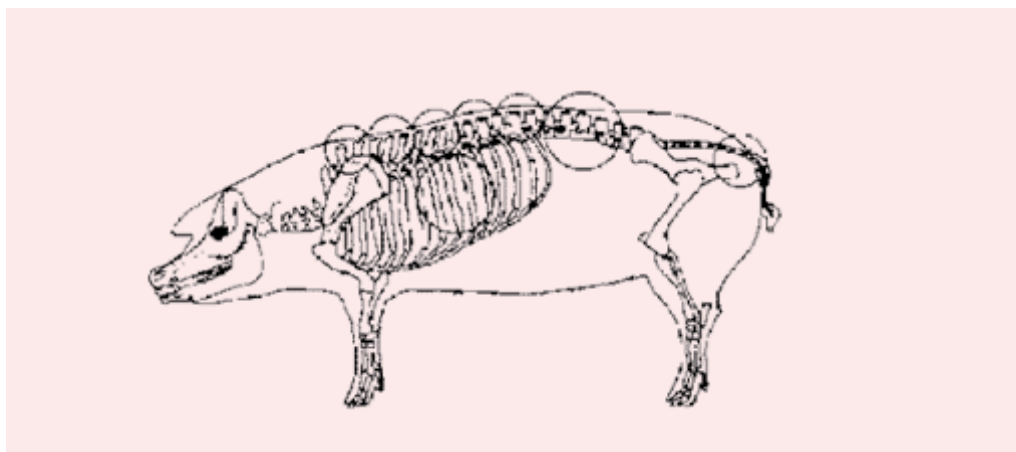
Remedial action recommended where poor body condition score occurs, would constitute some, or all, of the following steps:

- a. Examine pigs for any signs of illness or disease.
- b. Institute treatment where required, or seek the advice of a veterinarian.
- c. If individual pigs are affected in the herd, remove to single accommodation (or isolation if needed) and give extra feed.
- d. If generalised, examine, diagnose and correct health status/management/feeding of the herd.
- e. If no response to these steps, seek advice from a suitably qualified adviser.

It is recommended that farms have standard operating procedures (SOPs), outlining condition scoring and the remedial actions to be taken when condition scores are sub-optima. General recommendations for feeding sows can be obtained from several sources, including universities, private nutritional consultants, feed industry representatives and veterinarians. However, because individual operations vary in terms of animal genetics, environmental conditions and management, these general recommendations may not be adequate. Therefore, it is important to monitor sows on individual farms to determine the adequacy of current feeding management practices.

The Code outlines a condition scoring system for pigs. Body condition scores primarily relate to breeders. Other pigs tend to be referred to as showing signs of ill-thrift or fall-backs, poor-doers or even runts. A scale from 0 (emaciated) to 5 (grossly fat) is used in the scoring system, which combines both visual appraisal and feel. Visual appraisal alone is not good enough; handling the sow is essential to get an accurate assessment of its condition.

Figure 1. Condition scoring locations.



A critical element of successful pig reproduction is managing sows so they do not gain or lose too much body condition between parities. Figure 1 shows the various locations on the sow's body where condition is assessed. Condition scores are manually/visually assessed as follows:

1. shoulders, individual ribs, hips and backbone are visually apparent
2. shoulders, ribs, hips and backbone are quite easily felt when pressure is applied with the palm of the hand
3. shoulders, ribs, hips and backbone can only be felt when pressure is applied
4. shoulders, ribs, hips and backbone cannot be felt, even when pressure is applied
5. fat deposits are clearly visible.

Other considerations are:

- half scores may be used for mid ranges
- avoid variation and extremes. Ideally sows should enter farrowing with a body condition score of 3 to 3.5, and complete a 4-week lactation scoring 3 to 2.5 as a minimum

- very thin sows may not come into oestrus promptly post-weaning, or may not be able to maintain the pregnancy, support adequate foetal development or be able to consume enough feed for a good lactation yield
- excessively fat sows may have farrowing and leg problems, produce small litters, have low feed intakes during lactation and wean lighter litters
- if there is a wide range of body condition within the breeding herd, or significant numbers of sows in either of the extreme categories, a whole-herd review of the nutrition, management and health programmes is required.

Useful references include:

- QLD DPI fact sheet on Sow Condition Scoring [web reference: www.dpi.qld.gov.au/cps/rde/dpi/hs.xml/27_11718_ENA_HTML.htm]
- Assessing Sow Body Condition By Richard D. Coffey, Extension Swine Specialist; Gary R. Parker, Extension Swine Specialist; and Kevin M. Laurent, Extension Associate, University of Kentucky. [web reference: www.thepigsite.com/articles/?Display=275]

The Good Health Manual is a useful reference, as it provides very good descriptions of various common ailments and diseases. The updated *Care of the Compromised Pig* handbook is also a useful reference.

Provide Food that is Fresh, Palatable, and Unspoilt

See Recommended Practice 3.1.7 in the Code

Feed quality for producers using formulated feeds, generally relies on commercial feed mills being accountable, through contractual arrangements with mills, to ensure wholesomeness and correct formulation of feeds. Palatability of rations and spoilage issues, however, need to be considered within the scope of farm management systems in these situations. Palatability issues will reduce voluntary intakes of feeds. Typical voluntary intakes for different classes of pig are summarised in the *Weaning to Sale* manual.

All feed mills provide samples of mixes that are delivered to farm. These samples should be kept in proper conditions for six months, in case something unusual is observed with the pigs or with subsequent meat or offal after slaughter.

With home mixing, there are many more variables to consider. Standard operating procedures (SOPs) should be put in place for milling and mixing, based on the manufacturer's specifications for the equipment. Staff must be trained in this task, and ration formulation advice should be sought from a suitably qualified nutritionist. Testing of feed ingredients should be undertaken, such as the moisture content in grain. Proprietary mineral premixes, and/or any other additives, should only be used according to the manufacturer's specifications. Purchase of raw ingredients should occur from reputable merchants, and the feedstuffs must have been prepared under, or should be provided with, a quality assurance program.

In all cases, silos for storage of feeds, or feed ingredients, need to be well-maintained and checked regularly for water leaks and the presence of vermin that can cause spoilage. Silos should be emptied and cleaned on a regular basis, to prevent stale feed build up.

Have an Alternative for Obtaining and Delivering Food

See Recommended Practice 3.1.8 in the Code

Contingency plans for feed supply, in the event of equipment failure or delayed deliveries, should also be covered in farm SOPs.

Consult a Nutritionist to Help Meet Appetite Requirements for Boars, Pregnant Sows, and Dry Sows

See Recommended Practice 3.1.9 in the Code

The Code contains a recommendation that boars and pregnant sows should be given some bulky or high fibre feed to satisfy appetite. Feed provided for dry sows needs to satisfy appetite without causing the sow to become over-fat. A qualified nutritionist should be consulted on how to meet these requirements.

Use Condition Scoring as Only a Guide for Assessing Animal Welfare

See Recommended Practice 3.1.10 in the Code

Condition scoring of sows in and out of farrowing accommodation, needs to be backed up/cross referenced with reproductive data, especially the weaning to service interval, to establish if feeding levels are appropriate.

Use Weight-for-age and the Pig's General State of Health to Assess Whether Nutrition is Adequate

See Recommended Practice 3.1.11 in the Code

A chart showing weight-for-age guidelines for grower pigs is included in the *Weaning to Sale Manual*.

3.2 Water

Water, or another wholesome liquid, provided to pigs should be palatable and at a temperature that does not inhibit drinking.

Comments regarding operation of feeding systems, persistent bullying causing deprivation of feed and the need for contingency plans in the event of supply failures, apply equally to water systems.

Provide Enough Water for Different Classes of Pig

See Recommended Practice 3.1.9 in the Code

A reliable water source is essential for livestock to drink, and for cleaning. For pigs to drink and for wash-down purposes, you are likely to need a minimum of 75 L per sow a day for baconer production. However actual usage can be double this, and additional storage is desirable in case of pump failure. Some sub-artesian water may

be unsuitable for pigs, due to high levels of minerals. Analyse the water to determine its suitability before use.

The APL Weaning to Sale Manual provides useful reference information on drinker allocation, design, position and flow rates for growing pigs. Other useful references include:

- Pig Research & Development Corporation Report – “Water Supply To Pigs” DV172/1497 by Dr Ray King (available from APL). “How much water do pigs need?”
- Glen W. Almond, web reference - www.ncsu.edu/project/swine_extension/healthyhogs/book1995/almond.htm;
- and the pig site - www.thepigsite.com/pighealth/article/65/water

Test Whether Water is Suitable for Pigs

See Guideline 3.2.6 in the Code

Water supplies should be monitored periodically to confirm suitability. In times of drought, water tables can become very low, allowing ingress from other water tables, or salinity, to occur in previously tested sources. For information on recommended limits, see Pig Research & Development Corporation Report – ‘Water Supply To Pigs’ DV172/1497 by Dr Ray King (available from APL).

4 Accommodation

'**Expert advice**' on housing design, or redesign, may be sourced from (but not limited to) a combination of:

- a. experienced pig operators – to advise on practical aspects
- b. veterinarians – to advise on animal health and welfare
- c. engineers – to advise on technical design and building regulations compliance
- d. farm management consultants - to advise on management systems and productivity aspects
- e. environmental engineers - to advise on eco-footprint of the building.

There is likely to be some overlap between these roles. However, it is strongly recommended that comprehensive advice from a holistic perspective is obtained before committing to new building projects in the current industry environment. Such projects need to consider upcoming regulatory changes (such as the mandated reduction in use of sow gestation stalls to no more than six weeks of gestation, effective April 2017), as well as new technologies available to reduce building and operation costs, and improving animal welfare and productivity.

A useful reference on this topic is *Australian Pig Housing Series, Plan-it-Build-It*. Taylor, Kruger, Ferrier.

4.1 Accommodation Systems

Make Sure Accommodation Protects Pigs from Disease and Sociological Stress

See Standard 4.1.1 in the Code

The Code states “*accommodation for pigs must be designed, constructed and managed in such a way that it protects pigs from adverse weather, injuries or **other harm**.*” The industry considers **other harm** to include disease and/or sociological stress, such as bullying by herd mates, or predation from birds of prey, foxes or feral pigs in outdoor systems.

Key features of building design to address disease issues are flooring, drainage, ventilation (including the ability to improvise emergency ventilation rapidly, should automatic equipment fail, or in the event of a power failure), and ability to be easily cleaned to maintain hygiene.

Key features to manage sociological stress factors, and facilitate quiet stress-free handling of pigs throughout the facility, include pen design, building layout, width of races, steepness and surfaces of ramps, the amount of space provided and location/ layout of feed and water systems.

A useful reference on this topic is Taylor, G, Kruger, I, Ferrier, M 1994, *Australian Pig housing Series: Plan it Build It*, NSW Agriculture, Tamworth. (ISBN 0 7305 6740 0).

4.2 Space Allowances for Pigs

Dimensions for New Gestation Stalls

The Code requires that all new sow gestation stall installations are 0.6 m wide and 2.2 m in length. The extra length in stall dimensions set by the Code was originally proposed to allow a standing sow to take a step forward or backward, in relation to her nearby herd-mates, thereby averting the negative behavioural stress caused by frustrated dominance/submission interactions.

All stall measurements quoted are internal measurements.

There is scientific evidence to support the use of this stall size. A study conducted by John Barnett at the Animal Welfare Science Centre, compared sow welfare in stalls of different sizes, and made observations about welfare based on physiological stress responses. The study examined stalls of lengths 2.0 m, 2.2 m, and 2.4 m, and widths of 0.6 m and 0.75 m. It was concluded that stalls 0.6 x 2.2 m in size improved sow welfare.

Placement of Feed and Water Facilities and Stall Dimensions

See Standard 4.1.3 in the Code

For existing stalls, the stall must be the appropriate size for the sow, meaning that:

“Sows and boars accommodated individually in stalls must be able to stand, get up and lie down without being obstructed by the bars and fittings of the stall, lie with limbs extended, to stretch and to be able to freely undertake such movements”.

There has been some confusion as to whether feeders are considered to cause *obstruction* to the sow, and whether the placement of feeders within stalls affects the dimensions required for new stalls under the Code.

Appendix 3 of the Code advises that “*Pen fixtures such as feeders and waters can be included in this space for stalls and crates as long as they do not impede movement or cause injury*”.

APL advises that in general:

1. If the stall is 2200 mm long, as per the regulations for new stalls, a feeder of up to 150 mm in height can be placed inside the stall length, provided the edge of the feeder trough is flat or at least smooth, and will not injure the sow.
2. A feeder trough fully recessed into the floor can be positioned inside the measured length of the stall, regardless of the length of the stall. However, for larger sows in particular, producers should consider sow comfort when making judgment.
3. A trough with a broad flat edge, that is no more than 100 mm above floor level, should be satisfactory in a 2000 mm or longer stall.

4. In a situation where a hopper-type feeder is hung inside the front gate or bars of a stall, the length of the feeder may need to be added to the internal dimensions of the stall, if the stall is less than 2100-2200 mm long, and is used to house mature sows.

Producers should base final judgements on observing what the sow can comfortably do in the stall. The sow should be able to lie down comfortably in the stall without being forced to rest with her head actually in the trough, or at an uncomfortable angle.

Refer to chapter three - *Facilities*, for further information on sow housing.

Designing or Redesigning Pig Accommodation

See Standard 4.1.2 in the Code

Minimum space requirements for different types of pig accommodation are specified in Appendix III of the Code. As there is an interaction between group sizes, pen designs, flooring type and feeding systems used with the optimum amount of space required per pig, it is important to consider all these factors when designing, or redesigning, pig accommodation. The publication *'Plan It, Build It'* Taylor et al., provides a useful guide for indoor accommodation, as does the *Pig Housing Plans; Selected Reference Drawings* - DPI. 2nd ed. (84). Helpful information may also be found in tech notes issued by the Queensland Department of Primary Industries [web reference: www.dpi.qld.gov.au/pigs/] and/or occasional publications on the subject published by other state agriculture departments.

Ensure 'Fit' for Pigs Accommodated Individually

See Standard 4.1.3 in the Code

The Code introduces criteria for assessment of sow 'fit' within her gestation stall or farrowing crate, which provides a degree of flexibility for producers in what size stalls are used, but must be adhered to at all times.

Specifically, the 'fit' criteria states that:

- Pigs must be able to stand up at rest in a stall, without simultaneously touching both sides.
- Their snout and hindquarters must not simultaneously touch both ends of the stall.
- If the stall has bars along the top, they must not touch the animals back when standing at rest, or when their heads are down feeding.
- In practical terms, this allows producers to continue using existing smaller stalls for smaller sows for the rest of the stalls useful life. However, in some cases, producers may need to build larger stalls to accommodate larger sows.

Consider Carefully the Design of Gestation Stalls and Farrowing Crates

See Standard 4.1.4 in the Code

Design features for gestation stalls and farrowing crates are of particular importance to achieve the pig welfare outcome requirements stated in the Code. The references noted above include information on these topics.

Do Not Confine a Sow in a Gestation Stall for More than Six Weeks (from April 2017)

See Standard 4.1.5 in the Code

The Code states that sows must not be confined in gestation stalls for more than six weeks of gestation, from April 2017 onwards, unless in exceptional circumstances, such as individual sows being under veterinary advice or **special care by a competent stock-person**. The industry considers this would be a situation where it is seen as beneficial for the sow's treatment, for her to be isolated in a stall. Confinement may be beneficial where protection from aggression from herd mates is required, or where reduced physical activity is seen as essential, or conducive, to a faster recovery, and has been advised by a veterinarian or recorded as *special care* with supporting rationale by a competent stock-person. A **competent stock-person**, in this context, would be considered to be a person with appropriate qualifications and/or experience as outlined in chapter two.

Set On-farm Targets for Minimising Piglet Deaths and Injuries

See Standard 4.1.6 in the Code

Farrowing crates have a primary purpose of minimising piglet deaths and injuries. However, there will always be some piglet mortalities, even in the best managed environments. A useful reference includes:

- Swine reproduction papers – piglet losses. <http://www.livestocktrail.uiuc.edu/swinerepronet/paperDisplay.cfm?ContentID=6266>

Provide Additional Care if a Sow Needs to Stay Longer than Normal in a Farrowing Crate

See Standard 4.1.7 in the Code

The Code states that sows must not be confined in farrowing crates for more than six weeks in any one reproductive cycle, except in an emergency. For example, where a sow is required to foster a second litter after her own piglets are weaned. In such a situation, the stock-person must provide **additional care** to the sow.

The industry considers that such **additional care** would include providing *ad libitum* (adlib) access to feed and water, as well as regular monitoring of the sow's health and body condition.

Manage Aggression in Boars that are Run in Groups

See Standard 4.1.10 in the Code

The Code states that “boars run in groups must be monitored daily and managed to ensure that subordinate boars are not seriously injured or subjected to persistent aggression by other boars.” Aggression in boars typically starts to become problematic when they approach 100 kg live weight. Where boars over this weight are run together, piggeries must have a SOP to ensure appropriate caution is taken at all times. Mature boars are only run as a group on outdoor farms that have a dynamic mating system, such as when running a team of boars. These boars have been mixed as a group from a young age. You cannot mix previously unfamiliar mature boars together, because they fight, sometimes to the death.

It is important to note the occupational health and safety aspects as well, as mature boars can not only injure each other seriously, but they can also be dangerous to the stock-person trying to intervene. If boars in a shed environment are fighting, use a stream of water from a high-pressure cleaning hose (not a pressure cleaner) on them to cool them down and separate them. They lose interest after a while and readily separate. A useful reference on this subject is ‘Effects of fattening boars in mixed or single sex groups and split marketing on pig welfare’. **Authors:** Boyle, L.A.; Björklund, L. **Source:** Animal Welfare, Volume 16, Number 2, May 2007, pp. 259-262(4) **Publisher:** Universities Federation for Animal Welfare.

Seek Professional advice to Manage Aggression in Pigs that are Housed in Groups

See Guideline 4.1.14 in the Code

Section 4.1.14 of the Code outlines guidelines for the management of group housed pigs if aggression problems arise. These guidelines also refer to the need to seek advice of **qualified advisers** in these situations. The industry considers that such advisers would include senior piggery personnel with appropriate proven competencies in this area, along with veterinarians and/or experienced pig husbandry consultants, if and when required. The mix of approaches best used in any given situation, needs to be tailored to the specific farm environment and the nature of the problem being managed, rather than based on any particular formula or regime.

Ensure Flooring is Suitable

See Guideline 4.1.15 in the Code

Section 4.1.15 of the Code provides desired outcomes for flooring in pig accommodation: “floors should be installed and maintained in a way that minimises slipping and the risk of injury and allows pigs to stand normally.”

Suitable flooring, therefore, would provide a suitable surface for pigs to stand, stretch and lie down, as well as undertake other necessary movement, while at the same time, providing for drainage of effluent and have a non-slip surface. Careful attention needs

to be paid to the width of slats in slatted flooring, and gaps between them, as well as the materials used, in order to achieve the desired outcomes for pig welfare.

Useful references on this topic include Australian Pig Housing Series, *Plan-it-Build it*.

Use Materials that can Easily be Cleaned and Disinfected

See Guideline 4.1.16 in the Code

Solid surfaces that pigs have access to should be made of materials that can be readily cleaned and disinfected. This effectively precludes the use of earthen floors in indoor pens or shelters, unless part of a deep litter environment.

Replace or Refresh Litter if Using a Deep Litter System

See Guideline 4.1.17 in the Code

In deep litter systems, good management of the litter substrate used is very important to avoid pig health problems.

Provide Straw or Other Suitable Material in Housing

See Guideline 4.1.18 in the Code

Incorporation of straw, or other manipulable materials, into other types of pig housing is also suggested in the Code as a way of improving pig welfare, provided this is compatible with drainage, hygiene requirements and climatic conditions.

Make Sure Gilts and Sows are Not Injured in Mixed Groups

See Guideline 4.1.19 in the Code

Section 4.1.19 of the Code suggests the keeping of boars with groups of gilts or sows provided **excessive unwanted mounting behaviours** do not occur. This raises the question, when is such behaviour, generally considered normal in mixed sex groups, considered to be **excessive**? In the view of industry, that would be where physical injuries are being caused to the gilts or sows being mounted, or constant attention of an individual sow or gilt, that may prevent adequate access to ad lib feed and water.

4.3 Equipment

See Section 4.2 in the Code

Section 4.2 of the Code outlines standards for mechanical equipment essential to provide the basic feed, water and environmental needs of pigs in pig sheds. In general, these requirements will be met when the following aspects of management are undertaken:

- a. competent installation and related facilities design
- b. equipment used is in compliance with manufacturers' specifications

- c. staff are competent to inspect, test and operate equipment
- d. standard operating procedures are developed
- e. scheduled maintenance plans are developed
- f. testing and tagging of electrical equipment, as per state requirements
- g. daily/weekly/monthly checklists are used to ensure key operational and maintenance tasks are carried out
- h. technical assessment exercises are carried out on key equipment where required to determine its functional status
- i. contingency plans are in place for equipment breakdowns.

A useful reference on pig housing environments and management of related equipment problems, is the Australian Pig Housing Series *Plan-it-Build it*.

Larger pig units may employ specialist staff to maintain and/or operate equipment. However, on smaller owner-operated units, operation and maintenance of equipment may be a core competency for the stock-person, with outsourced technical support as required.

APL's industry quality assurance scheme, APIQ[✓]™, contains guidelines on standard operating procedures (SOPs) for pig equipment.

4.4 Environment

A competent stock-person must be able to assess pig's thermal comfort levels from observation of pig behaviour.

Keep Records of the Temperature in Sheds

See Recommended Practice 4.3.4 in the Code

Minimum/maximum thermometers are recommended to be placed in sheds, as close as practical to pig level. Records should be kept of the temperatures, noting date and placement of the thermometer. These records can then be used to adjust temperature control mechanisms to accommodate seasonal variations. The records should also be documented for audit and verification purposes.

Provide Extra Protection Against Cold for Suckling Piglets and Weaners

See Recommended Practice 4.3.5 in the Code

Pigs, except when very young, can tolerate a wide range of ambient temperatures. However, optimum comfort ranges are outlined in Appendix IV of the Code. Bedding, insulation and/or supplementary heating, should be provided for suckling piglets and weaners, where necessary, to protect against chilling, especially for piglets under three weeks of age.

Look for Signs of Heat Stress or Heat Stroke

See Recommended Practices 4.3.6 and 4.3.7 in the Code

The Code outlines steps to be taken in very hot weather to avoid heat stress or heat stroke occurring. This is particularly important as pigs have no sweat glands, and have limited ability to cool themselves in very hot conditions. Several methods are suggested for cooling pigs.

A useful reference is *Australian Pig Housing Series 'Summer Cooling'* Kruger, Taylor, Crosling. NSW Agriculture.

It is recommended that advice is sought from a veterinarian, or experienced pig consultant, about the options and best method to use in a particular farm situation. The most important thing from a management point of view is not the method, but that the actions are documented and achieve the right result.

Ensure there is Enough Fresh Air in Pig Housing

See Guideline 4.3.10 in the Code

The Code lists guideline levels for common air pollutants in pig housing. Generally, measurement for pollutants on a daily basis will rely on the stock-person's visual assessment and sense of smell. If a building is comfortable for people to work in, it will generally be suitable for the pigs.

However, design features are critical to achieving this, particularly ventilation systems, drainage systems, feeding systems and bedding/flooring. A build up of ammonia levels is the main risk in fully enclosed housing, especially on cold days when airflows may be reduced to keep temperatures up, and effluent is held in storage under slatted floors. Drager tubes are available to test ammonia levels where problems are being experienced, which may manifest in increased levels of pig respiratory disease.

4.5 Protection

Ensure Pig Housing is Protected From Fire

See Standard 4.4.1 in the Code

Fire protection for pig buildings is very important for risk management. As this is a specialist area, and also subject to state fire regulations, it is recommended that producers contact their local fire authority in their area and arrange for a site visit. Authorities will point out all regulatory obligations needed for the site, such as:

- fire extinguishers, hoses, etc
- fire escapes and exits
- fire alarms
- fire breaks
- documented *Fire Policy*, including evacuation strategy.

Emphasis should always be on being **PRO-ACTIVE**. The more proactive producers are, the less reactive they will need to be.

Owners should always strive to keep electrical wiring in a state of good repair.

A standard operating procedure (SOP), depicting steps needed when welding out in the open or in *high-risk* areas, such as shelters, should be readily available.

4.6 Special Considerations for Deep Litter Shelters

- Ensure straw storage is kept at a safe distance from the shelters. A distance of 20 metres is recommended.
- Straw stacks should not be built up too large, and a buffer distance between the stacks of 20 metres is recommended.
- A *No Smoking* policy must be in place and policed.
- Used bedding should not be stockpiled into large piles. Large stockpiles have a tendency to self combust in warmer weather.

Note: If heaps are stored as they are tipped off the truck and not enlarged, the risk of self combustion is minimal.

- It is the responsibility of the owner to ensure all welfare obligations and regulations (OHS) are met.

4.7 Waste Control

Ensure Pigs Have a Clean Area to Lie On

See Standard 4.5.1 in the Code

The Code states “*faeces and urine must not be permitted to accumulate to the stage where there is no **clean area** for pigs to lie down*”. Such a **clean area** would be an area free of urine and faeces, as well as generally dry, except in very hot conditions where pigs may prefer to lie on wet surfaces to aid cooling. Stock-people must ensure that reasonable steps are taken to avoid a build up of faeces and urine in the pig’s housing.

4.8 Pigs Kept Outdoors

Provide Shelter and Shade for Pigs Kept Outdoors

See Standard 4.6.1 in the Code

Pigs kept outdoors, except the very young, can tolerate a wide range of climates and environments, provided they have access to shelter from cold wet weather and shade to protect from hot sun.

Ensure the Land is Suitable if Keeping Pigs Outdoors

See Recommended Practice 4.6.6 in the Code

In regions with high summer temperatures, risk management measures are needed to prevent heat stress. This may include provisions for wallows or water sprinklers.

Suitability of land for outdoor pig-raising is very important, however, free draining soil types are preferred. Environmental and local body planning regulations also need to be taken into account, as these regulations place limitations on possible sites for outdoor pig units.

Choose Breeds of Pigs Suitable for Keeping Outdoors and Have a Herd Health Program

See Recommended Practice 4.6.7 and Guideline 4.6.8 in the Code

Choice of pig breed, pasture rotation and spelling and internal parasite control programs are all important specialised areas for consideration in outdoor pig production.

Useful references on this subject are:

- *An Introductory Manual for Outdoor Pig Production* by S.Macgugan and V.A.Fahy.
- *Pig raising outdoors in Australia: extensive controlled pig production* by Tony Gazia; Farming Solutions Publications, 2006 [Pamela O'Connor; photography Sandra Gazia].

5 Husbandry

5.1 Inspections

Inspect pigs at least once a day

See Minimum Standard 5.1.1 in the Code

The Code states “pigs must be inspected at least once each day by a **competent stock-person**”. In this context, the industry defines a **competent stock-person** as a person with appropriate qualifications and/or experience, as outlined in Section 2.0.

Recognise Early Signs of Distress or Disease and Seek Professional Advice

See Recommended Practice 5.1.3 in the Code

Recognition of early signs of distress or disease is a core competency for a stock-person. At supervisor level, the ability to take effective action is also important. A minimum competence level for those inspecting pigs would be to be able to identify problems and seek advice.

5.2 Health

Recognise Unusual or Distressing Behaviour

See Recommended Practice 5.1.4 and Standard 5.2.1 in the Code

Behavioural vices should also be identified by those inspecting the pigs. The industry considers a **behavioural vice** as behaviour that is not part of the normal everyday habits of pigs and is distressing or destructive to the pig performing the behaviour and/or its herd mates.

Examples of behavioural vices that may be seen in pig herds include:

- a. ear, flank or tail biting
- b. vulva biting
- c. excessive mounting
- d. ‘stereotypies’.

Of these, stereotypical behaviour is a somewhat controversial subject. Stereotypies are characterised as **movements or behaviours that are abnormal, repetitive, and seemingly have no function or goal**⁴. Such behaviours are considered by many animal welfare commentators to be an indication of poor management of the pigs. However, in practice, it can be difficult to determine whether a particular behaviour is a welfare problem that needs management attention, or simply a relatively harmless way of pigs adapting to their environment. If unsure, expert advice should be sought.

4 Anon. (2006) An HSUS Report: Welfare Issues with Gestation Crates for Pregnant Sows. The Humane Society of the United States

Seek Help From a Professional About Unusual or Distressing Behaviour

See Recommended Practice 5.2.11 in the Code

A suitably qualified adviser to consult on behavioural vices would be a veterinarian or professional pig consultant.

Other professionals may also need to be consulted as part of developing a solution, for example, a nutritionist or agricultural engineer. A useful reference in this area is *The Good Health Manual*.

Take Special Care During Weaning

See Standard 5.2.2 in the Code

A particularly stressful time for the pig during the production cycle is weaning. This is a time when both sow and piglets need special care and attention. Useful references on this subject include:

- *Weaning to Sale Manual*
- *Farrowing Manual*
- *Basic pig husbandry - the weaner*. <http://www.dpi.nsw.gov.au/agriculture/livestock/pigs/husbandry/basic-pig-husbandry-weaner>

Use a Herd Health Program to Manage the Risk of Disease

See Standard 5.2.7 in the Code

The Code states that all piggeries must have a herd health program in place (and be able to be cited, and be available for audit, by the appropriate state authorities) – to manage the risk of disease.

Such programs need to be tailored to the particular management situation. Therefore, it is recommended that, as a minimum, all piggery operators should discuss the disease risks likely to be faced in their particular operation with a pig veterinarian, and apply risk management measures accordingly.

A useful reference on this subject is:

- *Herd Health Checklist* available from the APL website and the NSW Industry and Investment website.⁵

Make Sure a Competant Person Administers Vaccinations and Other Health Treatments

See Standard 5.2.9 in the Code

The Code states “vaccinations and other health treatments must be administered to pigs only by persons **competent** in such procedures or by persons under the direct supervision of

⁵ Under development – expected to be operational June 2010

a person **experienced** in conducting the procedure”. The industry considers that in this context, **experienced** has the same meaning as **competent**.

Keep Records of Animal Health

See Recommended Practice 5.2.10 in the Code

Animal health records should include time/date of treatment, the withholding period (WHP) and/or export slaughter interval (ESI) and/or date of euthanasia, including a euthanasia action plan, as well as details of diagnosis, treatments given and the name of the person giving the treatment. These records should be available at any time for audit, if and when required. Sample templates for weaners, growers and finishers are available in Appendix 3.

Dispose of Dead Pigs Appropriately

See Guideline 5.2.14 in the Code

Methods of carcase disposal for dead pigs are important to ensure disease risks are contained and local environmental regulations are met. A useful reference on this subject is *APL's Carcase Management Guidelines, Section 15 National Environmental Guidelines for Piggeries, 2010*.

Farrowing and Weaning

Check Whether Piglets are Receiving Adequate Nutrition Within 24 Hours of Birth

See Standards 5.3.1 and 5.3.2 in the Code

Inadequate nutrition of piglets and/or lack of colostrum are most likely going to be evident in excessive piglet mortalities and/or piglets that are drawn and emaciated in appearance.

Foster sows nurse piglets that are not their own. The main reason to foster is to improve a piglet's chances of getting adequate nourishment and thriving. Fostering works better when carried out earlier during lactation, rather than later. As soon as a piglet starts losing weight, find him a new teat. Don't move a bigger pig from the same litter, hoping that decreased competition will give the smaller pig a better chance. The pig losing condition needs a new mother.

The main types of fostering used are to even up litter sizes, split suckle between litters, cross foster between litters or back fostering, or down line fostering, to create an empty sow. Some fostering techniques should not be used if the herd is weaning at less than 21 days of age. For this reason, each producer should work out a system that provides the best results, and most closely suits their farm situation, in discussion with their veterinarian or farm consultant.

Examples of fostering techniques are:

- a. **To even up litter sizes** – for example, where two sows farrow with 13 and seven piglets respectively. As long as both sows have 10 functional teats, move three pigs from the litter with 13 pigs, and place with the litter of seven piglets.
- b. **Split suckling** - this technique can be used when a sow has had a large litter and there are no other sows to place the piglets with to give them all a drink, for example, when a sow has 16 piglets. Split the litter into two groups of 10 and six piglets. Put the smaller sized piglets in the smaller group, and let the two groups suckle alternatively for two to three hour shifts. Also, tube or bottle feed the piglets away from the sow at least twice during their shift, with supplementary colostrum. If the small pigs are a concern and the nights are cold, leave the smallest pigs in a safe warm place overnight. This routine can be followed until a permanent mother is available.
- c. **Cross-fostering** - for example, in a particular farrowing group, there are 10 very good piglets on a good mother. In the same group there are 10 piglets on different mothers that are losing condition. If scours are not a problem, swap a good piglet for a piglet that is losing condition.
- d. **Down Line fostering** - used when litter size is large. For example, four sows farrow for 58 piglets born alive. Wean an extra litter, and move other litters down the line, until you have an *empty* sow that farrowed two to three days previously.

When moving piglets, try to make sure they are between one to three weeks of age, and are placed on a sow that has been lactating for no more than five to seven days of difference to the age of the pigs. For example, a litter 10 days of age could be placed on a sow that has been lactating for 15 days, but not a sow that has been lactating 19 days.

Pigs between three to seven days of age should be placed on a sow that has been lactating for no more than three days of difference to the age of the pigs. For example, a litter four days of age could be placed on a sow that has been lactating for six days, but not a sow that has been lactating seven days.

Pigs that are between one to two days of age should only be placed on a sow that has been lactating for no more than one day of difference to the age of the pigs. For example, a litter one day of age could be placed on a sow that has been lactating for two days, but not a sow that has been lactating three days. Ensure that the piglets you place on this sow have had their full requirement of colostrums, and try to put the biggest piglets onto that sow.

Some recommendations for fostering include:

- Try to pick a younger sow that has at least 12 small, but well-formed, functional teats.
- Quite often a gilt will make the best foster mother if you have very small piglets that need fostering.
- Sometimes foster sows will not take the pigs willingly, and you may have to calm and soothe them into accepting the new pigs.

- Some techniques which can work to soothe a stubborn sow include:
 - give her special feed/mash (mixing it with stale beer works well)
 - give her bran or sawdust to play with
 - spray her snout, her piglets and fosters with strong smelling air freshener
 - if she's just farrowed, rub her afterbirth over the piglets you want to foster, and lock her own piglets, and the new foster piglets, up together for at least 20 minutes
 - if there is no afterbirth, spray her piglets and the fostered piglets, and then lock up the piglets together. Just before you put the piglets back, spray around her nose with the same air freshener
 - if she is really upset, sedate her
 - leave fostering until late morning or early afternoon when the sows have settled down.

Seek Professional Help if Weaning a Piglet Early

See Guideline 5.3.4 in the Code

Management and diet formulation for early weaning of pigs (under three weeks of age), if undertaken, should be based on the advice of a veterinarian and qualified pig nutritionist respectively.

Boar Management

House Boars Individually Unless They Have Been Raised Together

See Recommended Practice 5.4.1 and General Information 5.4.6 in the Code

The APL *Mating and Reproduction* Manual has two excellent sections regarding young boar and general boar management. Also refer to comments in section 4.4 of this Handbook [Code reference section 4.1].

Provide Appropriate Service Areas for Mating

See Recommended Practice 5.4.2 in the Code

Design of service areas for mating is a specialised topic. Some useful references on this are:

- *Australian Pig Housing Series: Plan It Build It*, Taylor et al., 1994
- *Mating and Reproduction* Manual.

Train the Stock-person in Supervising Mating

See Recommended Practice 5.4.3 in the Code

Stock-persons supervising mating should have received adequate training.

A useful reference on this topic is the *Mating and Reproduction* Manual.

5.3 Moving Pigs

Use Appropriate Tools for Moving Pigs

See Standard 5.5.1 and Recommended Practice 5.5.2 in the Code

Generally, the best aids for pig handlers moving pigs are pig paddles, backing boards and hands.

Electric prodders must not be used to move pigs.

Dogs (unless under effective control to stop them biting) must not be used to move pigs. Dogs may be used if:

- the dog is under the effective control of a person who is responsible for the care of the pig
- in the case of a dog that has a history of biting humans or other animals—the dog is wearing a muzzle.

A useful reference on this topic is ProHand.

The Australian Animal Welfare Standards and Guidelines — Land Transport of Livestock (The Transport Code) states⁶ that electric prodders must not be used during the loading, transport, and unloading of pigs except, where:

- other reasonable actions to cause movement have failed
- individual pigs weigh 80 kilograms (live weight) or more
- there is a risk to the safety of the driver.

Make Sure the Design of Facilities Helps With Moving Pigs

See Recommended Practice 5.5.3 in the Code

Facilities should be well designed to facilitate pig flow when moving pigs.

Useful references on this topic are:

- Australian Pig Housing Series, *Plan-it-Build it*
- Livestock Handling and Transport by Temple Grandin Edition: 3 – 2007 ISBN: 978184593219
- Temple Grandin's website - www.grandin.com
- *Australian Animal Welfare Standards and Guidelines—Land Transport of Livestock*.

5.4 Elective Husbandry Procedures

Make Sure the Stock-person Has Had Specific Training for any Elective Husbandry Procedures

⁶ Note that this is in draft form and awaiting approval by PIMC, as at March 2010

See Standard 5.6.1 and Recommended Practices 5.6.3 and 5.6.4 in the Code

Specific training is needed for persons performing these procedures. The degree and form of restraint needs to be appropriate to the situation. A key consideration is managing the balance between the fear and pain that may be caused, as restraint itself can be a stressor, as can measures taken to reduce pain. A useful reference on this topic is the *NSW DPI Primefacts 69-73: Basic Pig Husbandry*, available from: <http://www.dpi.nsw.gov.au/agriculture/livestock/pigs/husbandry>

Where Possible, Castrate Piglets Between Two to Seven Days of Age

See Recommended Practice 5.6.7 in the Code

Appropriate and effective restraint, in the context of castration, means that the pig can be restrained for the operator to perform the procedure quickly, cleanly and safely, without physically injuring the pig by the restraining method used. Effective restraint is easier when pigs are castrated at the recommended age of two to seven days. However, where management reasons dictate that castration is done later (8-21 days of age), restraint requires extra consideration. Engineering plans for building a castration cradle can be found on the internet at: http://www.lsuagcenter.com/en/our_offices/departments/Biological_Ag_Engineering/Features/Extension/Building_Plans/swine/equipment/Castrating+Cradle.htm

Seek Advice From a Veterinarian About Whether ‘Needle’ Teeth Need to be Clipped

See Recommended Practice 5.6.11 in the Code

The Code states **qualified advice should be sought to determine if teeth clipping is necessary**. In this context, **qualified advice** should come from a veterinarian.

Clip ‘Needle’ Teeth Only if the Sow’s Udder or the Piglet’s Littermates Have Multiple Lacerations

See Recommended Practice 5.6.12 in the Code

This procedure is recommended when **unacceptable injury** is occurring to littermates and the sow’s udder. Such injury generally would be evident as multiple lacerations on either the sow’s udder or littermates.

Use Non-invasive Equipment for Pregnancy Testing and Back-fat Measurement

See Recommended Practice 5.6.19 in the Code

Use of ultrasonic scanning is the recommended method for pregnancy testing and back fat measurement, and should be carried out by a competent operator, according to the manufacturer’s instructions.

6 Preparation for Transport and Slaughter

Useful reference articles in this topic are:

- *Standards and Guidelines for the Land Transport of Animals.*
- Jackowiak, J. (2000). *A producer's guide to on-farm ante-mortem inspection of pigs.* ISBN 0 6427.
- *Is it Fit to Load? A National Guide to the Selection of Pigs Fit to Transport* (2010).
- *Care of the Compromised Pig and Euthanasia Manual.*

7 Emergency Euthanasia

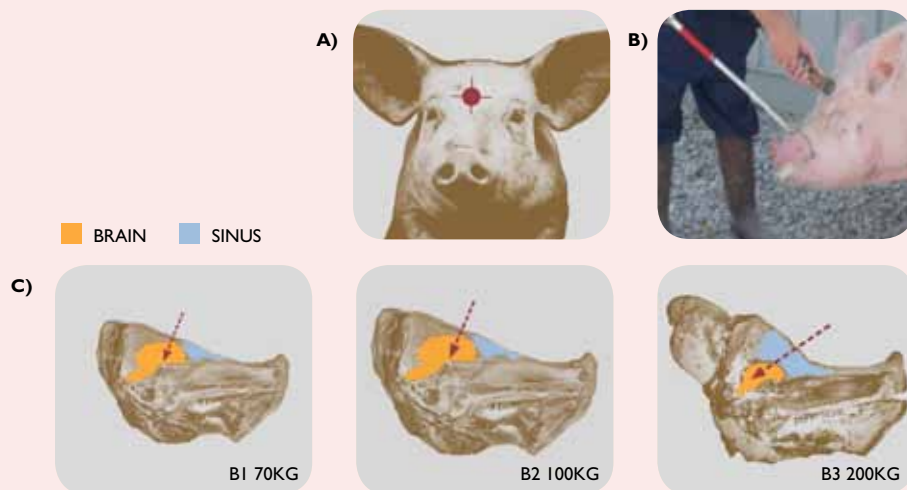
Make Sure the Stock-person is Properly Trained in Euthanasing Pigs

See Standards 7.1 and 7.2 in the Code

Euthanasia is defined as a humane death occurring without distress, pain, fear or anxiety. Key points to consider about euthanasia include:

- human safety — staff must be trained to avoid possible injury to themselves or others
- pig welfare — the method must minimise pain and distress to the pig
- practicality — the method must be affordable, easy to learn and repeatable
- aesthetics — the method should not be unpleasant for the person administering the procedure
- suitability — the method must be suited to the size of the pig
- location — the procedure must be done in a safe, quiet and private location.

The euthanasia process can be divided into three stages. First, the pig is physically restrained in a way that minimises pain and distress. This may include placing the animal, if small, into the container in which it will be killed. Larger animals may be restrained using a rope snare, or placed in a race, to restrict the animal's movements. It is then killed in a quick and painless way, in accordance with animal welfare regulations and statutory requirements. Finally, the pig is checked to ensure it is dead.



A) When using the gunshot method to euthanize pigs, the ideal target is half of an inch above eye level, on the mid-line of the forehead and aiming toward the tail of the pig as indicated by “A”. The penetrating captive bolt gun should be placed at the midline of the forehead, a half of an inch above eye level as shown in “A”. **B)** Positioning of captive bolt. **C)** As the pig ages, the sinus cavity becomes larger and the skull becomes thicker as shown in “B1” for a pig of 70kg; “B2” for a pig of 100kg and “C” for a pig of 200kg. It is important to select the bolt length and cartridge combination appropriate to the age and size of pig that is being euthanized to ensure that the bolt is long enough to penetrate the pig's skull.

Producers should be aware that it will be a requirement of state regulations, in some states⁷, that euthanasia is performed by a person who has been deemed **competent**. The industry strongly recommends there is at least one person on-farm that has received formal training, and has been assessed as competent in euthanasia.

Employees who perform euthanasia should have the tools available to determine which pigs need to be euthanised. Careful consideration should be given to the process that determines which pig is sick enough to be euthanised.

A step-by-step protocol should be developed for each pig age group, and proper training should be developed to ensure each employee has a thorough understanding of the process. The euthanasia protocol should minimise pig suffering and guarantee a quick death. See the sample *Euthanasia Action Plan* below.

A working farm euthanasia protocol would be helpful as a guide, for new and incumbent workers. Employees must understand and follow a step-by-step procedure to ensure a fast and painless death for the pig, and reduced stress for the farm employee. Farms within a company should follow the same protocol, so employees could move within the company without having to learn new euthanasia procedures. This would involve a pre-employment training process for new workers, and continuing education training for seasoned workers as the protocol changes.

Where expert advice is required, a veterinarian should be consulted. APL also has a reference guide on this topic in the publication *Care of the Compromised Pig*. Note that there are some errors in the appropriate weights and methods of euthanasia in Table 10 of the Code, in particular, related to captive bolt use. Please refer to the information below.

TABLE 7.1: Appropriate Euthanasia Methods for Destroying Pigs

	PIGLETS <3 WEEKS OLD	NURSERY PIG < 10 WEEKS	GROWING PIG	FINISHING PIG	MATURE
	Birth – 6 kg	6-30 kg	30-75 kg	75 kg +	
Carbon dioxide	YES	YES	Not practical	Not practical	Not practical
Gunshot	NO	YES (above 15kg)	YES	YES	YES
Penetrative Cap- tive bolt	NO	YES (above 15kg)	YES	YES	YES
Blunt trauma	YES	NO (pigs less than 15 kg may be euthanased using blunt trauma)	NO	NO	NO
FOR VETERINARIAN USE ONLY					
Anaesthetic overdose	YES	YES	YES	YES	YES

⁷ SA – South Australia Animal Welfare Variation Regulations 2009 under the Animal Welfare Act 1985

- Where gunshot is an appropriate method, APL recommends the use of a .410 calibre shotgun, rather than a .22 calibre rifle. The .410 is a much safer firearm to use in pens/sheds, and there is little chance of any projectile travelling through the pig.
- Note that the use, storage and maintenance of firearms is subject to state gun licensing laws. Producers should ensure that all persons using firearms are licensed according to state laws. As penetrative captive bolts do require gun licences in some states, please check with your local authorities.

Firearms or captive bolts should be directed at a point midway across the forehead, and between 2cm and 4cm above the level of the eyes. Aim downwards into the skull (note that the Code states aim should be horizontal into the skull, but this is not practical).

Example Euthanasia Action Plan

Farm Name: _____

Date: _____

Drafted by: _____

Employees responsible for euthanasia: _____

Phase of production / size of pig	Euthanasia method of choice	Alternative method of euthanasia
Suckling pigs, up to 6 kg		
Nursery pigs, up to 30 kg		
Grower - Finisher pigs, up to market weight		
Mature pigs, sows and boars		

Employees responsible for euthanasia who have been trained in methods of euthanasia, confirming insensibility and confirmation of death.

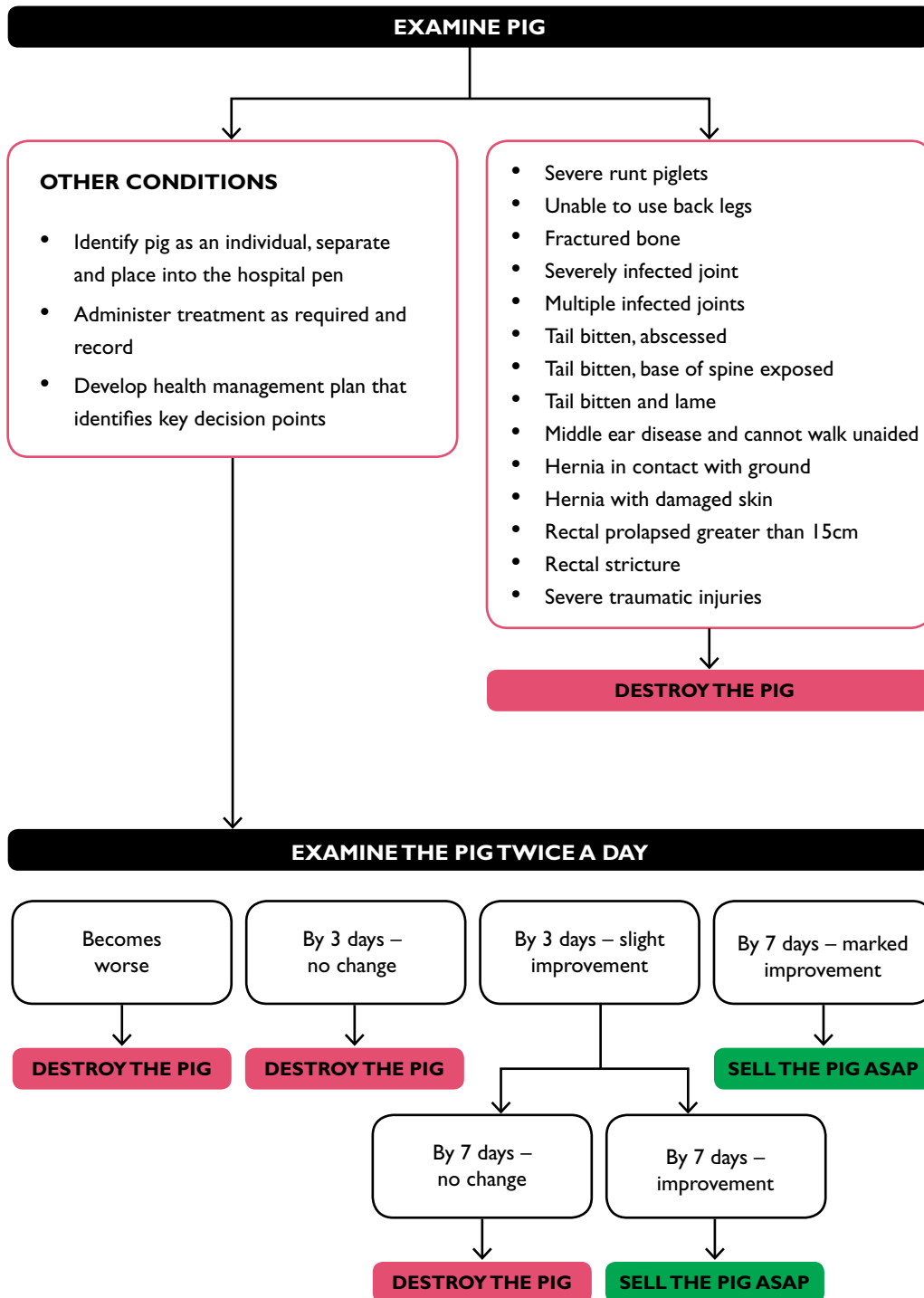
Employee name	Training received	Date of training
	<input type="checkbox"/> Yes	
	<input type="checkbox"/> Yes	
	<input type="checkbox"/> Yes	
	<input type="checkbox"/> Yes	
	<input type="checkbox"/> Yes	

Handle pigs quietly before euthanasia to avoid unnecessary distress.

See Recommended Practice 7.3 in the Code

Quiet handling of pigs prior to euthanasia is important to avoid creating unnecessary distress or alarm. ProHand is a key resource for stock-person training in this area.

TABLE 7.2: Decision tree for the care and management of compromised pigs



8 Quality assurance systems and record keeping

Keep complete records on-site for the previous 12 months

See Recommended Practice 8.2 in the Code

Complete records must be kept for seven years before being discarded.

Suggested identification methods for pigs are the use of visual ear tags and/or slap brand tattoos (for slaughter stock).

Use an on-farm quality assurance system

See Recommended Practice 8.4 in the Code

APIQ[✓]™, the industry's official Quality Assurance program, meets all the requirements advised in the Code, and is recommended by APL as the preferred method of meeting QA requirements.

Further information about QA programs is contained in chapter four of this handbook.

Chapter Two

Training and Assessing the
Competence of your Staff

Refer to standards
2.2, 4.1.5, 5.1.1, 5.2.1, 5.2.9, 5.6.1,
and 7.2 of the Code

I Introduction

Competence of the stock-person is one of the main requirements of the *Model Code of Practice for the Welfare of Animals – Pigs* (3rd edition 2008). Standard 2.2 of the Code requires that:

'Pigs must be cared for by personnel who are skilled in pig husbandry and are competent to maintain the health and welfare of the animals in accordance with the standards listed in the Code, or are under the direct supervision of such personnel.'

The competence of piggery staff is also referred to in standards 4.1.5, 5.1.1, 5.2.1, 5.2.9, 5.6.1, and 7.2 of the Code.

In order to ensure the health and welfare of pigs and meet the requirements of the Code, the pork industry has defined a set of competencies for stock-persons who are responsible for meeting the day-to-day needs of pigs. This set of competencies is known as the **stock-person skill set**.

While the industry understands that most producers and their piggery staff are competent in their role of caring for pigs, from 2011 onwards, piggery staff will need to start demonstrating this competency by obtaining certification.

This chapter describes how producers and their staff can demonstrate they meet the competency requirements of the Code and the incoming state pig welfare regulations. This chapter can be used as a general reference, but producers should be aware that the regulations in each state will vary slightly.

Who is a Competent Stock-person?

When the Code standards are translated into regulations in each state, there will be a requirement for all people responsible for the day-to-day management of pigs to be **competent** in their management, or under the direct supervision of a suitably qualified person.

The industry recognises that a person is suitably qualified if the person meets one or more of the following criteria:

- **is a veterinary practitioner**
- **holds a Certificate III in Agriculture (Pork Production)** or equivalent
- **has completed the stock-person skill set⁸**, and been assessed by a Registered Training Organisation (RTO)⁹.
- **has obtained Recognition of Prior Learning (RPL)**. To obtain this, a person must have had 12 months experience caring for pigs in a commercial establishment, and must have had on-the-job training and experience in at least the following areas:
 - moving and handling pigs
 - inspecting and assessing the health and well being of pigs
 - carrying out vaccinations, health treatments and elective husbandry procedures
 - humane destruction of pigs suffering an incurable disease, untreatable injury or painful deformity
 - maintaining records of inspections and assessments of pigs.

Note: In South Australia, this must be carried out on an establishment that complies with an industry quality assurance program.

What Does Direct Supervision Mean?

For the purposes of the Code, the industry recognises that a person is acting under direct supervision of a suitably qualified person, if the suitably qualified person performs the following role:

- provides instructions and guidance to the supervised person in relation to performing their required tasks
- oversees and evaluates the performance of the person under their supervision, including conducting regular personal progress checks on their performance
- is on the same premises as the supervised person while they are performing their tasks
- is able to assist the supervised person, if required, at any time while they are performing their tasks.

8 The stock-person skill set is made up of a number of units of competence. These are:

- Comply with industry animal welfare requirements
- Move and handle pigs
- Care for the health and welfare of pigs
- Implement animal health control programs
- Administer medication to livestock
- Contribute to OHS processes
- Observe industry OHS processes
- Observe enterprise quality assurance procedures

9 In NSW only.

What is the Stock-person Skill Set?

The pork industry stock-person skill set covers the minimum skills required by a stock-person **responsible for the day-to-day needs of pigs** or of a person **under the direct supervision of such personnel**. The stock-person skill set is made up of a number of units of competence. These are:

- comply with industry animal welfare requirements
- move and handle pigs
- care for health and welfare of pigs
- implement animal health control programs
- administer medication to animals
- contribute to OHS processes
- observe enterprise quality assurance procedures.

These are all units of competence in the Certificate II or III Agriculture (Pork Production).

While the skill set covers the minimum requirements of a stock-person, supervisors in piggeries will need to complete additional units to achieve the full Certificate III in Agriculture (Pork Production), or have an equivalent or higher qualification, such as a degree in veterinary science or another related agricultural field, to be deemed competent to supervise their staff.

Producers should also be aware that while euthanasia is not a compulsory component of Certificate III, or the stock-person skill set, it will be a requirement of the state regulations that euthanasia is performed by a person who has been deemed **competent**. The industry strongly recommends there is at least one person on-farm trained in euthanasia.

APL has developed materials for stock-people who wish to undertake the skill set. Completing the skill set will involve enrolling with an RTO to complete the above units, which may involve undertaking a series of short in-house courses, with the option of external learning available in some cases, or completion through RPL.

Obtaining Recognition of Prior Learning (RPL)

People with 12 months industry experience may go through a process of Recognition of Prior Learning (RPL) to obtain certification of their competency. RPL materials have been prepared for existing stock-persons working in the industry to be assessed against the skill set.

People seeking recognition of prior learning should enrol with a RTO that is registered to conduct the RPL process for pork production stock-persons. APL (Phone: 1800 789 099) can provide contact details of suitable RTOs.

They will then be taken through the process of providing evidence of their competence to an assessor. First a RPL form will need to be completed and submitted, along with documentation to verify their claims of competence.

Suitable documentation may include:

- a job description (or your employment agreement that includes your job description)
- work instructions
- treatment records
- inspection reports
- brief curriculum vitae or résumé
- certificates/results of assessment – universities, TAFE colleges, trade certificates, industry seminars, industry courses - such as ProHand, in-house courses, workshops and seminars
- results/statements of attendance/certificates, including first aid, coaching, fire warden, auditor and fork lift licence
- diaries/task sheets/job sheets/log books
- inspection or audit reports, such as QA audits and workplace inspection reports
- workplace records, including farm health plan, QA manual, OHS manual or maintenance log book
- hobbies/interests/special skills outside work
- references/letters from previous employers/supervisors
- reports related to any work and/or matters relating to their role in a range of contexts and situations
- other documentation that may demonstrate industry experience, such as task and work experience.

An assessor will review the information provided and begin to match the person's skills to the units/subjects in the stock-persons skill set. At this point, they will have the opportunity to discuss their previous experience with an assessor who is familiar with the industry. The assessor will then determine what other documentation and/or assessment needs to be done to confirm their competency, and notify them of any further requirements.

Further assessments to confirm competency may be necessary, which may involve:

- oral and/or written questioning
- assessment of your practical skills by observation and/or third party verification of your skills
- other forms of assessment that support the validation of your competencies.

Once all assessment requirements have been met, the person will be issued with a nationally recognised *Statement of Attainment*, or transcript, confirming they have met the requirements of the stock-person skill set (or the award they have applied for).



Conclusion

Being able to provide evidence of stock-person competency is an important part of meeting the requirements of the Code and incoming state regulations.

The stock-person skill set is a set of units of competency developed by the industry, which covers the minimum requirements of competency for a stock-person.

It is recommended that supervisors undertake further units to make up the full Certificate III in Agriculture (Pork Production). Obtaining recognition of prior learning involves enrolling with a RTO and going through a process of assessment and verification of your current skills.

Producers should be aware that although euthanasia is not a compulsory unit of either the skill set or Certificate III, it will be a requirement of some state regulations that euthanasia is performed by a competent stock-person.

Chapter Three

Facilities

I Introduction

The use of individual stalls to house gestating sows is to be subject to restrictions from April 2017, as one of the requirements of the Code.

This chapter outlines current knowledge and practical suggestions on alternative methods of sow housing.

Background to the use of sow gestation stalls

Running gestating sows outdoors, with simple shelters for protection from the elements, lost favour though the 1970s and 80s, with the trend to larger herds and maximisation of production.

However, while the indoor housing of gestating sows provided more control and a reduction in climatic extremes, trough feeding of sows in groups, invariably leads to variable nutrition and injuries from fighting. As a result, we saw a move to individual housing of gestating sows in stalls.

Housing dry sows in gestation stalls provided many advantages; individual feeding, protection from bullying, easy heat detection and control of health problems, and efficient utilisation of space and labour, while at the same time providing for contact with other sows satisfying the gregarious nature of sows. Therefore, stalls provided producers with what was perceived as a high animal welfare system, with economical housing, and they rapidly became the standard option for commercial producers.

‘Times are a Changing’

More recently, the animal welfare movement in Europe successfully lobbied to have sow tethers banned and a limit placed on the use of gestation stalls. The welfare issues and concerns that have brought about these changes can be summarised as follows:

1. physical health, such as leg and feet problems and shoulder sores
2. psychological well-being, such as perceived increased stereotypic behavior
3. illness, like urinary tract infections
4. space restriction – preventing sows from turning around.

In Australia, the general public are increasingly concerned with animal care and welfare issues, in particular, how stock are housed in intensive animal production units.

Where to From Here?

To achieve an acceptable return on investment, production systems must be designed to suit the climate, management style, intended market, feed supply and labour skill and availability. In addition, the consumer's perception of animal welfare must also be considered and addressed, as part of strategic planning to upgrade facilities to improve efficiencies in production and the pigs' well-being, particularly in housing for gestating sows and gilts.

Producers must make good business decisions that will not detrimentally affect their bottom line, and yet preserve market access. What is obvious is that there is no one design or perfect system that will meet all requirements, and suit every pork producer.

Producers will need to plan management and facilities to minimise the negative effects of group interactions and aggression within group housing systems.

Other issues that will need to be considered are:

- the requirement for extra building space
- effects on productivity and predictability of pig flow
- new skills required to maintain even body condition and manage injuries resulting from sow aggression
- ability to treat an individual animal
- specialised/separate gilt management.

What are the Alternatives?

Arguments and research information are well documented on the ability of sow gestation stalls to optimise individual animal care and performance. However, there are also counter arguments from a perspective that such close confinement is inconsistent with allowing pigs to carry out a full range of natural behaviours.

The current *Australian Model Code of Practice for the Welfare of Animals – Pigs*, states that, from 20th April 2017, sows must not be kept in stalls for more than six weeks of any one gestation. In practice, this will usually mean keeping them in stalls during the post-weaning period until pregnancy is established, and then putting them into group housing. In addition, some producers may choose to adopt other forms of management that utilise group housing more extensively.

Results from numerous trials suggest that sow well being and health are multi-factorial, and influenced by many things other than just housing. Excellent stockmanship is critical for good sow health. The first signs of ill health must be recognised and the appropriate action taken. It is generally acknowledged that group housing systems require a particularly high level of stockmanship, to ensure all sows in the group receive adequate feed and do not suffer unduly from aggressive interactions.

Group housing of gestating sows provides advantages in:

- giving the sows the opportunity for social interactions
- more space for sows to move and exercise
- the ability of sows to control their personal environment.

Factors Involved with Design and Management of Group Housing Systems for Pregnant Sows:

- Number of animals per pen
- Size of animals per pen
- Floor space per animal
- Type of flooring
 - Total slats
 - Partial slats
 - Solid concrete
 - Bedding
- Thermal comfort
 - Heating system
 - Ventilation/cooling system
 - Use of mould-free bedding
- Height of pen partitions
 - Vertical bars
 - Horizontal bars
- Composition of group
 - Stable
 - Dynamic (frequently changing)
- Reproductive performance
- Capital and operating cost
- Establishing a 'hospital' area
 - Lame and injured sows
 - Sick sows
 - Non competitive sows
- Aggression
 - Time and method of mixing
 - Time and method of feeding
 - During daily activity of animal
- Method of watering animals
 - Animals per waterer
 - Type of waterer
- Time and method of mixing
 - At weaning
 - Immediately after breeding
 - At 35 - 42 days of gestation
 - Rate of morbidity and mortality
- Method of feeding
 - Mechanical
 - Non-mechanical
 - Floor feeding
 - Dump feed in a pile
 - Dump with spinner to spread feed
 - Individual feed drops
 - Interval feeding
 - Trickle feeding
 - Locked feeding stall
 - Unlocked feeding stall
 - Self-locking feeding stall
 - Electronic sow feeder
- Urination and defecation area
- Eating area
- Boar housing area
- Skill and attitude of staff
- Geographic location
- Genetic composition of sows
- Temperament of sows
- Complexity of accomplishing work tasks
 - Oestrus detection
 - Artificial insemination of sows and gilts
 - Natural mating of animals
 - Moving animals
 - Feeding animals
 - Treating sick animals
 - Use of pregnancy detection device
 - Daily observation of animals
 - Locating a specific animal

Factors involved with design and management of housing sows and gilts in groups (Levis, 2007).

Welfare considerations

While some people perceive group-housing systems to be more welfare friendly, the housing of pregnant sows in groups may lead to the following welfare problems:

- aggression during mixing of animals
- aggression at times of sow feeding, particularly if individual, and locking feeding bails are not used
- bullying by dominant animals
- feet, leg and back injuries, due to excessive riding of each other during oestrus
- excessive high feed intake by dominant animals when floor fed
- excessive low feed intake by subordinate animals when floor fed
- vulva biting - risk factors include the use of electronic feeders and restricted numbers of drinkers per pen
- body wounds, lesions and scars occurring from fighting at mixing and competition for feed and water.

Why do Sows Fight?

In the **natural state**, social groups of pigs are made up of small numbers of adult females, and associated with this core are a number of juveniles, sub adults and possibly one or two adult males. The stability of the group is based on familiarity, adequate food resources and mutual survivability. The purpose of aggression is to settle disputes within the group, and to deter intrusions of outsiders into the group space and is often due to competition for food and other resources. Therefore, pigs do fight when they are mixed, so any housing system must be designed to reduce sow aggression. This will be through pen configurations, the use of barriers, flight zones and individual feeding and planning to minimise mixing.

To provide a method of comparison, we have considered the alternative housing systems under the following broad headings.

Group Size and Space Allowance

Numbers can range from small groups of four to eight sows, where sows are mixed once and stay together from mixing until farrowing, through to batch groups of 20 - 50 sows, to large dynamic groups of 100-500 sows, in which the composition changes weekly as sows are added post-mating, and removed pre-farrowing.

A minimum of 1.4 square metres per sow is required in the Code. While optimal group sizes will vary, larger groups appear preferable. Where dynamic systems are used which have separate or distinct lying areas, sub groups are maintained within the resident group, with reported advantages from less aggressive interactions. The longest serving subgroup becomes the most dominant. However, in the situation of managing large groups, farm staff safety becomes a significant issue, especially during procedures such as oestrus and pregnancy checking.

A more critical issue than space is feeding space, as this is when the critical interaction and aggression between sows is strongest. Feeding management poses a major difficulty, because unless individual feeding stalls are provided, or an Electronic Sow Feeding (ESF) system is used, it is extremely difficult to manage individual sow body condition effectively without pulling out sows to feed separately, which can further disrupt the group dynamics.

Labour Requirements

Generally, moving to group housing of sows does not reduce, and may in fact increase the amount of labour required. It certainly does increase the requirement for higher skilled labour. Daily interaction with sows is still required, and where a computerised feeding system is used, at least an elementary understanding of this process is necessary.

Three key skills for staff to master have been identified for maintaining sow performance when changing to a group housing system:

1. The ability to identify sows in the group that are unable to compete, or have been injured, so they can be given extra care.
2. Taking appropriate actions, to look after the sows that are unable to compete fully in these systems.
3. Undertaking suitable handling techniques for sorting individual animals from a group, to eliminate animal stress and the potential for human injury.

If an Electronic Sow Feeding (ESF) system is used, then considerable time, which has been estimated at 20 minutes per gilt, is required to train new animals. Daily observation of sows has been estimated to take an extra 15 minutes to check 50 sows, loose housed, compared to stalled sows. Time spent maintaining the gates, and other physical components of the group management system, can be another area of increased time requirement.

It is important, therefore, to design systems that not only meet sow requirements, but also have consideration of labour requirements and the husbandry functions to be undertaken.

Feeding

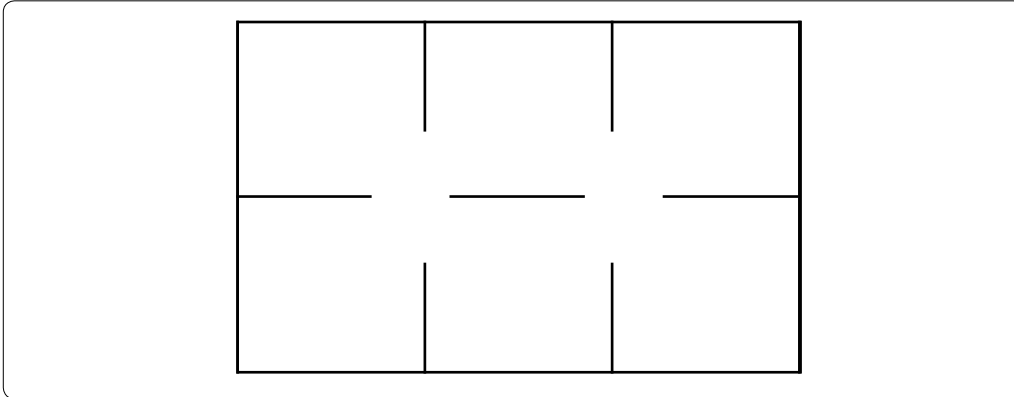
(1) Floor Feeding

When floor feeding, providing floor layouts that gives space variety is preferred.

Other points to consider are:

- Increased frequency of feeding, up to 8+/day.
- No gilts in the sow groups, and ensuring that there is no lameness.
- All sows to be in good body condition when setting up groups.
- Using stalls or sick pens as a buffer, to ensure all sows get an *equal* chance at feed.

Layout to reduce aggression when floor feeding, by providing a variety of spaces



(2) Trickle Feeding

The use of feeding bails protects the sow's head and shoulders while they are eating.

Single drops, or a continuous trickle, during feeding time are the two options. The continuous trickle needs to be at the rate of the slowest feeding sow, so that there is no feed accumulation. This will probably be about 20 minutes for the daily feed allowance. However, slow feeding can cause frustration for some sows.

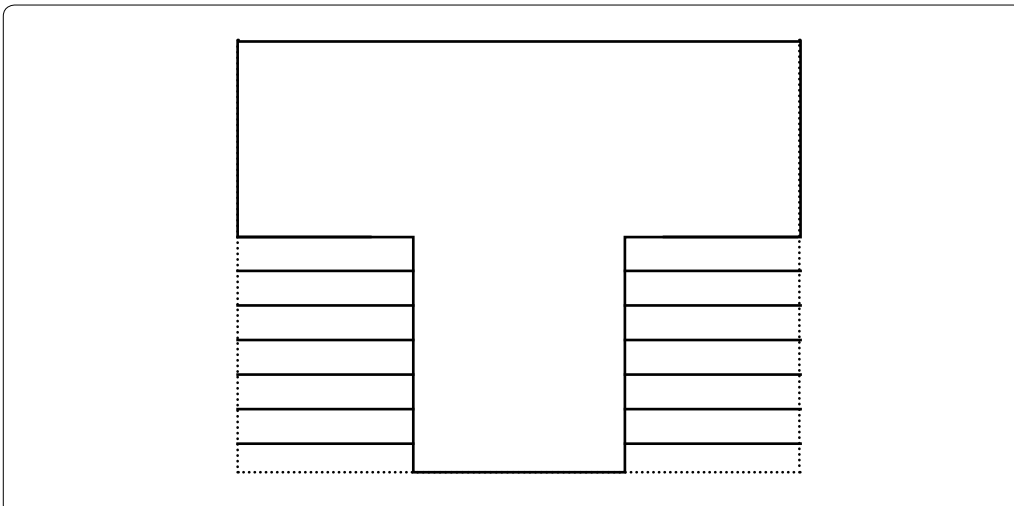
When providing feeding bails, consideration needs to be given to providing sufficient space for sow movements, social interaction, avoidance of aggressive sows and resting and loafing areas.

Because of these needs, feeding bail systems have evolved into a 'T system', with about 2.8 sq m/per sow.

'T' system layout

Layout recommended for trickle feeding systems.

Conceptual sketch - feeding with liquid or trickle system



(3) Individual Feeding Stalls/Cafeteria Systems

These use a much smaller overall space per sow when a time share feeding regime is used. The sows are moved out to an area separate from the sleeping/loafing area, and fed in individual feeding stalls with gates. Advantages include increased observation opportunities and less lameness, because sows are moved to and from the feeding areas under supervision, allowing for early detection and treatment of ailments.

Sows are allowed into the stalls for feeding, during which time they are locked in for their protection.

All animals are typically supplied the same amount of feed, but producers have the option of supplying additional feed or supplements to individuals by hand, as a *top dressing*.

(4) Electronic Sow Feeding (ESF)

Using automatic sow feeders has the advantage that sows do not associate staff with food, which results in less disturbance and aggression when staff move through pens.

ESF gives very good control of individual sow feed intakes. It allows the nutritional research knowledge gained over the last 20 years to be applied, in terms of both nutrient levels and quality. They also keep sow feed costs down.

However, there are several issues that need to be considered for successful operation:

- Retaining of good stock-people is essential.
- Good systems for training pigs are required and these may take up quite a bit of time.
- In mixed age groups, young sows don't compete and eat later, so an 18 hour feeding period is required.
- Dominant sows line up for food when the daily feed cycle begins.

Examples of problems that have been experienced by pork producers are:

- If overstocking, subordinate sows suffer.
- Lost electronic responders and identification tags are a major problem.
- Can't have a system where sows back out of the feeder(s). Also required is a recycle system for *hungry* sows, to lock them out at entrance, or channel these sows at exit to another area.
- Cost and servicing can be an issue. The need for a computer and control system means they are only suitable for larger sow groups.
- Where ESF is used, there is generally a high incidence of vulva biting and increased sow fighting.

In group housing systems, injuries to the sows' backs can be a problem because of the tendency for sows to want to *ride* each other, especially if a sow in a group returns to oestrus.

Thermal comfort and air quality may become issues where solid walls and partitions or deep litter are used. This conflicts with the desire of sows to lie against a solid wall, and observation shows that sows have preferred lying areas, with the dominant sows having the prime spot.

For accurate oestrus, detection boars (vasectomised or entire) are required, but their presence causes considerable restlessness and injuries amongst sows in group housing pens.

Environment Effects

Seasonal variations in temperature and day length in Australia are known to affect productivity, with *summer infertility* a common problem. Therefore, any design for housing sows during pregnancy needs to take the hot summer temperatures into account.

Consideration should be given to adequate insulation, natural or mechanical ventilation allied to automated spray or drip cooling, dependant on location and expected summer temperatures. Temperatures above 32° C during early pregnancy usually result in lower conception rates and numbers born, while such high temperatures in late pregnancy are more likely to cause increased sow mortality rates.

In addition to temperature, air quality can also be an issue. Manure removal rates, and whether to use re-cycled water to reduce water volumes used, need careful consideration. High ammonia levels will detrimentally affect pig health.

Flooring

Whether to use bedding is a major consideration, and needs careful consideration at the design stage. Following this decision, the two major points to consider are if slats will be used, and if so, which areas of the design will be slats. Slats have the advantages of cleanliness and less labour requirement, but foot and claw injuries may be more likely.

There is a wide range of products available for making slatted floors with concrete, wood, and pre-formed products using steel and plastic being the main ones. Those that provide a wide slat area are preferred, as they are less likely to cause foot damage.

Deep Litter Systems

Used extensively for growing pigs, deep litter designs providing group housing for pregnant sows, have been developed. Many of these designs have stalled feeders or trickle feeding systems installed, that sows visit in rotation. This can significantly reduce the total capital expenditure.

Because they are recent innovations, the layouts tend to be more *purpose built*, with layouts similar to those in conventional sheds. Provision of bedding allows sows the opportunity to consume bulk feed, resulting in satiety and contentment. Bedding also provides a better surface for sows when suffering aggression, resulting in less leg and foot damage. Bedding materials such as, straw, wood chips and sawdust, all need to be available locally and competitively priced.

TABLE 3.1: Advantages and Disadvantages of Different Feeding and Housing Combinations

System	Advantages	Disadvantages
Small yards with individual feeders	<ul style="list-style-type: none"> • Lying areas can be <i>kenned</i> for colder climates • Suitable for bedding use • Sows confined for individual feeding, good control and adjustment • Small static groups (typically 5-10), based on week of service • Simple and low-tech • Weekly groups provide easy identification and management • Little mechanical equipment • Low aggression with limited mixing • Good for gilts • Low running costs • Suitable for conversions 	<ul style="list-style-type: none"> • Difficult to automate feeding, resulting in high labour input • Higher space and capital cost/per sow • Difficult to re-mix when sows drop out of a group • Less suitable for large herds
Liquid feeding in small groups	<ul style="list-style-type: none"> • Can be automatic • Simultaneous feeding and <i>gut fill</i> results in contented sows • Easy inspection • Small groups make identification easier • Equipment reliable • Can use co-products • Suitable for housing conversions 	<ul style="list-style-type: none"> • Individual sow feed intake not fully controlled, aggression at feed time • Sows near outlet valve may get more feed due to heavier feed particles settling out, and sows <i>blocking</i> the flow • Increased liquid manure to clean out/remove • Higher capital cost
Floor feeding in groups	<ul style="list-style-type: none"> • Can automate feeding, with reliable equipment • Simultaneous feeding and easy observation • Can be weekly static groups or dynamic groups • Lower capital cost 	<ul style="list-style-type: none"> • Uncontrolled feeding • Variation in sow condition • Feed wastage • Dynamic group difficult to observe and manage • Vulva biting and other aggression
Trickle feeding system	<ul style="list-style-type: none"> • Feeding automated to reduce labour requirement • Simultaneous feeding to reduce aggression • Reduced feed wastage • Simple, reliable equipment • Suitable for smaller weekly groups • Suitable converted buildings • Good for gilts, no training required 	<ul style="list-style-type: none"> • More suited to smaller sow groups • Not individual feeding • Costly to set up • Need feeding bails

Electronic Sow Feeding (ESF)	<ul style="list-style-type: none"> • Electronic identification and data capture • Accurate individual feeding, with low labour input • Low feed wastage • Can accommodate large and dynamic groups • Can use in modified buildings • Can be wet or dry feed • Sows appear calmer • Sow productivity is described as good 	<ul style="list-style-type: none"> • Expensive, may be limited backup service for this equipment • Mechanics of system complicated • Initial tag and subsequent replacement costs • Higher levels of stock-person skills required • Not suited to gilts, training required • May be vulva biting
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Group Composition and Mixing of Sows

Gilts are often half the size and weight of mature sows. Therefore, gilts will be at the bottom of the dominance hierarchy in a group and suffer more fighting injuries, such as scratching and scarring.

It is therefore recommended, wherever possible, that gestating gilts are housed separately from older sows. By housing gilts separately, it is easier to design a set up that achieves more consistent ovulation and better fertility, through boar stimulation and controlled individual feeding, which are recognised stimuli.

When to mix sows may become a contentious issue, depending on the welfare standards that come into force. Minimising the weaning to (oestrus) mating interval is a key point for maximising sow productivity. Retaining the use of stalls for this post weaning and mating phase of the production cycle is desirable. Mixing of the sows would then occur after implantation at 28-plus days.

Regardless of what point in pregnancy the mixing of sows for group housing occurs, minimising fighting is important. To this end, consideration needs to be given to the required *escape* distance the housing provides. Sandra Edwards, of Edinburgh University, noted from her studies of group housed sow behavior, that the absolute distances needed by sows to avoid aggression, or escape, can be considerable. Although most encounters were resolved in a chase distance of less than 2.5 metres, some sows were observed to chase for up to 20 metres.

Consideration should therefore be given to installing a specific mixing pen.

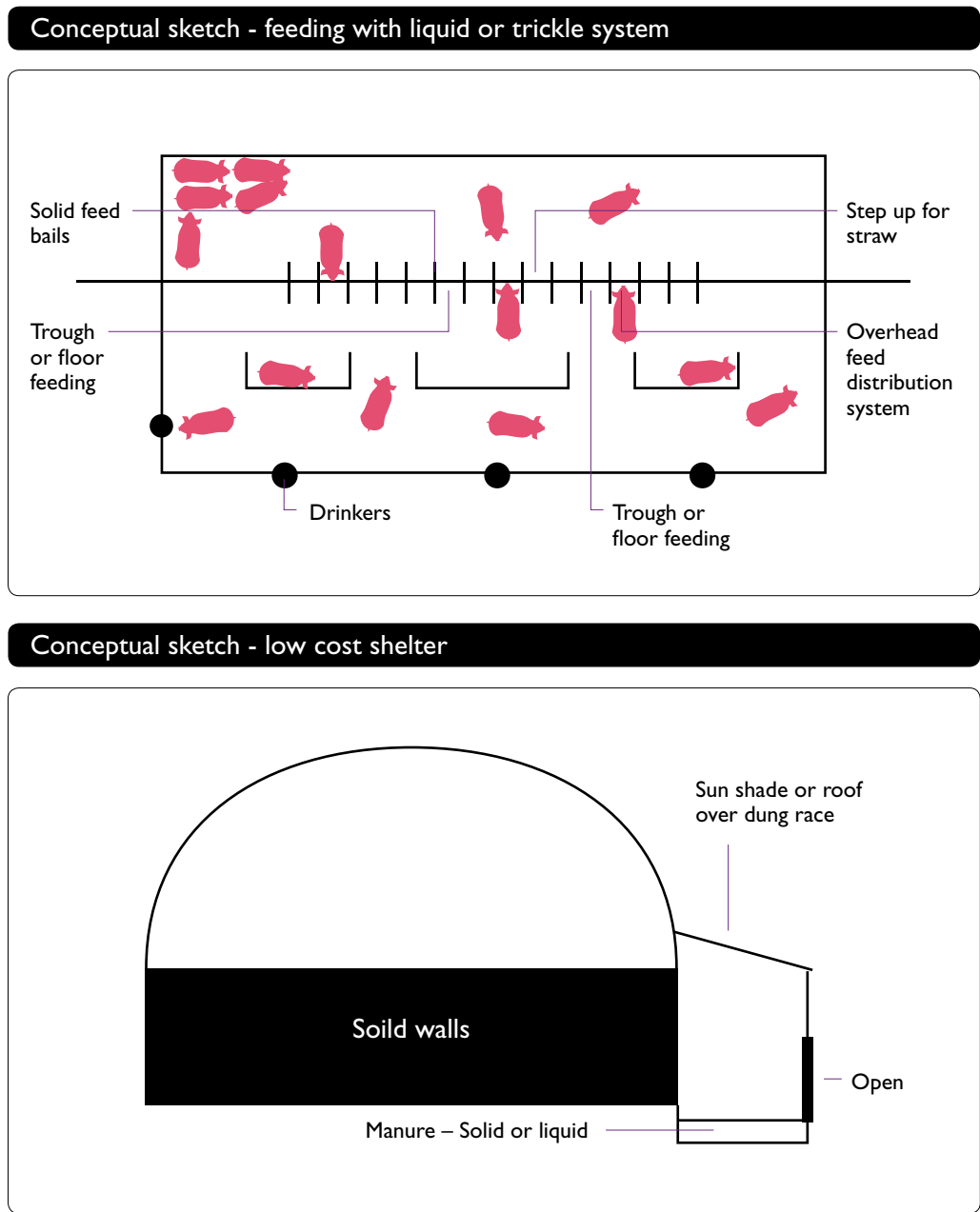
Design points for such a mixing pen are:

- A straw/sawdust bedded pen that provides a good foot hold for sows or other non slip flooring
- An absence of protruding objects or ridge edges
- An absence of confined areas, with no escape route
- Adequate space for sows to turn around, and for two sows to pass side by side, such as no congestion points near feeders or drinkers

- Visual barriers to allow sows to isolate themselves and provide *refuge* areas and separation from dominant sows
- Management aspects, including supervision at mixing, removal of bully sows to non-compete pens and/or timid injured sows to hospital pens.

Other often-recommended interventions, such as time-of-day mixing or the use of masking agents, tend to only *put off* the aggressive interactions until the next day, or when the masking agent has worn off.

FIGURE 3.1: Examples of layouts that incorporate the key design elements:



2 Recommendations for Effective Operation of Group Housing Systems

Recommendations to reduce aggressive sow behaviour when housed in group pens are:

1. Wean sows into breeding stalls

It is imperative that your facility has enough breeding stalls to hold the required number of sows for the time they will be stalled. Stalls prevent the injuries associated with sow activities during oestrous. Many producers hold sows in stalls until after 28-day pregnancy confirmation. Others have success when sows are mixed prior to day seven after breeding. Implantation typically occurs 12-14 days post mating, so it is recommended to group sows before or after this time, wherever possible.

2. Add extra feed to the floor of the pen before sows enter

This is a distraction device. Some people, where possible, add a bag of shavings to the floor. Sows become engrossed in eating or exploring their environment, and tend to fight less. It also helps to feed up to one and a half times the normal daily feed rations for two to three days after a group is mixed.

3. Add a boar to the pen

The boar's role of *leader* keeps aggressive encounters between sows to a minimum. It takes a boar of a stable temperament, neither too aggressive (attacker) nor too passive (attacked), to perform this role well.

4. Mixing times

Try mixing at the end of the day, then turn out the lights. This action, plus extra feed, leads to sows that are full in a dark, quiet environment.

5. Sow size in groups

Try for uniformed sized sows. Very large or very small animals in a group can lead to overly dominant or overly submissive behaviour. Small sows or gilts can often be overly aggressive.

6. Group size (20 or more)

Larger sized groups reduce aggressive encounters. It is easier for a pursued sow to hide in a large group. It appears that if sow numbers are over 20, the animals give up on establishing a hierarchy. Smaller groups of 10 or less, tend to establish strict hierarchies, as they are in a contained area with no *flight* distances.

7. Partition walls

Solid walls can be made of cement or of hanging rubber mats, or of sections of pen dividers removed between adjacent pens. This gives sows a place to escape to when pursued, and some choice of a pen location to congregate in. Straw bales can be used to create refuge areas.

8. Spread out the feed

Most aggressive encounters occur during floor feeding. Spreading the feed over the floor reduces sow encounters. The addition of an inverted Y or a witches hat *distribution zone*, to the feed drop area, can do this reasonably well.

9. Multiple feedings

With once a day feeding, anxiety prior to feeding causes sows to hoard feed and increases fighting. Feeding from three to eight times per day results in calmer sows at feeding.

10. Using a mixing pen

It is suggested that one well laid out mixing pen be used for the first week. At the end of this week, sows can then be moved into a traditional, and possibly less than ideal, loose housing system.

Chapter Four

Quality Assurance Systems

I What is a Quality Assurance System?

A Quality Assurance (QA) system is any systematic process of checking to see whether a product, or service being produced or delivered, is meeting production requirements. Some farms have staff devoted to QA, while others, often smaller producers, develop QA themselves as they can. A producer may get assistance from suitably qualified or experienced advisors or facilitators to develop their on-farm QA system, if they choose. A QA system is said to increase customer confidence and a company's credibility, to improve work processes and efficiency and to enable a company to better compete with others. QA was initially introduced in World War II when munitions were inspected and tested for defects after they were made. Today's QA systems emphasise catching defects before they get into the final product. Increasingly, customers and regulators are requiring suppliers of goods or services to have QA systems in place, especially in food-based industries where the production of safe food for human consumption is paramount. Healthcare, engineering and aviation are also significant industries where quality failures can pose serious risks to consumers or the general public. Having a structured QA system to manage quality and consistency, becomes more and more necessary as a business gets larger and more complex, whereby quality can no longer be managed by the direct day-to-day supervision and input of the business owner/operator.

The ISO Guidelines

A commonly recognised guideline for QA systems is the ISO 9000 series of international standards, which many companies use to ensure their QA system is in place and effective. Conformance to ISO 9000 is said to show that a company delivers quality products and services. To follow ISO 9000, a company's management team decides on QA policies and objectives. Next, the company, or an external consultant, formally writes down the company's policies and requirements, and how the staff can implement the QA system. Once this guideline is in place, and the QA procedures are implemented, an outside assessor (QA systems auditor) examines the company's QA system to make sure it complies with ISO 9000. A detailed report describes the parts of the standard the company missed, and the company agrees to correct any problems within a specific time. Once the problems are corrected, the company is certified as complying with the standard.

The Role of Standards in QA

A key aspect of QA systems is that they are based on measurable **standards**, agreed in advance about particular requirements that a product or service must meet. A **standard**, as defined in QA, is a statement describing an expected level of requirements and conditions against which quality is assessed. QA standards may be set internally by the owner of the operation, based on the understanding of their customers' requirements (as in many company ISO systems), or may be set externally by a customer or regulatory body.

The PDCA Cycle – Plan Do Check Act

The PDCA cycle is a common process built into all QA systems. PDCA stands for Plan Do Check Act. In principle, this means your management system needs the following aspects built into it to be considered capable of managing quality in a structured way:

Plan – outlining what is to be done to meet the stated quality outcomes

Do – how things are done

Check – how the doing will be monitored

Act – what will be done to correct things when they go wrong.

Quality Assurance in Pig Care

Many of the existing management practices you already do on-farm could be considered part of your farm's QA system. Therefore, it makes sense to consider QA as a tool for formally managing pig care and welfare on-farm. This approach is now recognised by government animal welfare regulators in Australia, and major retail customer groups.

QA Standards for Pig Welfare

The animal welfare standards that your on-farm QA system must address are specified in the *Model Code of Practice for the Welfare of Animals – Pigs*, and discussed further in chapter one of this handbook.

Components of a QA System for Pig Welfare

In order to meet the requirements of QA for pig welfare on your farm, you will need to have in place:

- Some form of evidence that shows how your day-to-day operations comply with the standards. This can be in the form of Standard Operating Procedures (SOPs) or documented work instructions.
- Evidence that shows the people taking care of the pigs are competent in the tasks required, to meet the animal welfare standards (see chapter two on stock-person competency).
- Records that show regular checks are being made of your animals and systems, with corrective actions taken when any problems occur.
- Records to show when pig/piggery management has changed, and that the changes continue to meet the standards required.

Your QA system should be an accurate reflection of the way you manage, or do things, in your piggery. It can be very simple if you have a small herd and manage the pigs yourself. In this situation, being able to demonstrate you are familiar with the Code requirements, and demonstrate what you do on a daily basis to meet them, would suffice to meet the expectations of QA for pig welfare. A simple farm diary system would be suitable for record keeping in this situation.

However, if you run a larger scale operation with large numbers of staff, and possibly multiple sites, more documentation will be needed.

Internal Audit

A key feature of any QA system is an **internal audit**. An internal audit is a check you do yourself across all your systems and procedures, usually annually, to confirm your system covers all the requirements it is designed to meet, and is working properly.

An internal audit should be done at least every 12 months, and at any time after you have made major changes to your pig farming operation, such as changing methods of providing feed and water, or introducing a new type of housing system.

External Audit

An **external audit** of a QA system occurs when you have become part of an industry or customer-driven QA program, which includes a process of **accreditation** or **certification**. For APIQ✓™, the external audit is conducted by an independent National Food Safety auditor with APIQ✓™ Scope. The auditor will check your system to ensure it meets the certification requirements of APIQ✓™.

If they are satisfied that your system meets the scope and purpose of the required QA program, they will recommend to the program owner/manager that your farm be certified under that program. If the auditor finds there are non-conformances in your system, they will identify those to you and give you a timeframe to remedy them. These are referred to as a Corrective Action Request (CAR). Once CARs have been closed out to the auditor's satisfaction, they will then recommend certification. Generally, the need for an external audit is driven by industry, customer or regulatory concerns about aspects of quality and/or product safety, that could have serious negative consequences to consumers or the public if they are not met.

Introduction to APIQ✓™ the Australian Pork Industry's QA Program

APIQ✓™ is the Australian Pork Industry Quality Assurance Program. It is managed and owned by Australian Pork Limited on behalf of the industry, and was originally developed in 1997.

APIQ✓™ has been specifically designed to provide assurance to pork industry customers and regulators that certified farms are following good practices in relation to management of food safety, animal welfare, traceability and biosecurity.

APIQ✓™ contains standard operating procedures (SOPs), as well as records to prove compliance with requirements in all areas.

The APIQ✓™ program, at the time of writing of this handbook, is being extensively reviewed. APIQ✓™, the latest version, is due for release in 2010, and will offer a purpose-built QA framework for Australian pig farms, for both larger farming operations and Small Holders.

APIQ✓™ will incorporate all the standards in the current version of the *Model Code of Practice for the Welfare of Animals – Pigs*, and is the industry's recommended QA framework to meet these requirements.

Further information and application forms for the APIQ✓™ program can be obtained from APL by phoning 1800 789 099 (Toll Free), or by visiting www.apiq.com.au.

Glossary of Terms used in this Handbook

Adult	any pig over the age of nine months.
Boar	an uncastrated male pig over nine months of age.
Colostrum	milk secreted by the sow for the first few days after farrowing, characterised by high protein and antibody content.
Competent	for stock-persons, this means they have been assessed by either a nationally registered training organisation or an equivalent external authority, to have successfully demonstrated specified competencies (either through training or through recognition of prior learning), OR for staff in a supervisory role (where they are in line control of one or a number of other stock-persons), to have the competencies contained in Certificate III in Agriculture (Pig Production), or equivalent qualification.
Deprivation of food (due to persistent bullying)	a situation where a pig is unable to approach its feed source, or spend adequate time at the feed source, to consume its normal ration, due to intimidation (fear and/or physical obstruction) by others in the herd.
Elective Husbandry Procedures	procedures that are perceived to be stressful or painful to the animal, including castration, tail docking, clipping of needle teeth, nose ringing, identification and tusk trimming.
Farrow/ Farrowing	giving birth to piglets.
Farrowing crate	an enclosure closely related to the sow's body size, in which sows are kept individually during and after farrowing.
Farrowing pen	an enclosure for confining individual sows and their litters during and after farrowing. Such pens contain a creep area and a farrowing crate, or other structure, for confinement of a sow.
Finisher pigs	pigs that are in the final phase of their growth cycle, above 50 kg live-weight, until they are sold or retained for breeding. The same meaning applies for pigs referred to as <i>Finishing</i> .
Foster	a management practice where a piglet is moved soon after farrowing, so that it is fed by a sow that is not its mother.
Grower	pigs generally with live-weights between 20 and 60 kg. The same term can apply for pigs referred to as <i>Growing</i> . For example, throughout the entire growth period cycle from weaning to finishing.
Health	freedom from any (recognisable) disease or ailment.
Health treatment	any medication administered by oral dosing, injection, topical application to the skin or any other means.

Herd Health Program	a structured and documented management program (which in some states must be approved by the Minister) that identifies potential health risks to the pigs, and specifies relevant actions to prevent or minimise those risks.
Injury	physically obvious cuts, bruising or lameness.
Lactating sow	a sow that has given birth and is producing milk to feed her piglets.
Mated gilt	a young female pig that has been mated, but has not had a first litter.
Persistent aggression	repeated aggressive attacks on a pig by others in the herd, leading to deprivation of food or water, but not necessarily accompanied by physical injuries.
Persistent bullying	repeated aggressive attacks on a pig by others in the herd, leading to injury, deprivation of food or water, and/or restricted voluntary movement caused by fear.
Physiological requirements	maintenance of normal body functions, growth and reproduction parameters, in line with age, breed and type (refer to industry guidelines/benchmarks, such as PigCheck, 'Measure to Manage' program and any recommendations from breeding company regarding care of specific genotypes).
Remedial action	action taken to lessen or alleviate/eliminate a problem or stress.
Sow	an adult female pig which has had one or more litters, and may include a mated gilt that is confirmed pregnant but yet to give birth.
Special care	an individual nutritional regime required for a limited period to restore health and body condition; or administration of health treatments to the sow that require her to be confined, such as treatment of injuries and poor body condition, resulting from bullying by herd mates.
Stall	an enclosure, closely related to the pig's body size, in which gilts, sows and boars are kept individually. Stalls are normally joined together in rows and may be used for total confinement, or allow the pig to free choice of access.
Stock-person	a person who undertakes the immediate day-to-day husbandry tasks associated with looking after pigs.
Tether	a method of restraining pigs where a neck or girth collar is attached to a short length of chain, which is in turn fixed to the floor or the front of a pen.
Weaner	a pig after it has been weaned from the sow, up until about 20 kg live weight.
Wholesome liquid	a fluid, such as whey or any premixed liquid feed, that is delivered to the animals providing both water requirements and some component of nutrition.

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