11 January 2024

Inquiry into Pig Welfare in Victoria 2023
Economy and Infrastructure Committee
Parliament House, Spring Street
East Melbourne VICTORIA 3002

Submitted online: pigwelfareinquiry@parliament.vic.gov.au

Dear Committee,

Animals Australia submission to the Inquiry into Pig Welfare in Victoria

Animals Australia commends the Victorian Government on convening this much needed Inquiry.

Animals Australia has an extensive track record in calling attention to entrenched animal welfare issues and animal cruelty in relation to pigs. For many decades, we have formally and repeatedly alerted industry, the Australian community, and government, to serious concerns about pig welfare. Across the country, however, we still see pigs at every stage of their lives being subjected to unacceptable harms, including:

- **Painful husbandry** procedures (e.g., ear notching, teeth clipping, tail docking) routinely performed without anaesthesia or analgesia (pain-relief)[1];
- **Inhumane killing** methods for sick and injured piglets (e.g., smashing them against hard surfaces)[2];
- **Highly restrictive and barren housing** systems (e.g. mating stalls, boar pens, sow stalls, farrowing crates) that prevent basic freedom of movement and engagement in highly motivated behaviours, and cause injuries, frustration, stress, and distress[3,4];
- **Restrictive diets and feeding regimes** that do not permit engagement in highly motivated behaviours (e.g., foraging), rendering sows in a state of boredom, frustration, and hunger[5];
- **Stressful** loading, transport and unloading[6];
- **Aversive handling** practices (e.g., use of electric prods)[7]; and

[1] Adcock SJJ (2021) Early life painful procedures: long-term consequences and implications for farm animal welfare. Frontiers in Animal Science 2: 759522.
[2] EFSA Panel on Animal Health and Welfare (2020) Welfare of pigs during killing for purposes other than slaughter.
[3] EFSA Panel on Animal Health and Welfare (2022) Welfare of pigs on farm.
[4] Barnett JL et al. (2001) A review of the welfare issues for sows and piglets in relation to housing. Australian Journal of Agricultural Research 52(1), 1–28.
[5] Hoorweg FA et al. (2017) Review on hunger induced behaviours: aggression and stereotypies. EU Reference Centre for Animal Welfare - Pigs.
[6] EFSA Panel on Animal Health and Welfare (2022) Welfare of pigs during transport.
[7] Grumett D, Butterworth A (2022) Electric shock control of farmed animals: welfare review and ethical critique. Animal Welfare 31(3), 373–85.

Animals Australia Locked Bag 1236, North Melbourne, VIC 3051 Ph (03) 9329 6333 Fax (03) 9329 6441
enquiries@animalsaustralia.org • www.AnimalsAustralia.org • ABN 65 016 845 767 • ACN 617 080 387

- **Highly aversive CO_2** stunning[8].

Change in the pig industry is long overdue.

The failure to address recommendations made decades ago highlights the startling lack of progress. For example, in 1965, the seminal 'Brambell Report' raised concerns about intensive pig production including close confinement of sows, tail docking, and high stocking densities[9]. These concerns are as true today as they were then[10]. **In 2023, pigs are not even being treated in a way that is consistent with recommendations made in 1965, let alone in line with twenty-first century animal welfare science and community expectations.**

In the 1980s and 1990s, Animals Australia, then the Australian and New Zealand Federation of Animal Societies (ANZFAS), provided the 'benchmark' animal welfare submissions and testimony to the Senate Select Committee on Animal Welfare (SSCAW). ANZFAS raised concerns about close confinement, social isolation, invasive procedures, and lack of opportunity to engage in highly motivated behaviours. In their final 1990 report, SSCAW made several key recommendations including (but not limited to)[11]:

- "*11.72 The Committee recommends that future trends in housing the dry sow should be away from individually confined stall systems and that this be reflected in the Codes of Practice for the welfare of the pig and that this be reflected in the Codes of Practice for the welfare of the pig".*

- "*11.73 The Committee, noting that sow size has increased over the years, recommends immediate attention be given to ensure that stalls and farrowing crates currently in use do not cause suffering due to cramping. The Committee recommends that the Codes of Practice for the pig be revised to ensure stalls and crates reflect the body dimensions of large sows".*

- "*11.79 Finally the Committee recommends that the appropriate authorities ensure that regular inspections of intensive pig production units be undertaken to monitor husbandry practices generally and to ensure stocking densities do not exceed those specified in the Codes of Practice for the welfare of the pig".*

Decades later, evidence-based recommendations from the Brambell Report and SSCAW have still not been adequately regulated across Australia. This is while mounting scientific evidence indicates that pigs "*show self-awareness, form likes and dislikes, enjoy creative play, and experience emotions…*[and] *share a number of cognitive capacities with other highly intelligence species such as dogs, chimpanzees, elephants, dolphins and…humans"*[12].

More than ever, we are being called upon to re-evaluate our views about pigs, how they experience their lives, and how they must be treated.

We elaborate on these concerns in our response to the Inquiry's Terms of Reference.

[8] EFSA Panel on Animal Health and Welfare (2020) Welfare of pigs at slaughter.
[9] Brambell FWR (1965) Report of the Technical Committee to enquire into the welfare of animals kept under intensive livestock husbandry systems. Report presented to the Parliament by the Secretary of State for Scotland and the Minister of Agriculture, Fisheries and Food.
[10] Lawrence AB et al (2024) Positive Welfare: What does it add to the debate over pig welfare? advances in pig welfare, 2024, 83–112.
[11] SSCAW (1990) Intensive livestock production. A report to the Parliament of the Commonwealth of Australia.
[12] Marino L, Colvin CM (2016) Thinking pigs: cognition, emotion, and personality. Mammalogy Collection 1.

Overall, we make 18 key recommendations to the Inquiry:

Recommendation 1. New 'Australian Animal Welfare Standards and Guidelines for Pigs' must be developed to replace the outdated 'Model Code of Practice for the Welfare of Animals (2008) Pigs'.

Recommendation 2. Regulation of pig welfare across export and domestic abattoirs must be harmonised.

Recommendation 3. Regulations must be introduced to prohibit CO_2 stunning of pigs.

Recommendation 4. While CO_2 stunning occurs, CCTV systems must be mandated to visualise pigs inside CO_2 systems and evaluation of footage undertaken by regulators.

Recommendation 5. Regulations must be introduced to prohibit the extreme confinement of sows in sow stalls.

Recommendation 6. Regulations must be introduced to prohibit the extreme confinement of sows in conventional farrowing crates.

Recommendation 7. Regulations must be introduced to prohibit invasive procedures (including tail docking and castration) without anaesthesia or analgesia.

Recommendation 8. Conventional boar stalls must be phased out.

Recommendation 9. All pigs must be provided with adequate substrate and enrichment.

Recommendation 10. At a bare minimum, all sows must be provided with sufficient roughage/bulk to prevent chronic hunger.

Recommendation 11. Early weaning must be phased out and contemporary weaning practices must incorporate pre-weaning socialisation.

Recommendation 12. Killing piglets by smashing them against a hard surface must be prohibited.

Recommendation 13. Minimum space allowances must be reviewed to ensure all pigs have sufficient space to meet their behavioural and social needs.

Recommendation 14. Use of electric prods on pigs must be prohibited on farm, during transport and at abattoirs.

Recommendation 15. Human-inflicted lesion data should be collected and published with a view to phasing out tattooing/slap branding.

Recommendation 16. Routine monitoring of sows for painful conditions (e.g., lameness, oeseophago-gastric ulcers, urinary tract infections) must be undertaken and reported, and adequate treatment administered to relieve their suffering.

Recommendation 17. The underlying causes (e.g., confinement) of painful conditions (e.g., lameness, oeseophago-gastric ulcers, urinary tract infections)

must be addressed to prevent these conditions developing in the first place.

Recommendation 18. Overall data collection, reporting and transparency must be improved.

Contents

Executive summary

From birth to slaughter, pigs in Victoria and across Australia, are suffering unacceptable and entirely preventable harm. Animals Australia calls on the Victorian Government to urgently address poor animal welfare and animal cruelty in intensive pig farming.

The outdated 'Model Code of Practice for the Welfare of Animals (2008) Pigs' must be updated, and we contend that all pigs should be provided with adequate space, substrate, enrichment, and roughage. Immediate action must be taken to address early weaning, painful procedures (e.g., tail docking) and painful health conditions (e.g., lameness).

On animal welfare grounds, Animals Australia urges regulators to prohibit sow stalls and farrowing crates, boar stalls, electric prods, inhumane killing of piglets, and CO2 stunning, and mandate CCTV in slaughterhouses to monitor pigs during stunning and slaughter. Given apparent inconsistencies in the response of Commonwealth and state regulators to cruelty to pigs in Victorian abattoirs, we recommend the harmonisation of animal welfare regulation across export and domestic abattoirs.

Going forward, data collection, reporting and transparency must be improved to ensure effective monitoring and enforcement.

It is unacceptable for pigs to continue to be deprived of basic freedom of movement, subjected to hunger, discomfort, and pain, and prevented from engaging in highly motivated behaviours.

Regulatory reform, in line with available scientific evidence and community expectations, is needed now.

ToR 1. The scope, application, compliance with and enforcement of relevant existing regulatory frameworks and their ability to promote pig welfare outcomes

It is clear from long-standing and ongoing animal welfare issues that existing regulatory frameworks have proven insufficient to prevent or address poor animal welfare and animal cruelty to pigs in Victoria.

Regulators have long been made aware of entrenched poor animal welfare, by Animals Australia and other parties, but have failed to improve regulatory frameworks or take adequate enforcement action. Existing regulatory frameworks and enforcement regimes have failed to protect pigs from fear, frustration, stress, distress, pain, and hunger, associated with a myriad of harmful practices (outlined above). As these issues are Australia-wide, we refer to relevant national as well as Victoria specific examples.

Regulators continue to facilitate (e.g., via the granting of licenses to operate), turn a blind eye to (e.g., via failure to monitor), and condone (e.g., via failure to mitigate or stop) practices that cause unnecessary harm to pigs. Policy development via Codes and Standards and Guidelines is slow, ineffectual and is widely acknowledged to be currently dysfunctional. System transformation is required to safeguard animal welfare and meet community expectations (which we discuss further in Section 6).

Animals Australia can attest to a protracted timeline of regulatory and enforcement failures dating back several decades.

1.1 Failure to update Animal Welfare Standards and Guidelines for Pigs

Recommendation 1. New 'Australian Animal Welfare Standards and Guidelines for Pigs' must be developed to replace the outdated 'Model Code of Practice for the Welfare of Animals (2008) Pigs'

Australia lacks an up-to-date nationally consistent approach to pig welfare. The key policy documents are woefully out of date, contributing to inadequate animal welfare regulations.

Animals Australia (and ANZFAS) have been pushing for reform since Australia's first codes of practice for pigs in 1980s. During the development of the current Model Code of Practice for the Welfare of Animals (2008) Pigs (the Model Code), most issues were not even adequately discussed and the draft Model Code was finalised by the Animal Welfare Working Group (AWWF) not the Code Review Reference Group (including Animals Australia and RSPCA Australia). As we formally stated to the Co-ordinator of the Code Review at the time, Animals Australia did not 'sign off' on the current Model Code because it allowed cruel practices (e.g., sow stalls, farrowing crates, and invasive procedures without anaesthesia or analgesia) to continue.

Just one example to illustrate deficiencies in the current Model Code is how it deals with extreme confinement. Despite overwhelming evidence of their significant harms to animals[5], unacceptable forms of extreme confinement are still permitted under the Model Code and Victorian Standards and Guidelines for the Welfare of Pigs (2012) (the Victorian Standards). Issues associated with extreme confinement are discussed further in Sections 3 and 4.

Animals Australia has previously drawn attention to deficiencies in the Model Code. In 2006, we served on the stakeholder group reviewing the Model Code and made formal submissions calling for significant improvements in line with scientific evidence and community expectations. No significant changes were made, with pig industry intransigence clearly influencing State Agriculture Ministers who are the final decision-makers.

In 2018, a review of the scientific literature and international pig welfare codes and standards was commissioned by Australian Pork Limited (APL)[13]. Since then no further progress has been made in updating the 2008 Model Code to Australian Animal Welfare Standards and Guidelines for Pigs. The process has stalled, leaving Australia still without contemporary animal welfare standards for pigs.

To date, the policy development process has failed animals. This failure is to a great degree attributable to the influence of industry in the policy development process.

> "*The livestock industries are not only able to exert influence over the development of the standards, but also over the scientific research that underpins the standards (White 2013). Indeed, they may even be involved in commissioning the research, as is the case in the development of the standards and guidelines for the welfare of pigs."*

Australia needs independent and accountable oversight of animal welfare policy. As a matter of urgency, an agency independent from industry and the agriculture department, must be appointed and resourced to lead the updating of the Australian Animal Welfare Standards and Guidelines for Pigs.

State governments can take a leadership role in the Standards development process, for example Queensland (albeit the Department of Agriculture) is currently coordinating the review of the Australian Animal Welfare Standards for Processing Establishments. We urge the Victorian Government to take a leadership role in the development of long overdue Australian Animal Welfare Standards and Guidelines for Pigs.

1.2 Inconsistent response of Commonwealth and state regulators

Recommendation 2. Regulation of pig welfare across export and domestic abattoirs must be harmonised

Australia has no coherent Commonwealth animal welfare legislation, and animal welfare regulation across the country has been described as "*fragmented, complex, contradictory, inconsistent*". As such, the current legal system as it pertains to animal welfare "*causes public confusion, makes national data collection almost impossible, and does not present a united front toward animal protection*"[14].

The contradictory and inconsistent nature of animal welfare regulation was evident in the response of different regulators to recent evidence of pigs suffering in CO_2 stunning systems.

In March 2023, footage was released of pigs suffering inside CO_2 systems at three abattoirs in Victoria[15]. One of the abattoirs in question, Diamond Valley Pork (DVP), is an export abattoir regulated by the Federal Department of Agriculture, Fisheries and Forestry (DAFF), and two of the abattoirs in question, Australian Food Group (AFG) and Benalla, were/are domestic abattoirs. All three abattoirs operate(d) in Victoria and thus require(d) licensing by the state regulator, PrimeSafe. However, it appeared that DAFF and PrimeSafe responded differently to the evidence of pigs suffering in CO_2 systems.

It is understood that PrimeSafe charged AFG with two counts of breaching the Victoria *Meat Industry Act 1993*[16] and required AFG to install CCTV cameras inside its CO_2 system as a

[13] Hemsworth L et al (2018) Review of the scientific literature and the international pig welfare codes and standards to underpin the future standards and guidelines for pigs. A report commissioned by Australian Pork Limited.
[14] Morton R, Whittaker AL (2022) Understanding subordinate animal welfare legislation in Australia: assembling the regulations and codes of practice. Animals 12(18), 2437.
[15] Day L (2023) Stunned. ABC 730, 30 Mar.
[16] Hunt P (2023) Gas chamber video leads to charges against pig abattoir. The Weekly, 2 Nov.

condition of its licence. Shortly thereafter, AFG ceased operating as an abattoir[17]. It was also reported that Benalla committed to "*installing CCTV to monitor pig handling*"[16]. It is unclear whether DAFF has required DVP to install CCTV to view pigs inside the CO_2 system. But there may be inconsistencies in the regulatory response, illustrating the inadequacies of current frameworks.

An animal has the same needs and welfare requirements regardless of whether they are sent to an export abattoir or a domestic abattoir. Yet, we have abattoirs in Victoria, and across Australia, apparently operating under different regulatory requirements. Uniform appropriate regulations and enforcement are urgently required.

1.3 Failure to act on long-standing evidence of pigs suffering inside CO2 systems

Existing regulatory frameworks have failed to prevent **and thereby have accepted** the suffering of pigs in CO_2 systems despite multiple studies spanning decades consistently demonstrating that CO_2 stunning is highly aversive to pigs[18,19,20,21,22]. Further details are provided in Section 2.

1.4 Failure to prevent the confinement of sows in highly restrictive housing systems

Despite overwhelming scientific evidence of the unacceptable suffering of sows confined in highly restrictive conventional housings systems[3,4,23,24,25,26,27], regulatory frameworks in Victoria (and all states and territories except the ACT) have failed to prevent the extreme confinement of sows. Industry has been left to self-regulate regarding housing and facilities and this has proven ineffective in protecting all sows from extreme confinement. Further details are provided in Section 3.

1.5 Failure to mandate anaesthesia or pain relief for painful husbandry procedures

> "*Piglets may undergo a battery of procedures during the first few days or weeks of life, potentially including tooth-clipping, tail docking, castration, and ear-notching or another identification method such as tagging or tattooing*"[28]

[17] Day L (2023) Pig abattoir cease operation amid investigation into "serious and disturbing" allegations. ABC News, 26 Apr.
[18] Jongman EC et al (2021) Pre-slaughter factors linked to variation in responses to carbon dioxide gas stunning in pig abattoirs. Animal 15(2), 100134.
[19] Raj ABM, Gregory NG (1995) Welfare implications of the gas stunning of pigs 1. determination of aversion to the initial inhalation of carbon dioxide or argon. Animal Welfare 4(4), 273–80.
[20] Rodríguez P et al (2008) Assessment of unconsciousness during carbon dioxide stunning in pigs. Animal Welfare 17(4), 341–49.
[21] Steiner AR et al (2019) Humanely ending the life of animals: research priorities to identify alternatives to carbon dioxide. Animals 9(11), 911.
[22] Velarde A et al. (2007) Aversion to carbon dioxide stunning in pigs: effect of carbon dioxide concentration and halothane genotype. Animal Welfare 16(4), 513–22.
[23] Baxter EM et al (2018) Sow welfare in the farrowing crate and alternatives. Advances in Pig Welfare, 27–72.
[24] Baxter EM (2021) Chapter 4: Optimising sow and piglet welfare during farrowing and lactation. In Understanding the Behaviour and Improving the Welfare of Pigs, Burleigh Dodds Science Publishing.
[25] Ceballos MC et al (2021) Impact of duration of farrowing crate closure on physical indicators of sow welfare and piglet mortality. Animals 11(4), 969.
[26] Goumon S et al (2022) Review of temporary crating of farrowing and lactating sows. Frontiers in Veterinary Science 9, 811810.
[27] Pedersen LJ et al (2020) Review on Farrowing Housing and Management. EURCAW-Pigs.
[28] American Veterinary Medical Association (2014) Literature review on the welfare implications of teeth clipping, tail docking and permanent identification of piglets.

Expert review of the scientific literature has concluded that procedures routinely performed on piglets without anaesthesia or analgesia, including teeth clipping and tail docking, are stressful and painful[3]. Yet regulatory frameworks have failed to mandate anaesthesia or analgesia (pain relief) for painful procedures routinely performed on piglets.

Animals Australia has for decades formally called for mandatory pain relief for painful husbandry procedures, or indeed their phasing out, including to the Senate Select Committee on Animal Welfare in the 1980s, in the early 1990s and again in the 2000s during reviews of the Model Code, and in a 2020 submission to the New South Wales (NSW) Government, and at all and every other State or national opportunity.

Under APIQ Free Range Standards, teeth trimming, tail docking and surgical castration are not permitted but these are not legislated minimum requirements, and APL Certified Free Range represents only a very small fraction of the Australian industry.

Other jurisdictions have moved to limit these painful husbandry procedures without anaesthesia and analgesia (see Section 5.4), but Australia is lagging far behind. To illustrate just how far behind pig welfare policy and regulation is in Australia, we again draw the Committee's attention to the seminal Brambell Report (1965)[9]:

- **Teeth clipping** - The Brambell Report (1965) highlighted that teeth clipping is "*inherently injurious*" and "*the necessity for teeth reduction can be minimised by risk mitigation; this includes sow management…and balancing litter size with the number of teats*"[1]. These conclusions have been further supported by subsequent studies[29,30]. Yet in 2023, teeth clipping is still permitted in Australia.

- **Tail docking** - The Brambell Report (1965) stated that "*tail biting is rare under good management in suitable houses that are not over-stocked, and that in consequence docking will be generally unnecessary under the conditions we have specified. We disapprove of this mutilation in principle; it involves the destruction of sensitive tissue and bone, thus causing severe pain and we recommend that the docking of pigs should be prohibited, save, when necessary, as a remedial treatment by a veterinary surgeon*"[1]. These conclusions have been further supported by subsequent studies[31] and reviews[11]. Yet in 2023, tail docking (amputation – cutting through the end of the spinal cord) of piglets without anaesthesia or analgesia is still permitted in Australia.

- **Castration** - The Brambell Report (1965) highlighted that surgical castration without anaesthesia and analgesia is painful at any age[3]. While most piglets in Australia are no longer routinely surgically castrated, there are still no regulations mandating pain relief when castration is performed.

[29] M. Gallois, Y. Le Cozler, and A. Prunier, 'Influence of Tooth Resection in Piglets on Welfare and Performance', Preventive Veterinary Medicine 69, no. 1 (10 June 2005): 13–23.
[30] W. Hay et al., 'Long-Term Detrimental Effects of Tooth Clipping or Grinding in Piglets: A Histological Approach', Animal Welfare 13, no. 1 (February 2004): 27–32.
[31] A Valros and M Heinonen, 'Save the Pig Tail', Porcine Health Management 1, no. 1 (2015): 2, https://doi.org/10.1186/2055-5660-1-2.

ToR (2) the ability of the most common methods used to stun pigs before slaughter (including electrical stunning and exposure to high concentrations of carbon dioxide gas) in Victorian slaughterhouses to minimise pain, suffering and distress and prevent injury, and available alternatives

2.1 CO_2 stunning of pigs is inhumane and should not be permitted

Recommendation 3. Regulations must be introduced to prohibit CO_2 stunning of pigs

There is robust and long-standing scientific evidence, from international[20-22] and Australian studies[18], that CO_2 is highly aversive to pigs[8].

The suffering of pigs exposed to high concentration CO_2 is severe and multifactorial[8]. They experience painful burning of the mucus membranes (e.g., eyes, nose, throat)[32], breathlessness (physical sensation of struggling to breathe and the associated negative affective states e.g., panic), air hunger (the feeling of 'needing more air', 'being smothered' or 'suffocating')[33], physiological[34] and psychological[35] stress and distress, respiratory distress (related to inability to get enough oxygen)[36], and intense fear associated with the amygdala response to CO_2[37] . CO2 stunning may also affect animal welfare via major mineral and acid base imbalances[38].

In 90% CO_2, (the regulated level in Australia) some studies report average time to loss of consciousness of ~one minute[20], two minutes[13], or as long as 3 min 39 sec[35]. Studies which report shorter time periods often only report time to loss of posture (i.e., falling over) but measures of brain activity by electroencephalogram (EEG)[39] and auditory evoked potentials (AEP)[40] show that pigs may still be conscious for 10[39] to 60 seconds[20] after loss of posture. In effect, pigs exposed to CO_2 stunning may suffer unbearably for up to several minutes even when the system is operating 'optimally/as intended'.

A recent study of 1769 pigs across five Australian abattoirs (199-492 focal pigs per abattoir) found up to 46.2% of pigs were crawling and trying to escape the gondola as it descended into the next (lower) level of the CO_2, and up to 81.8% of pigs were seen gasping[18]. Considering that cameras in this study did not follow pigs all the way down to the bottom of the pit, it is possible that this represents a conservative estimate of distress behaviours in pigs exposed to CO_2 in commercial abattoirs in Australia.

Another recent experimental study confirmed that pigs are still conscious while displaying behaviours consistent with extreme distress (e.g., gasping) and some remain conscious when seen vigorously shaking their heads and bodies[40]. This adds further to already overwhelming evidence that CO_2 gassing of pigs is inhumane and cannot be permitted to continue.

[32] A Dalmau et al (2010) Stunning pigs with different gas mixtures: aversion in pigs. Animal Welfare 19(3), 325–33.
[33] Beausoleil NJ, Mellor DJ (2015) Introducing breathlessness as a significant animal welfare issue. New Zealand Veterinary Journal 63(1), 44–51.
[34] Sutherland MA et al (2017) The effect of age and method of gas delivery on carbon dioxide euthanasia of pigs. Animal Welfare 26(3), 293–99.
[35] Atkinson S et al. (2015) Group stunning of pigs during commercial slaughter in a Butina pasternoster system using 80% nitrogen and 20% carbon dioxide compared to 90% carbon dioxide. Swedish University of Agricultural Sciences.
[36] Raj ABM, Gregory NG (1996) Welfare implications of the gas stunning of pigs 2. Stress of induction of anaesthesia. Animal Welfare 5(1), 71–78.
[37] Ziemann AE et al (2009) The amygdala is a chemosensor that detects carbon dioxide and acidosis to elicit fear behavior. Cell 139(5), 1012–21.
[38] Becerril-Herrera M et al (2009) CO2 stunning may compromise swine welfare compared with electrical stunning. Meat Science 81(1), 233–37.
[39] Verhoeven M et al (2016) Time to loss of consciousness and its relation to behavior in slaughter pigs during stunning with 80 or 95% carbon dioxide. *Frontiers in Veterinary Science* 3.

Examination of tissue samples also showed that pigs exposed to CO_2 sustain bleeding in their lungs and airways[40].

So severe is the distress of pigs exposed to high concentrations of CO_2 that pigs' behavioural response is not lessened even with the administration of butorphanol[41], a potent opioid sedative and analgesic (three to five times more potent than morphine in humans and up to thirty times more potent than morphine in rats[42]). This suggests pigs experience such overwhelming distress associated with breathlessness that it may over-ride even the effect of butorphanol on pain[41].

So severe is the suffering of pigs exposed to high concentration CO_2 that it has been described thus - "*animals' survival instincts are being triggered to the maximum capacity, which probably induced the* ***highest level of fear and distress possible in the animals' attempt to survive***"[35] [emphasis added].

A panel of international experts advising the European Commission, reviewed available evidence, and concluded that the level of extreme suffering caused by CO_2 stunning cannot be mitigated, that is, "***there are no preventive or corrective measures to the pain, fear and respiratory distress caused by the exposure to high CO_2 concentrations as this is inherent to the stunning method***"[8].

On animal welfare grounds, Animals Australia strongly opposes the continued use of CO_2 to stun pigs. Particularly given that the latest evidence of pigs suffering in CO_2 systems was collected from three Victorian abattoirs, we call on the Victorian Government to take a leadership position on this issue and take action to stop this inherently harmful practice.

2.2 Long-standing evidence of pigs suffering in CO_2 systems in Australia including Victoria

There is long-standing evidence that use of CO_2 stunning systems in Australia causes pigs maximal pain, suffering and distress.

In 2014, undercover footage was taken of pigs inside a CO_2 system in NSW. When exposed to CO_2, pigs could be seen trying frantically to escape, screaming and thrashing[43]. At the time, Animals Australia formally raised concerns with the Commonwealth Minister for Agriculture, DAFF, the Managing Director of Rivalea Australia, the Australian Meat Industry Council, the Meat Industry Working Group, and APL. The facility sacked several staff members and claimed that loading facilities were altered to improve flow. Research was later commissioned by APL to examine CO2 stunning in 5 Australian commercial abattoirs. That research confirmed the severe welfare impact was evident in each facility[18]. However, the practice of CO_2 stunning of pigs continues to this day with industry statements still insisting that it is humane.

Almost a decade on from the 2014 expose and an estimated 85% of pigs slaughtered in Australia are stunned using CO_2[44].

On 27 March 2023, footage of pigs inside CO_2 systems at three pig abattoirs in Victoria aired on *ABC 730*[15]. Pigs can be seen trying frantically to escape, struggling, thrashing, screaming,

[40] Hognestad BW et al (2023) CO2 Stunning in pigs: physiological deviations at onset of excitatory behaviour. Animals 13(14), 2387.
[41] Çavuşoğlu E et al (2020) Behavioral response of weaned pigs during gas euthanasia with CO2, CO2 with butorphanol, or nitrous oxide. *Animals* 10(5), 787.
[42] Wixson SK (1994) Anesthesia and analgesia. In The Biology of the Laboratory Rabbit, American College of Laboratory Medicine, 87–109.
[43] Farm Transparency Project, 'Humane Slaughter' at Corowa NSW Abattoir', 2014.
[44] Australian Pork Limited (n.d.) Stages of Pork Production.

and gasping, as they are exposed to CO_2, regardless of whether they were moved to the gondolas in groups or single file[45]. Following the release of this footage, Animals Australia lodged formal animal cruelty complaints with two different regulators, DAFF and PrimeSafe Victoria.

2.3 Lack of monitoring and accountability surrounding the use of CO2 stunning

Recommendation 4. While CO_2 stunning occurs, CCTV systems must be mandated to visualise pigs inside CO_2 systems and evaluation of footage undertaken by regulators

Despite records of CO_2 systems in use in Australia as far back as the early 1990s[46], the 2014 expose was the first-time the public (anywhere in the world) was able to view footage of pigs inside these systems. There remain no standardised state or nationwide regulatory requirements for animal welfare monitoring (e.g., CCTV) inside the system or reporting of pigs' response to CO_2 inside these systems. Indeed, we have concerns whether anyone is routinely monitoring pigs inside the gondolas.

Of relevance is that the Australian Meat Industry Council (AMIC) Standards (adopted by all export abattoirs and some domestic abattoirs) routinely require audit monitoring of vocalisations of animals in abattoirs (an indicator of welfare) but suspends this requirement for pigs within gas systems. Industry claims this is because they cannot isolate vocalisations to specific individuals. However, the loud screaming of pigs in CO_2 systems, regardless of whether one can pinpoint the specific individual who is screaming, is clearly still indicative of intense psychological distress originating from overwhelming physical, psychological and physiological stressors[47].

In large paternoster systems (deep CO2 pits with a ferris-wheel type motion), pigs cannot be viewed inside the gondolas without CCTV cameras placed inside the system. As Professor Temple Grandin (2022) writes –

> *"To assess the pig's reaction in large commercial CO_2 machines **will require the use of video cameras installed in the pit.** In the large machine, the gondolas travel through the CO_2 on a continuous conveyor, which is like a skinny Ferris wheel. Viewing the pigs when they reach the bottom of the deep pit is **impossible** because the next gondola blocks the view"*[48] [emphasis added]

Animals Australia questions how abattoir staff, the industry peak body and the regulators are currently monitoring pigs' reaction to CO_2 in large commercial systems. According to Grandin, this "*will require the use of video cameras installed in the pit*", But as there is no standardised requirement for all abattoirs using CO_2 systems in Australia to have CCTV installed in the pit so how are they monitoring the pigs and assessing their welfare?

Wherever CO_2 stunning systems are currently in use, CCTV must be mandated inside the pit and unannounced evaluation of this CCTV footage must be undertaken by independent regulators.

[45] Farm Transparency Project, 'Ban Gas Chambers: Videos – Diamond Valley Pork, Australian Food Group Abattoir, Benalla Abattoir', 2023.
[46] Productivity Commission (1995) Pigs and Pigmeat.
[47] Lechner I et al (2021) Discomfort period of fattening pigs and sows stunned with CO2: duration and potential influencing factors in a commercial setting. Meat Science 179, 108535.
[48] Grandin T (2022) Carbon dioxide stunning of pigs.

2.4 Alternatives to CO2 gassing

High concentrations of CO_2 have been known for decades to cause pain, fear, and distress in pigs before loss of consciousness[17-21] but no alternative to the current CO_2 gas systems for pigs appear to be in commercial development[49], and in Australia, neither government nor industry appear to be investing in alternatives.

The lack of alternative systems represents a failure of prioritisation and investment by industry and government. Industry has been allowed to prioritise killing as many pigs as fast as possible while ignoring irrefutable evidence that this method is unacceptable on animal welfare grounds.

That government and industry have failed to stop inhumane CO_2 stunning, and failed to invest in research into alternatives is clear. From FY2012-13 to FY2021-222, the Commonwealth Government provided $51,163,945 in matched research and development (R&D) funding to APL but none of this funding has been invested in finding alternatives to CO_2 stunning of pigs[50] In contrast, following the 2020 report by the Animal Health and Welfare (AHAW) Expert Panel that highlighted the inherent pain, fear and respiratory distress to pigs exposed to high concentration CO_2[8], the European Commission invested €2 million in ongoing applied research into alternatives[51]. This EU funding appears to be supporting The PigStun Project, a consortium of researchers across Europe. The PigStun Project "*aims to encourage EU pig slaughterhouses using high carbon dioxide concentration to convert to more welfare friendly systems*", and they are studying "*promising alternatives*" including inert gases and improved electrical stunning.

2.5 Electrical stunning, a currently available alternative

In the immediate term, large-scale automated electrical stunning systems represent the most feasible alternative to CO_2 systems. Best practice automated head-to-body electrical stunning allows pigs to be moved in familiar groups and stunned in a way that renders them immediately insensible and eliminates chance of recovery of consciousness prior to sticking[52] (throat cutting). These electrical systems are currently available and already in widespread use internationally.

We readily acknowledge that there are multiple potential animal welfare hazards associated with electrical stunning such as restraint stress and mis-stun (see comprehensive review by EFSA AHAW 2020)[8]. However, there is significant and demonstrable scope to improve animal welfare in electrical stunning systems (e.g., facility design, improved animal handling) whereas even the 'best' CO_2 system is inherently painful and distressing i.e., no amount of management or facility improvements can alleviate the animal welfare hazards inherent in CO_2 stunning[8].

If pigs are to be slaughtered, 'best practice' automated head-to-body electrical stunning is preferable to CO_2 stunning. The Dutch organisation, Eyes on Animals, has worked with several large European pig abattoirs, with high throughput comparable to the largest pig abattoirs in Australia, to install multiple electrical stunning systems, design raceways and stun boxes, train handlers in low-stress handling, and address other facility factors that can pig welfare (e.g., lighting, air flow, noise, flooring)[52]. We are aware that Eyes on Animals have consulted to at

[49] Sindhøj E et al (2021) Potential alternatives to high-concentration carbon dioxide stunning of pigs at slaughter. Animal 15(3), 100164.

[50] Finance and Investment Division, 'Answers to Questions on Notice', Budget Estimates Agriculture, Fisheries and Forestry Portfolio (Rural and Regional Affairs and Transport, 16 June 2023).

[51] EuroGroup for Animals (2020) High-concentration CO2 stunning of pigs: the European Parliament approves funding to move away from the cruel practice.

[52] Eyes on Animals (2021) Improving animal-welfare in pig slaughterhouses – Tips on how to reduce stress, suffering and ease handling.

least one large European commercial pig abattoir who, on animal welfare grounds, have transitioned from CO_2 to 'best practice' electrical stunning.

Defenders of CO_2 often cite the advantages of moving pigs in familiar groups as a reason to retain CO_2 stunning. However, as can be seen in the single and group-wise CO_2 stunning systems depicted in the recent footage from Victorian abattoirs[45], the pigs are panicking struggling and suffering in the CO_2 regardless of whether they are moved in groups or not. In addition, group handling is not exclusive to CO_2 stunning. In abattoirs practicing best practice automated electrical stunning, pigs are moved in familiar groups right up until the final seconds when the individual pig moves into the stun box and electrodes are applied[52].

Concerns have also been raised about return to consciousness with electrical stunning. However, comprehensive expert review has concluded that "i*rreversible stunning of pigs by head-to-body application of an electric current eliminates the chances of recovery of consciousness and stun-to-stick interval is not critical*"[8].

In the past, concerns have been raised about meat quality in electrical systems. However, more recent direct comparisons of electrical and gas stunning have found that any differences in meat quality are minor, and differences reported in earlier studies are "*probably due to different levels of pre-slaughter stress and not to different impacts of the stunning method. This indicates that electrical stunning may result in improved meat quality if pre-stun conditions are less stressful and demand less physical effort*"[53].

2.7 Alternatives in research and development

Several other alternatives to CO_2 are currently at the research stage (e.g., inert gases, Low Atmospheric Pressure Stunning (LAPS). Other methods have been discussed but remain largely or entirely theoretical in the absence of published assessments in pigs (e.g., single pulse ultra-high current stunning, electromagnetic radiation)[54]. We are aware that international investigations into some of these alternatives are ongoing.

2.7.1 Inert gases

Evidence to date indicates that inert gases (e.g., 90% argon (Ar) are less aversive to pigs compared to CO_2[54,55]. However, they require longer dwell times in the gas, and pigs exposed to high concentration Ar remain unconscious for a shorter period, so stun-stick interval is critical to ensure pigs are still in a state of deep unconsciousness at sticking[55]. Sindhøj E et al (2021) reviewed alternatives to high-concentration CO_2 stunning of pigs at slaughter, including alternative gases[49].

2.7.2 Low Atmospheric Pressure Stunning

While literature-based assessments have suggested that "*LAPS could be commercially viable for pig slaughter and that for most pigs it will be less stressful than current commercial slaughter method*", it is also noted that "*pigs suffering from upper respiratory tract disease, tooth decay or excess gas in the alimentary canal may, however, experience pain*"[56]. Post-mortem examination of anaesthetised pigs exposed to LAPS found "*congestion in most organs*

[53] Terlouw EMC et al (2021) Comparing gas and electrical stunning: effects on meat quality of pigs when pre-stunning physical activity is minimal. Foods 10(2), 319.
[54] Brandt P (2015) Assessment of welfare of finishing pigs from farm to slaughter. PhD thesis, Aarhus University, Danish Meat Research Institute.
[55] Raj ABM (1999) Behaviour of pigs exposed to mixtures of gases and the time required to stun and kill them: welfare implications. Veterinary Record 144(7), 165–68.
[56] Bouwsema JA, Lines JA (2019) Could Low Atmospheric Pressure Stunning (LAPS) be suitable for pig slaughter? A review of available information. Animal Welfare 28(4), 421–32.

and some haemorrhage, which could raise concerns for the welfare of conscious pigs undergoing this type of stunning, depending on when in the cycle the damage is occurring"[57]. More information is required to evaluate the animal welfare advantages and disadvantages of LAPS for pigs.

2.8 Over-reliance on CO2, a non-renewable resource

In addition to direct animal welfare concerns, over-reliance on CO_2 also creates supply chain vulnerabilities which can have flow on effects for animal welfare. For example, in 2023, meat processors across the east coast of Australia experienced an "acute" and "serious shortfall" in carbon dioxide, and "*a recent industry survey revealed most industry players could only source 50 per cent or less of their normal CO2 needs…other countries have experienced similar problems, and it does appear to be a structural problem fuelled by high energy prices and certain CO_2 producing industries reducing or closing…as we decarbonise the economy we will generally be producing less CO_2 as well, so this isn't going to go away*"[58]. In recent years, shortages of CO_2 in the UK and Europe triggered industry panic, fears of mass on farm pig culls, and calls for government intervention[59]. These concerns only further bolster the case for reducing reliance on CO_2 and phasing-out CO_2 stunning of pigs.

ToR (3) the outcomes of the 2017 industry-led phase out on the use of sow stalls

Recommendation 5. Regulations must be introduced to prohibit the extreme confinement of sows in sow stalls

> "*People are being led to believe by this industry that sow stalls are a thing of the past when they are still widely used*"[60].

Sow stalls, also known as 'gestation crates' or 'gestation stalls', confine a sow during pregnancy. From 2017, the Model Code has permitted the confinement of sows in sows stalls for up to 6 weeks each pregnancy i.e., a minimum space allowance of 60 x 220cm for an adult sow. Sow stalls restrict even the most basic freedom of movement. She is unable to get up and lie down comfortably. She cannot turn around or walk freely. She suffers painful injuries, lameness and urinary tract infections, and experiences social isolation, stress and frustration[5].

> "*The amount of space a sow needs in order to perform even the most minimal body movements have been determined: A sow weighing 250 kg needs an area* [at least] *220.3 cm long and 86.4 cm wide in order to stand up and lie down in one place without touching the sides of an enclosure—a larger area than typical crates provide. Most gestation stalls are not wide enough to allow a sow to lie down on her side without "protruding outside the bars or being compressed against the bars of the side walls."*[61]

In the absence of an adequate regulatory framework, industry has been left to self-regulate. Legal experts, Timoshanko and Kyriakakis (2015), identified key flaws in industry self-regulation of sow stalls[62].

- **Not real freedom** - APL never intended for the voluntary phase-out to free sows from confinement because their definition of "loose housing" includes other forms of

[57] Baxter EM et al (2022) Characterizing candidate decompression rates for hypobaric hypoxic stunning of pigs. Part 2: pathological consequences. Frontiers in Veterinary Science 9, 1027883.
[58] Greenblatt E (2023) Meat processors report "acute" and "serious shortfall" in carbon dioxide which is critical in processing meat products. The Australian, 1 May.
[59] Ambrose J, Partridge J (2021) UK carbon dioxide shortage could force farmers to cull pigs. The Guardian, 18 Sept.
[60] McNaughton J (2022) Illegal investigation by animal rights activists uncovers pigs in sow stalls across Victoria. ABC, 21 Sept.
[61] Humane Society US (2009) The welfare of sows used for breeding in the pig industry. Impacts on Farm Animals 26.
[62] Timoshanko A, Kyriakakis J (2015) It will take a ban on caging pigs to clean up the pork industry. The Conversation, 28 Jul.

confinement. The phase-out also fails to address access to the outdoors, social isolation, or barren stalls without bedding/nesting material.

- **Not all producers** - The voluntary phase-out was only ever intended to apply to APL members (~38% of pork producers accounting for 94% of pig meat products) so there are producers who do not even come under the voluntary scheme.

- **No independent oversight** - There is no independent verification because the voluntary phase-out is overseen by the Australian Pork Industry Quality Assurance Program (APIQ) which is owned and managed by APL.

- **No penalties for non-compliance** - The phase-out was voluntary, with no mechanisms to penalise APL members who continue to confine sows in sow stalls.

There is a lack of data transparency, but it is estimated that ~20% of pregnant sows are still being housed in sow stalls[63], and there remain no legal ramifications for producers who continue to confine sows in this way.

Despite pledges by industry to phase out highly restrictive sow stalls by 2017[64], their use continues. Industry spokespeople have publicly stated that "*Over 88% of industry have voluntarily phased out the use of sow stalls for a period longer than five days*"[60] but **evidence collected in 2022 from six farms across Victoria revealed pigs confined in sow stalls for up to 27 days**[60].

> *"There are limits to the efficacy of industry self-regulation given the tension that can exist between profit maximisation and animal welfare goals… **To protect all pregnant pigs from sow-stalls, laws must be passed in each Australian State and Territory**"*[60]
> [emphasis added]

ToR (4) Current industry breeding and housing practices particularly the use of different forms of confinement

Recommendation 6. Regulations must be introduced to prohibit the extreme confinement of sows in conventional farrowing crates

> "*At the negative extreme, close confinement and isolation of social animals in threatening and/or barren environments may lead to experiences that include various combinations of anxiety, fear, panic, frustration, anger, helplessness, loneliness, boredom and depression*"[65]

Animals Australia asserts that current industry breeding and housing practices, particularly the use of different forms of confinement, are not consistent with contemporary animal welfare science. We addressed concerns about sow stalls in Section 3, and here we move to concerns about conventional farrowing crates (FC).

4.1 Failure of policy and regulation to free sows from extreme confinement

Shortly before a sow is due to give birth (farrow), she is moved into a FC, which is like a sow stall with a small amount of additional space (creep) to the side accessible to the piglets but not the sow.

[63] RSPCA Australia (2023) What are the animal welfare issues with sow stalls?.
[64] Australian Pork Limited (n.d.) Housing.
[65] Mellor DJ (2016) Updating animal welfare thinking: moving beyond the "Five Freedoms" towards "a Life Worth Living"', Animals 6(3), 21.

Existing Codes, Standards and regulations permit the industry to subject sows to extreme confinement in FC for up to six weeks per reproductive cycle. The Model Code permits minimum farrowing crate dimensions of 0.5 x 2m and a total farrowing crate and creep area of 3.2m^2. Given that the sow does not have access to the creep area, keeping her in a conventional FC is the equivalent of keeping a large (up to 250kg), heavily pregnant (then lactating) animal in a footprint similar to that of a standard bathtub for a month and a half. She can stand up or lie down, but cannot turn around, nor even properly interact with her piglets.

Given that there is insufficient policy and regulation to protect them, it seems likely that the majority (>85%[66]) of Australia's ~265, 000 breeding sows[67] are confined in FC for between 4 and six weeks per reproductive cycle; some days to a week prior to farrowing and then 3-4 weeks before the piglets are weaned. The Model Code permits even longer confinement in some circumstances "*e.g., where a sow is required to foster a second litter after her own piglets are weaned*".

Sows in commercial piggeries are typically bred twice a year for approximately two years (average ~4.8 litters per sow[68]). As per the Model Code, she can legally be kept confined in a conventional FC for six weeks per cycle, equating to twelve weeks (three months) per year if she is bred twice a year. If she is bred for two years, she will have spent approximately six months, a quarter of her lifetime, confined in a FC, unable to comfortably stand up, lie down, turn around or walk freely. On top of this, if she is also confined in a mating stall for insemination then a sow stall during gestation, she will have spent even more time trapped in confinement. This extreme, prolonged, and repeated confinement is unacceptable on animal welfare and ethical grounds.

> "*After weaning, the breeding sow has at best only a few days of comparative freedom before the next service and repetition of the regime.* ***She may spend, therefore, the greater part of her breeding life in very close confinement***"[9] [emphasis added].

4.2 Failure to meet sows' most basic needs

FC deprive sows of every facet of good welfare including: 'function' (biological processes), 'feelings' (positive affective states), 'naturalness' and opportunity to fulfil their telos (i.e., what it is to be a pig).

Confining a sow in an FC is the antithesis to what she would choose if given free choice. In nature, sows live in small groups of related females and offspring. Days before birth, sows travel many kilometres to gather materials to build a nest. After giving birth, she nurses her piglets while spending brief periods away from the nest. Domesticated sows are still highly motivated to engage in these physically, psychologically, and socially stimulating behaviours but are unable to do so when trapped in barren conventional FC[25].

[66] Baxter E, Edwards S (2016) Proceedings of Free Farrowing Workshop, Belfast UK. Figure 1, p12.
[67] Dagleish M, Whitelaw A (2021) State of the Industry Report 2021. Thomas Elder Markets for APL.
[68] Athorn R, Plush K (2019) Best practice gilt management for fertility and longevity. APL.

4.3 Overwhelming evidence that conventional farrowing crates are inhumane

The physical, psychological, and physiological harms associated with FC have been extensively reviewed[3,4,13,25-27].

In summary, sows in FC experience concurrent, cumulative, and chronic stressors[26,28] that represent concerns as per the Five Domains model of animal welfare[3,4,13,25-27,69,70]:

- **Nutrition** (e.g., restricted feeding and chronic hunger due to limited if any roughage);
- **Environment** (e.g., confinement, monotony, hard bare flooring, air pollutants, high temperatures);
- **Health** (e.g., heat stress, injuries, infections, gastric ulcers, lameness, discomfort and pain, inactivity, weakness, long distressing farrowing of large litters, birthing complications);
- **Behaviour** (e.g., stress, stereotypies/repetitive behaviours, lack of freedom of movement, lack of opportunity to engage in natural behaviours such as socialising with other pigs, maternal care, nesting); and
- **Mental state** (e.g., negative affective states such as boredom, loneliness, helplessness, frustration and depression, and absence of positive affective states such as contentment).

4.4 The continued confinement of sows in conventional FC is indefensible

FC were introduced decades ago to minimise labour input and maximise production output, namely, to reduce crushing of piglets by the sow. However, in the modern era, it is increasingly difficult to defend conventional farrowing practices on the grounds of piglet survival[71] given that:

- **Alternative farrowing systems can minimise piglet deaths while improving sow welfare** - In 2022, the European Food Safety Authority (EFSA) Panel on Animal Health and Welfare reviewed all relevant information and concluded that comparable piglet survival rates could be achieved with temporary confinement (as few as 3 days) in larger spaces (4.3-6.3 m^2) with enrichment (additions to create a more stimulating environment)[5,72,73]. The majority (80%) of crushing deaths occur within the first 72 hours[74,75], and removing confinement on day 3[76], 4[72] or 7[77] can improve sow welfare and manage piglet deaths while maintaining commercial viability[25,26,78].

[69] Sánchez-Salcedo JA, Yáñez-Pizaña A (2022) Effects of free farrowing system on the productive performance and welfare of sows and piglets. Journal of Applied Animal Welfare Science, 1–11.
[70] Kells NJ (2022) The Five Domains model and promoting positive welfare in pigs. Animal 16, 100378.
[71] Andersen I, Ocepek, M (2021) Why should we worry about farrowing systems for sows: Insights from studies on maternal behavior? Overcoming Barriers, Facilitating Change. Freedom in Farrowing and Lactation Workshop.
[72] Moustsen VA et al (2013) Confinement of lactating sows in crates for 4 days after farrowing reduces piglet mortality. Animal 7(4), 648–654.
[73] Lambertz C et al (2015). Confinement of sows for different periods during lactation: Effects on behaviour and lesions of sows and performance of piglets. Animal 9(8), 1373–1378.
[74] APL (2018) Guidelines for fostering: Getting the "one percenters" right.
[75] Nicolaisen T et al (2019). The effect of sows' and piglets' behaviour on piglet crushing patterns in two different farrowing pen systems. Animals 9(8), 538.
[76] Singh C et al (2017) The behaviour and welfare of sows and piglets in farrowing crates or lactation pens. Animal 11(7), 1210–1221.
[77] Wettere,W (2017) Reducing the confinement of peri-parturient and lactating sows. A report for the Pork CRC.
[78] Olsson A-C et al (2018) Piglet mortality – A parallel comparison between loose-housed and temporarily confined farrowing sows in the same herd. Acta Agriculturae Scandina Victoria Section A, Animal Science 68(1), 52–62.

- **Under Australian conditions, comparable piglet survival rates have now been achieved with alternative housing systems** e.g., Piglet and Sow Alternative Farrowing Environment (PigSAFE)[79,80].

- **Improved housing can have welfare and production benefits** - Changes ranging from opening a crate to designed pens with enrichment can reduce stillbirths[81]; facilitate piglet interaction[65], improve piglet growth rates[82,83], and enhance the physical and behavioural health of current and future generations[84,85,86].

- **Other factors must be addressed to reduce piglet deaths** e.g., litter size (≥10), sow health, sow experience[87], enrichment, diet[88], and other management factors[78].

4.5 Alternatives to farrowing crates

A range of alternative farrowing systems have been available for decades[23,24,89,90.] Recent reviews provide up-to-date accounts of alternative farrowing systems e.g., Sánchez-Salcedo and Yáñez-Pizaña (2022), Babington (2021) for RSPCA, Ward et al (2019) (summary table), and Knight (2018) for SAFE NZ. FFL21.

4.5.1 Designed individual farrowing pens

The Australian industry appears to see designed pens (e.g., Freedom Farrower, SWAP, PigSAFE) as the main alternatives to conventional FC[83]. Designed pens aim to give sows a little more space. Large-scale national studies (e.g., Pro-SAU in Austria) have found designed pens can improve sow welfare without compromising piglet welfare or production[91].

In designed pens, sows spend more time nursing and interacting with piglets[92], and piglets spend more time feeding and playing[93], all of which can benefit piglet survival[94]. Sows in open pens display fewer pain behaviours during farrowing possibly due to improved comfort or tolerance[95]. However, these designed pens are still forms of individual confinement that restrict movement and prevent expression of highly motivated behaviours.

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[79] Morrison R et al (2021) Confinement-free farrowing and lactation systems. APL.
[80] Morrison R, Baxter E (2013) Developing commercially viable confinement-free farrowing and lactation systems – Part 1: PigSAFE System. A report for the Pork CRC.
[81] Rosvold EM, Andersen I-L (2019) Straw vs. peat as nest-building material – The impact on farrowing duration and piglet mortality in loose-housed sows. Livestock Science 229, 203–209.
[82] Kinane O et al (2021) Freedom to grow: Improving sow welfare also benefits piglets. Animals 11(4), 1181.
[83] APL (2016) Alternative lactation housing systems for Australian pork producers. Pork CRC.
[84] Edwards LE et al (2019) Enrichment with lucerne hay improves sow maternal behaviour and improves piglet survival. Animals 9(8), 8.
[85] Plush KJ et al (2021) The effect of hessian and straw as nesting materials on sow behaviour and piglet survival and growth to weaning. Animal: An International Journal of Animal Bioscience, *15*(7).
[86] Lagoda ME et al (2022) Risk factors for chronic stress in sows housed in groups, and associated risks of prenatal stress in their offspring. Frontiers in Veterinary Science, 9.
[87] King RL et al (2019). Consistency is key: Interactions of current and previous farrowing system on litter size and piglet mortality. Animal 13(1), 180–188.
[88] Quesnel H et al (2018). Enriching sow environment and diet during gestation reduced piglet neonatal mortality. Proceedings of the 69th Annual Meeting of the European Federation of Animal Science (EAAP), 24.
[89] Baxter EM (2022) Free Farrowing: Exploring different international farrowing regulations, industry-and market-led initiatives-Policy Spotlight.
[90] Baxter EM et al (2012) Alternative farrowing accommodation: Welfare and economic aspects of existing farrowing and lactation systems for pigs. Animal, 6(1), 96–117.
[91] Heidinger B et al 2018). Summary of the Austrian Project "Pro-SAU": Evaluation of novel farrowing systems with possibility for the sow to move. Pro-SAU.
[92] Portele K et al (2019). Sow-piglet nose contacts in free-farrowing pens. Animals 9(8), 8.
[93] Loftus S et al (2020) The effect of two different farrowing systems on sow behaviour, and piglet behaviour, mortality and growth. Applied Animal Behaviour Science 232, 105102.
[94] Nowland TL et al (2019) Allowing sows to farrow unconfined has positive implications for sow and piglet welfare. Applied Animal Behaviour Science 221, 104872.
[95] Bøe KE (2019) The effect of pen design on pen floor cleanliness in farrowing pens for loose housed lactating sows. Livestock Science 229, 37–42.

4.5.2 True free farrowing systems

True free farrowing systems (FF) (e.g., family pen, kennel-and-run)[96] involve no close confinement, allowing sows and piglets unrestricted contact. FF offer benefits to sow welfare including a greater degree of choice and control, and more opportunities to engage in natural behaviours[97]. FF are the focus of much research with >4400 papers published since 2018[84].

FF systems may be indoors or outdoors, with or without access to individual nest boxes. In outdoor FF, sows are kept in individual or group paddocks with farrowing structures (e.g., A-frame huts). A minimum footprint of ~7m^2 per sow is likely required for successful FF[98].

FF require good management to address challenges including hygiene, social stress, piglet deaths and climate[91,99,100,101]. These challenges have been successfully managed in several countries where FF is now well-practiced, and **comparable piglet survival has been achieved**. For example, ~40% of sows in the UK are managed in outdoor FF[5], and average piglet mortality rates (12.2%) are comparable to indoor crate systems (12.19%)[25], which would be considered fair to good by Australian industry benchmarks. A large-scale study in Switzerland compared FF (173 farms, 18824 litters) to pens with crates (482 farms, 44837 litters) and found no significant difference in piglet deaths[102].

4.6 A free farrowing future

In terms of meeting the needs of both sows and piglets, well-managed outdoor FF have been described as the gold standard[94], and the future of sow management[103].Experts from countries where FC have been banned for decades argue there is sufficient knowledge and experience to support FF[71], and outcomes improve over time[71]. Where piglet survival concerns persist, a compromise may be two-stage farrowing; temporary confinement (e.g., for the first 72 hours) in a larger designed pen with enrichment then transfer to FF[106].

ToR (5) international comparisons to determine industry adherence to best practice standards

In terms of pig welfare policy and regulations, Australia is lagging far behind other jurisdictions. Here we focus on jurisdictional comparisons in the context of four key animal welfare concerns: CO_2 stunning, sow stalls, farrowing crates, and painful husbandry procedures without anaesthesia or analgesia.

5.1 Jurisdictional comparison on inhumane CO_2 stunning of pigs

Australian regulators' current tacit approval of CO_2 stunning appears to be at odds with international jurisdictions which have never permitted or pledged to prohibit this cruel practice. CO_2 stunning is not used by our near neighbour New Zealand (NZ). CO_2 stunning of pigs has never been permitted in NZ. As per the NZ Code of Welfare Commercial Slaughter 2018

[96] USDA National Cooperative Swine Extension (2019) Housing options for swine farrowing: considerations for animal welfare and economics.

[97] Wiechers D-H et al (2022) Does nursing behaviour of sows in loose-housing pens differ from that of sows in farrowing pens with crates? Animals 12(2), 137.

[98] Baxter EM et al (2022) Transitioning from crates to free farrowing: a roadmap to navigate key decisions. Frontiers in Veterinary Science 9, 998192.

[99] Conrad L et al (2022) Effects of farrowing hut design on maternal and thermoregulatory behaviour in outdoor housed sows and piglets. Applied Animal Behaviour Science 251, 105616.

[100] Zhang X et al (2020) Effects of different farrowing environments on the behavior of sows and piglets. Animals 10(2), 320.

[101] Verdon M et al (2017) Welfare implications of group lactation at various ages. A report for the Pork CRC.

[102] Weber R et al (2007) Piglet mortality on farms using farrowing systems with or without crates. animal welfare 16(2), 277–79.

[103] Kinane O et al (2022) Freedom to move: free lactation pens improve sow welfare. Animals 12(14), 1762.

Section 6 (b) CO2 is not listed as a permitted method to stun large mammals (including pigs). Further afield, in 2015, the Dutch House of Representatives accepted a motion to phase out the use of CO2 for stunning pigs prior to slaughter[104], and in 2019, recommendations were made to phase out CO_2 stunning of pigs across the European Union[105].

5.2 Jurisdictional comparison on inhumane confinement of sows in sow stalls

5.2.1 Other Australian jurisdictions

In 2013, Tasmania (TAS) passed legislation to phase out sow stalls by 2017 but it has eventuated that sows in TAS are still confined in conventional sow stalls for up to ten days after service or insemination[106].

In 2018, the Australian Capital Territory (ACT) passed legislation to prohibit sow stalls. While there are no intensive piggeries in the ACT, this legislation ensures that any future enterprises cannot confine sows in sow stalls.

In the absence of adequate regulation in most states and territories, it has been left to retailers to step in to protect animals. One major supermarket has only sold sow stall free pork since 2013[54] and another met that commitment soon after[107]. It should not be left up to retailers to act as proxy animal welfare regulators. Rather, it is the role of government to introduce regulations to protect animals' most basic needs at the very least. Sow stalls must be prohibited.

5.2.2 International jurisdictions

Among Western nations, Australia is close to the worst in terms of still permitting sow stalls for up to six weeks (or more). Several countries banned sow stalls in the 1990s, and those that still permit them do not allow sows to be confined for even close to as long as six weeks. Plush et al 2023 provide a tabulated scan of proposed or future legislation relating to use of stalls in sow and boar housing[108].

- **Sweden** – Sow stalls were banned in 1994[109].
- **United Kingdom** – Sows stalls were banned in 1999[109].
- **European Union** – Since 1 January 2013, sow stalls have been prohibited across all EU Member states (with an 11-year phase out period and exemptions for the first four weeks of pregnancy and a week before farrowing)[110].
- **Denmark** – For all new housing constructed after 2015, and all housing from 2035, sows must be loose housed from weaning till farrowing[109].
- **The Netherlands** – Sow stalls only permitted for four days after insemination[109].

[104] Eyes on Animals (2015) Good Newsletter - Dec.
[105] EuroGroup for Animals (2012) Stunning/killing of pigs with high concentrations of CO2. Position Paper
[106] Voiceless (2012) Briefing – sow stalls.
[107] Woolworths (2014) Social Responsibility Report.
[108] Plush KJ et al (2023) Review: Towards truly stall-free pork production? Animal, 101002.
[109] Compassion in World Farming (2022) End the cage age – sows investigation Link.
[110] Zanoni A (2013) Implementation of ban on individual sow stalls, in force since 1 January 2013 in accordance with Directive 2008/120/ec on the protection of pigs. Question for written answer E-00321-13, European Commission.

- **Austria -** Gilts and dry sows can only be held in stalls for a maximum of 10 days[111].

- **Germany** - Sow stalls will be banned after 2030[107].

5.3 Jurisdictional comparison on inhumane confinement of sows in farrowing crates

Conventional farrowing crates have long been banned in Switzerland (since 1997)[112], Sweden (since 1987) and Norway (since 2000), and other jurisdictions are phasing them out e.g., NZ (2025), EU (2027)[23]. In July 2020, Germany voted for a transition to a maximum of 5 days confinement in farrowing crates[110].

5.4 Jurisdictional comparison on invasive husbandry procedures without anaesthesia or analgesia

Recommendation 7. Regulations must be introduced to prohibit invasive procedures (including tail docking and castration) without anaesthesia or analgesia

5.4.1 Tail docking

> *"In the pig tail, sensory neurons are located in four caudal nerves (two dorsal and two ventral, left and right) that innervate all the way to the distal tip of the tail…Tail amputation injury in an appendage with this level of sensory innervation is likely to cause acute and possible long-lasting tail stump pain, especially where traumatic neuroma development also present"*[113]

Tail amputation (docking) causes acute pain and can cause chronic pain (e.g., neuromas). At present, the Model Code and the Victorian Standards permit piglets in Australia to have their tails amputated (docked) before seven days of age without pre and/or post-operative anaesthesia or analgesia.

There are currently no minimum Australian Animal Welfare Standards for Pigs requiring producers to first address all the underlying causes of tail biting (e.g., early weaning, crowding, lack of bedding material, poor ventilation, thermal discomfort, lack of opportunity to engage in highly motivated behaviours)[114], nor are there any mandatory requirements regarding amputation methods, maximum length of tail that can be amputated, amputation equipment, or provision of anaesthesia or analgesia.

On tail docking, Australia lags behind other Western jurisdictions[115]:

- **Sweden** – Tail docking has been prohibited since 1988.

- **Finland** – Tail docking is considered an act that causes unnecessary pain and is prohibited.

- **Lithuania** – Tail docking is completely prohibited.

[111] Compassion in World Farming (2020) End the cage age - why the EU must stop caging farm animals.
[112] Free Farrowing (2021) Swiss FF.
[113] Sandercock DA et al (2019) Transcriptomics analysis of porcine caudal dorsal root ganglia in tail amputated pigs shows long-term effects on many pain-associated genes. Frontiers in Veterinary Science 6.
[114] Kittawornrat A, Zimmerman JJ (2011) Toward a better understanding of pig behavior and pig welfare. Animal Health Research Reviews 12 (1), 25–32.
[115] Lippi IC et al (2022) Global and Brazilian scenario of guidelines and legislation on welfare in pig farming. Animals 19, 2615.

- **Norway** – Tail docking can only be performed for medical reasons by a veterinarian using anaesthesia and analgesia.

- **Switzerland** – Tail docking can only be performed under anaesthesia.

- **Canada** – Since 2016, analgesia must be administered to all pigs subject to tail docking.

In 2008, the EU passed a Directive (2008/120/EC) which stated that tail docking piglets should not be performed routinely, only when there is demonstrated evidence of tail biting and all other prevention measures for tail biting have been tried first.

In Denmark, as per Directive 2008/120/EC, tail docking must only be performed when strictly required, between two and four days after birth, and the tail should be docked as little as possible, not more than half of the length of the tail. However, the Danish Animal Welfare Society asserts that almost all pigs in Denmark are still being routinely tail docked without evidence of tail biting and without addressing environmental conditions, in violation of Danish law and the EU Directive[116]. This indicates effective enforcement action is essential for meaningful regulation.

Caudal amputation (tail docking) is (outside of farmed animals) considered a surgical procedure. For example, tail docking dogs is a prohibited procedure under state and territory animal welfare legislation, and if a person subjected a fully conscious dog to caudal amputation without adequate anaesthesia and analgesia, they would be committing multiple offences. The potential fear, pain and suffering of piglets undergoing this procedure is no different from that of any other animal subject to such an invasive and painful surgery.

Regulations must be introduced to ban tail docking (unless under to exceptional circumstances) and ensure that if this procedure is to be performed on piglets, it must be performed with adequate anaesthesia and pre/post-operative pain relief.

5.4.2 Castration

In Australia, castration of piglets is permitted without anaesthesia or analgesia. This is inhumane and must be prohibited. Once again, Australia lags behind other Western jurisdictions:

- **European Union** - In 2010 the European Declaration on alternatives to surgical castration of pigs stipulated surgical castration shall only be performed with prolonged analgesia and/or anaesthesia from 2012 and surgical castration should be phased out altogether from 2018[117].

- **Denmark** – From 1 January 2019, local anaesthetic must be applied for surgical castration[118].

- **France** – Since January 2022, surgical castration of piglets without anaesthesia and analgesia has been prohibited[119].

[116] Damm B (n.d.) Routine tail docking of pigs - it is illegal. A presentation from the Danish Animal Welfare Society.
[117] de Briyne N et al (2016) Pig castration: will the EU manage to ban pig castration by 2018? Porcine Health Management 2.
[118] van Dooren K (2018) Denmark: Anaesthetics prior to piglet castration. Pig Progress, 12 Dec.
[119] Beigneux A (2022) Ban on the live castration of piglets. Question for Written Answer to the Commission E-00395/2022.

- **Germany** – Since 2021, Germany has only allowed castration under general anaesthesia[120].

Castration is a surgical procedure. It would be an offence under state and territory animal welfare and veterinary practice legislation for a person to castrate a fully conscious puppy or kitten, without adequate anaesthesia and analgesia. The potential fear, pain and suffering of piglets undergoing this procedure is no different from that of any other animal subject to such an invasive and painful surgery. Regulations must be introduced to ensure that when castration is performed, it must be performed with adequate anaesthesia and pre/post-operative pain relief.

ToR (6) any other relevant matter

6.1 Boar stalls

Recommendation 8. Conventional boar stalls must be phased out

Adult male breeding pigs (boars) are routinely confined individually in boar stalls ~70cm x 240cm, not much larger than sow stalls. The Model Code allows boars to be always confined except for mating and exercise (of unspecified duration) at least twice a week. Perhaps because there are far fewer boars used compared to sows, welfare concerns for boars receive less attention and regulators may also be less likely to be checking compliance with minimum requirements. However, available evidence indicates individual confinement is also stressful for boars[108]. Accordingly, the 'customer specifications' for a major supermarket have specified that boars are not kept in stalls. Alternatives, such as group-rearing boars with their littermates in farrow-to-finish pens, are preferable to conventional boar stalls[121].

Conventional boar stalls should be phased out.

6.2 Boredom

Pigs are routinely bred and raised in barren environments lacking in any positive mental or sensory stimulation. They spend their entire lives in mind-numbing boredom. Boredom is often dismissed as trivial but as Meagher (2023) asserts "*monotonous, stimulus-poor environments can induce an increased motivation for diverse stimuli, consistent with the experience of boredom. This experience is likely to be aversive and may lead to problems such as depression-like states or self-injurious behaviour if not addressed.* ***Boredom should therefore be treated as an important welfare concern***"[122] [emphasis added].

Concerns have long been raised about boredom in sows. Common production practices deprive sows "*of their natural tendency to be active and inquisitive, and the lives of sows have become 'extremely dull'; their great need to explore the environment is reflected in their continuous use (given the opportunity) of using their very sensitive noses…the long list of stereotypic and conflict behaviour, related to exploratory behaviour, feeding behaviour and locomotion in a richer environment where the sows are not restrained, provides evidence that boredom is a real problem for pigs in modern confinement systems without straw or some other substance to stimulate various natural behaviours*"[123].

[120] Winner E-M et al (2022) Implementation of piglet castration under inhalation anaesthesia on farrowing farms. Porcine Health Management 8, 20.

[121] Fredriksen B et al (2008) Entire male pigs in farrow-to-finish pens - effects on animal welfare. Applied Animal Behaviour Science 110(3), 258–68.

[122] Meagher RK (2019) Is boredom an animal welfare concern? Animal Welfare 28(1), 21–32.

[123] Wemelsfelder F (1984) Animal boredom: is a scientific study of the subjective experiences of animals possible? In Advances in Animal Welfare Science, p115–54.

At present, the lives of pigs in intensive production are almost entirely devoid of any positive experiences. At a bare minimum, all pigs should be provided with basic freedom of movement, social interaction, substrate, and other forms of enrichment. For example, sows should be provided with straw, which benefits sows and piglets (e.g., decreased stress hormones, lower rate of stillbirths (0.8 stillbirths/litter has been recorded in pens with straw, which would be considered fair by Australian industry standards), greater opportunity to engage in highly motivated behaviours, and fewer stereotypies and instances of aggression)[27,124,125].

At present, the Model Code and the Victorian Standards still permit extreme confinement, social isolation and barren environments. At best these environments, totally lacking in stimulation, will lead to debilitating boredom. At worst, these deprived conditions inflict psychological trauma.

6.3 Psychological trauma

Recommendation 9. All pigs must be provided with adequate substrate and enrichment

> "*The barren environment impacts the welfare* [of] *pigs…These animals are highly curious of their surroundings and have a natural rooting instinct…in intensive production systems, economic considerations prevent provision of conditions that allow these animals to fully express most of their natural behaviours. In particular, the widespread individual housing of sows (during farrowing and lactation) and thus limited space represent a high adaptation challenge to this group of pigs. As the Scientific Veterinary Committee, Animal Welfare Section [1997] pointed out, stereotypies in stall-kept sows constitute one of the most important welfare problems"*[126]

Prolonged isolation and sensory deprivation are potential sources of psychological trauma in humans and other animals[127]. Separated from conspecifics (other members of the same species) and prevented from engaging in highly motivated behaviours (e.g., social interaction, rooting around, oral manipulation of complex substrates, nesting), pigs can suffer psychological trauma. This trauma often manifests in neurotic stereotypies (e.g., tail biting, sham chewing) as they struggle to cope with the stress and frustration of extreme behavioural deprivation.

> "*These are not dumb creatures. They have a rich emotional life and personality*" - Dr Jan Langbein, Leibniz Research Institute for Farm Animal Biology[128]

Numerous studies have demonstrated that pigs have remarkable cognitive capacities ranging from sophisticated social behaviour and social recognition to spatial cognition, learning, tool-use, strategic thinking, problem-solving and memory[129]. Pigs demonstrate language comprehension (e.g., gestures and verbal cues), and when given the opportunity, will engage in complex types of social and object play[130]. There are even some indications that pigs have episodic memory (remembering what happened where and when), previously thought to be a

[124] Tatemoto P et al (2019) Environmental enrichment for pregnant sows modulates hpa-axis and behavior in the offspring. Applied Animal Behaviour Science 220, 104854.
[125] Yi R et al (2019) Maternal behavior, posture change, and production performance of lactating sows housed in an enriched environment. Journal of Applied Animal Welfare Science 22(3), 298–308.
[126] Radkowska I et al (2020) Stereotypic behaviour in cattle, pigs and horses-a review. Anim. Sci. Pap. Rep 38, 303–19.
[127] Ferdowsian H, Merskin D (2012) Parallels in sources of trauma, pain, distress, and suffering in humans and nonhuman animals. Journal of Trauma & Dissociation 13 (4), 448–68.
[128] Grimm D (2023) What are farm animals thinking? Science, 7 Dec.
[129] Gieling ET et al (2011) Assessing learning and memory in pigs. Animal Cognition 14(2), 151–73.
[130] Marino L, Colvin CM (2015) Thinking pigs: a comparative review of cognition, emotion, and personality in Sus domesticus. International Journal of Comparative Psychology 28(1).

uniquely human capacity[121]. Like chimpanzees, pigs have demonstrated self-agency (the ability to recognise actions caused by oneself)[123], and may well have a concept of self, one of the central tenets of 'theory of mind'[121]. A recent study also found pigs without prior training will spontaneously open a door to free a trapped group member, behaviour that may be consistent with empathy[131].

> "*Pigs are highly social animals and tactile information plays an important role in their behaviour. The highest density of tactile receptors is found in the pig's snout (Kruska, 1988), as they use their snouts to engage in highly manipulative behaviours such as rooting, carrying, and pushing, and social interactions…"*[137].

Pigs developed these complex cognitive capacities as adaptations to the social and environmental complexities of their ancestral origins[137]. Confining pigs in restrictive, socially isolating, barren environments, devoid of mental stimulation is entirely analogous to the complex and enriching environments to which they are adapted. Pigs in commercial production are typically born and raised in environments which prevent them from engaging in highly motivated behaviours such as exploring, rooting around, digging and nesting. While other jurisdictions (e.g., the UK) have mandated access to materials such as straw, hay, sawdust, or peat, pigs in Australia are still often left to languish in barren stalls, crates, and pens. At best, pigs might hope for a little bedding material or token enrichment item, which while better than nothing, is unlikely to meet their complex cognitive and sensory needs.

> "*…the complexity of pig behaviour is already evident, indicating sophisticated associative learning abilities and…perhaps the capacity for episodic memory, intentional deception and even theory of mind. Even if these latter abilities are not present, it seems unlikely that pigs will be fulfilled by a life spent standing up and lying down in a metal crate"*[132]

6.4 Constant hunger

Recommendation 10.	**At a bare minimum, all sows must be provided with sufficient roughage/bulk**

In the common lexicon, pigs conjure stereotypes of 'greed' and 'eating all the time'. Ironically, to control weight, metabolic disorders and reproduction, pregnant sows in commercial production are fed restrictive diets in restrictive regimes (e.g., once a day), and consequently experience chronic hunger[133,134]. Sows are not permitted to eat until they are satiated (feeling full). They have their feed restricted 40 to 60% of their ad libitum diet (ad lib = free access to food/eat until satiated)[131].

Keep in mind how far-removed restrictive feeding practices are from pigs' behavioural and physiological adaptations to foraging in complex environments. To make matters worse, feeding is often the only potentially rewarding 'event' or 'diversion' that occurs in a sow's life, and even this is restricted.

Chronic hunger is a debilitating physical sensation but also a negative psychological experience, and unsurprisingly, restrictive diets activate a stress response in sows[135]. While

[131] Moscovice LR et al (2023) Spontaneous helping in pigs is mediated by helper's social attention and distress signals of individuals in need. *Proc Royal Soc B: Biol Sci* 290, 20230665.
[132] Mendl M et al (2010) Pig cognition. Current Biology 20(18), R796–98.
[133] Lawrence AB et al (1989) Measuring hunger in the pig using operant conditioning: the effect of dietary bulk. Animal Science 48(1), 213–20.
[134] Tolkamp BJ, D'Eath RB (2016) Hunger associated with restricted feeding systems. In Nutrition and the Welfare of Farm Animals. In Animal Welfare, Springer, p11–27.
[135] Hayford M (2019) Quantitative evaluation of hunger in pregnant sows: physiological, behavioral and performance responses to feeding time and frequency under limit-fed regime. PhD thesis, University of Minnesota.

there has been much research into alternative diets, critics argue that indicators of hunger (e.g., abnormal oral behaviours) persist, and hunger is unavoidable with restrictive diets. Minimum animal welfare requirements must address chronic hunger in sows. At the very least, they must be provided with more roughage/bulk.

6.5 Early separation of piglets from their mother

Recommendation 11.	**Early weaning must be phased out and contemporary weaning practices must incorporate pre-weaning socialisation**

"The process of weaning is one of the most stressful events in the pig's life"[142].

When piglets are just 3 to 5 weeks old, they are abruptly weaned, that is suddenly and permanently separated from their mother[42]. Such early and sudden weaning is in stark contrast to pigs' natural behaviour where piglets are gradually introduced to non-littermates, and weaning is not complete until they are up to 18 weeks old[136].

Weaning exposes piglets to a multitude of significant stressors including sudden separation from their mother, handling, transport, mixing with unfamiliar pigs, pathogen exposure, and changes in feed and a range of environmental variables. These stressors can be too much for their little systems to handle. They can experience gastrointestinal and immune system dysfunction, and reduced feed intake, growth, and health [137].

> *"In commercial pork production, piglets are weaned at a fairly young age. Piglets are removed from the sow and are subject to sudden changes in their diet, environmental conditions, and social grouping. For the piglet, this causes major upheaval and disruption to eating and behavioural patterns, leading to distress, gastrointestinal tract dysfunction and behavioural disorders after weaning"*[142].

Pigs commonly develop oral stereotypies (i.e., repetitive behaviours e.g., sham chewing, tail biting, belly nosing or belly sucking). Early weaning contributes to the development of these behavioural problems due to stress, distress and because they have been denied maternal contact and are frustrated by unmet strong motivations to suckle[138].

Kerschaver et al (2023) contrast sow and piglets' natural behaviour in the post-partum period with commercial weaning practices and discuss potential methods to reduce the trauma of weaning. In summary, at the very least, contemporary weaning practices must incorporate pre-weaning socialisation/co-mingling of non-littermates.

6.6 Inhumane killing methods for piglets

Recommendation 12.	**Killing piglets by smashing them against a hard surface must be prohibited**

On farm, ill or injured piglets are routinely killed by holding them by the hindlegs, swinging them and smashing them against a hard surface (e.g., concrete floor or wall) to cause catastrophic trauma. This practice happens daily out of the public eye.

Inflicting blunt force trauma to piglets in this way is inhumane and should be prohibited. It is

[136] van Kerschaver C et al (2023) Reducing weaning stress in piglets by pre-weaning socialization and gradual separation from the sow: a review. Animals 13(10), 1644.
[137] Campbell JM et al (2013) The biological stress of early weaned piglets. Journal of Animal Science and Biotechnology 4(1).
[138] Godyń D et al (2019) Effects of environmental enrichment on pig welfare—a review. Animals 9(6), 383.

also "*likely to be unpleasant for some stock people to perform, and as such it may result in a delay in the euthanasia of compromised piglets*"[12].

The EFSA AHAW Expert Panel reviewed available evidence and concluded that "*the procedure is not recommended as an on-farm killing method and should be avoided*"[4].

> "*The practice of "holding the piglet with both hands around the hind legs and swinging the piglet's head against a hard surface…is not recommended from an animal welfare point of view. This…leads to high stress and may have a higher probability of dislocated joints (e.g., hip) and broken legs (Woods and Shearer, 2021). The position and movement of animals may cause pain and fear (EFSA, 2020). There is a potential risk of spinal disruption and/or brain concussion without loss of consciousness when there is an injury in the neck and upper thoracic area (Blumbergs, 1997; Fong et al 2009, cited by Dalla Costa et al., 2020)"*[139]

Australia must take immediate action to prohibit the routine inhumane killing of piglets by smashing them against a hard surface. For no other species is it deemed acceptable to kill babies in this way, nor should it be considered acceptable for piglets.

> "*This method [blunt force trauma] should not be promoted over more reliable and repeatable cull methods such as captive bolt…there is a significant potential for animal harm associated with inappropriate practice, lack of accuracy, issues with repeatability and operator fatigue*"[140]

6.7 Space allowances

Recommendation 13.	**Minimum space allowances must be reviewed to ensure all pigs have sufficient space to meet their behavioural and social needs**

The current Model Code calculates minimum space allowances for weaners, growers and finishers using the allometric equation (m^2 = 0.030 x body weight$^{0.67}$). However, as highlighted by Fels et al (2018), this allometric equation reduces an animal's 3D spatial needs into 2D static space and does not account for an animal's behavioural needs (dynamic space) or social needs (social-interaction space). They re-evaluate minimum space allowances for pigs using image-based monitoring and provide discussion of minimum space allowances in different international jurisdictions[141]. Considering that stocking density has profound implications for animal health and welfare, it is critical that Australia reviews minimum space allowances for pigs.

6.8 Electric prods

Recommendation 14.	**Use of electric prods on pigs must be prohibited on farm, during transport and at abattoirs**

> "*The use of electric prods is likely to cause avoidable suffering with no welfare benefit and it therefore ethically unjustifiable under the conditions described*"[7].

The 2023 footage of pigs at the Australian Food Group and Benalla abattoirs in Victoria, showed workers using prodders on most of the pigs into the CO^2 system despite even AMIC

[139] Wi k l et al (2021) Review of euthanasia of suckling piglets on farm. A report for the European Union Reference Centre for Animal Welfare Pigs.
[140] Dalla Costa FA et al (2020) Evaluation of physical euthanasia for neonatal piglets on-farm. Journal of Animal Science 98(7).
[141] Fels M et al (2018) Determination of static space occupied by individual weaner and growing pigs using an image-based monitoring system. The Journal of Agricultural Science 156(2), 282–90.

Standards recommending that only up to 5% of pigs should be subjected to electric prodding[44]. The relevant Standards still permit the use of electric prods on pigs ≥60kg (most slaughter weight and above), thus subjecting pigs to "*avoidable suffering with no welfare benefit*".

Multiple studies replicating or in commercial operations, have shown that pigs subjected to electric prods had significant changes in blood lactose, pH, and stress hormones (cortisol) indicating fatigue and stress[142] and "*exhibited behaviour that may lead to injury,* [they] *had more bruises and were more fatigued…*"[143].

The use of electric prods on pigs should be prohibited on farm, at loading/unloading, and at abattoirs. It is entirely unnecessary to electric shock pigs in this way. Pigs can be moved with minimal intervention (e.g., boards, flags) as per best practice low stress animal handling.

6.9 Painful tattooing/slap branding

Recommendation 15.	**Human-inflicted lesion data should be collected and published with a view to phasing out tattooing/slap branding**

Biosecurity regulations in Victoria require pigs >25kg to be tattooed (branded) when they are moved off a property, and the Model Code and Victorian Standards permit the application of body tattoos (slap brands). Body tattoos are typically inflicted on pigs by hitting them with a hammer/mallet (striker) fitted with sharp metal prongs (needles) dipped in ink. This procedure is inherently frightening, painful, and injurious to pigs.

Australia does not appear to collect or publish data on injury associated with tattooing. However, the Danish Veterinary and Food Administration (DVFA) publishes annual data on bruising and penetrating lesions caused by excessive use of tattoo hammers. "*Bruises caused by blunt trauma and penetrating lesions due to excessive use of the tattoo hammer or other devices will in the following collectively be referred to as suspected human-inflicted skin lesions. The apparent increase in forensic cases of bruises combined with an increased focus on animal welfare in the public, have led to the establishment of the specific post-mortem recording of skin damages by the DVFA in April 2010*". From 2008 to 2012, the DVFA identified hundreds of pigs sustained unacceptable human-inflicted skin lesions, which under Danish law led to police reports and warnings[144].

There are a range of alternative methods of individual animal identification. For example, under PigPass, Australia's national tracking system, pigs can be identified with approved tags. The practice of slap branding/tattooing of pigs should be phased out, but while it continues, Australia must collect and publish data on human-inflicted lesions akin to the DVFA.

6.10 Transport stress

Transport is widely understood to entail a multitude of significant and concurrent stressors for pigs including mixing with unknown pigs, handling, restriction of movement, heat stress, motion stress, injuries, fatigue, as well as prolonged hunger and thirst. Pigs, particularly pregnant sows, and weaners are very vulnerable to these stressors[8]. Even though industry advises, "do not use dogs or electric prodders" at loading[145], the use of electric prodders and

[142] Ludtke CB et al (2010) Welfare and meat quality of pigs submitted to different pre-slaughter handling techniques. Revista Brasileira de Saúde e Produção Animal 11(1), 231–41.
[143] Correa JA et al (2010) Effects of different moving devices at loading on stress response and meat quality in pigs. Journal of Animal Science 88(12), 4086–93.
[144] Nielsen SS et al (2014) The apparent prevalence of skin lesions suspected to be human-inflicted in Danish finishing pigs at slaughter. Preventive Vet Med 117(1), 200–206.
[145] APL (2017) Producers' Guide to Pig Production & Nutrition.

dogs at unloading and loading is not strictly prohibited. Considering that the industry peak body agrees that dogs and electric prodders should not be used on pigs in transport[144], it would seem feasible to introduce these prohibitions into regulation to reduce at least some of the stressors to pigs during transport.

6.11 Painful lameness

Lameness is one of the leading reasons that Australian producers 'prematurely cull' gilts and breeding sows[146]. Causes of lameness may be infectious (e.g., Salmonellosis) or non-infectious (e.g., traumatic fractures) and lame pigs may be suffering from bone infection (osteomyelitis), osteochondrosis (abnormal bone development), joint inflammation (arthritis), joint infection (e.g., bursitis), claw lesions and a variety of other painful conditions. Multiple factors put pigs at high risk for lameness including extreme confinement, inactivity, injuries, poor flooring, poor hygiene, and nutritional imbalances. Lameness represents a significant and longstanding animal welfare concern, and industry's response has largely just been to kill lame sows after they give birth to a litter.

There must be more regulatory pressure to compel industry to address the underlying causes of lameness, namely high productivity, and sub-optimal environment/management systems[147]. There is also no transparency around how many gilts and sows in Australia are culled due to lameness. At the very least, regulated Standards should compel monitoring and reporting of lameness, and mandate actions that need to be taken to address lameness.

6.12 Painful gastric ulcers (OGUs)

A significant percentage of pigs in intensive production in Australia suffer from painful oeseophago-gastric ulcers (OGUs), which human patients have described as causing intense radiating burning pain in the center of the chest. One large-scale study of pigs across Australia (n= >15,700) found 30% of all pigs examined had OGUs including median within-herd prevalence of 53% in Victoria.

Risk factors for OGUs are directly related to intensification including feeding practices, fine feed particles, time-off feed, infections, and stress[148].

In 2010, Animals Australia wrote to APL raising concerns about painful gastric ulcers in pigs, and in his response the then APL CEO confirmed that "*In all, over 20 issues have been identified as risk factors for gastric ulceration in pigs*".

Analyses should be undertaken to update OGU prevalence data and ensure that all risk factors are addressed to prevent OGUs.

6.13 Painful urinary tract infections (UTIs)

Urinary tract infections (UTIs) are common in sows but are often undiagnosed[149] leading them to be labelled "*a silent but serious problem*"[150].

Intensive production exposes sows to a multitude of risk factors for UTIs including extreme confinement, prolonged direct contact of the vulva with faecal material facilitating ascending

[146] Lumby JC et al (2015) Locomotion scores in early gestation of younger parity sows are associated with fight lesions and body condition. Animal Production Science 55(12), 1510–1510.
[147] Willgert KJE et al (2014) Risk factors of lameness in sows in England. Preventive Vet Med 113(2), 268–72.
[148] Robertson ID et al (2002) Risk factors for gastric ulcers in Australian pigs at slaughter. Preventive Vet Med 53(4), 293–303.
[149] Bunter K, Vargovic L (2019) Pre-farrowing health and welfare assessment of sows. Report for the Pork CRC.
[150] DSM (2023) Urinary tract infections: a silent but serious problem for sows and their progeny.

infection, and less frequent urination/less flushing of the urinary tract (e.g., due to lameness which limits the sow's ability to stand and urinate, and the demands of lactation which trigger physiological mechanisms to conserve fluids)[155].

Post-mortem analyses reveal that cystitis-pyelonephritis (bladder and kidney infection) is a leading cause of death in sows[151]. It is critical that Australia addresses risk factors (e.g., extreme confinement) for these painful and potentially life-threatening infections, as well as instigating requirements for routine urinalysis and targeted individual animal treatment to ensure that sows suffering from painful UTIs are not left to suffer yet more painful medical conditions.

Recommendation 16.	**Routine monitoring of sows for painful conditions (e.g., lameness, urinary tract infections) must be undertaken and reported, and adequate treatment administered to relieve their suffering**

Recommendation 17.	**The underlying causes (e.g., confinement) of painful conditions (e.g., lameness, urinary tract infections) must be addressed to prevent these conditions developing in the first place**

6.14 One Health and One Welfare

Animals Australia would also like to draw the Inquiry's attention to public health concerns associated with intensive pig production. Raising pigs intensively and exposing them to significant, chronic, and cumulative stress, affects animals' immune function and makes them more susceptible to disease. This is not only an animal health and welfare concern. It also has profound ramifications for public health.

> *"Expansion and intensification of pig production has resulted in…*[and] *environment conducive to increased emergence and spread of infectious diseases. These include several zoonotic viruses including influenza, Japanese encephalitis, Nipah and coronaviruses"*[152]

Industrial animal agriculture "*amplifies the impact of the disease due to the high density, genetic proximity, increased immunodeficiency, and live transport of farmed animals*"[153]. This is highly concerning because many infectious diseases in the human population originate in non-human animals, and pigs are unique in their role as amplifying hosts for new and emerging zoonotic viruses[114]. For example, in influenza virology, pigs are referred to as 'mixing vessels' because they are susceptible to bird, pig and human influenza viruses, facilitating the emergence of novel strains with pandemic potential[114].

Intensive pig farming is also an incubator for antimicrobial resistance (AMR)[115], and AMR surveys of farmed pigs in Australia have identified resistance to critically important antimicrobials[154]. For example, of 618 pigs sampled across two sites in Australia, 75.2% were positive for multi-resistance Staphylococcus aureus (MRSA) and this increases the risk of zoonotic infection in farm workers[155].

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[151] Dee SA (2022) Porcine cystitis-pyelonephritis complex. Merck Veterinary Manual.
[152] McLean RK, Graham SP (2022) The pig as an amplifying host for new and emerging zoonotic viruses. One Health 14, 100384.
[153] Espinosa R et al (2020) Infectious diseases and meat production. Env Resource Econ 76(4), 1019–44
[154] Abraham S et al (2017) Current and future antimicrobial resistance issues for the Australian pig industry. Animal Production Science 57(12), 2398–2407.
[155] Sahibzada S et al (2020) Prevalence and antimicrobial resistance of MRSA across different pig age groups in an intensive pig production system in Australia. Zoonoses and Public Health 67(5), 576–86.

We provide these brief examples to illustrate that improving the health and welfare of pigs in intensive production is not only imperative for them, but also for the health and welfare of human communities.

6.15 Lack of monitoring, transparency, and accountability

Recommendation 18.	**Overall data collection, reporting and transparency must be improved**

As mentioned in Section 2.3, Animals Australia has serious concerns about insufficient monitoring and accountability. These concerns extend to every stage of production from insemination/service to gestation, farrowing, weaning, grow out, transport and slaughter.

Industry and the regulators are often quick to defend or condone current practices seemingly without contemporaneous or robust evidence to support their claims. Who is on the ground inspecting premises, are the inspectors independent or linked to industry, how many inspections are unannounced, how often do these inspections occur, what animal welfare indicators are being assessed, what thresholds are being applied, and what rectification measures are being ordered when those thresholds are exceeded?

There is little data transparency to inform consumers about what is happening to pigs behind the scenes. How many sows are still being confined in sow stalls and for how long? How many gilts and sows are prematurely culled due to lameness? What is the prevalence of UTIs, OGUs, and preventable injuries and what is being done to address these? What indicators are being used to assess transport stress and when thresholds are exceeded, what measures are being put in place? This information should be readily available. The regulators must require greater transparency in industry data.

In addition, considering the significant taxpayer funds given to APL in matched funding for R&D, it would be proper for there to be greater transparency around past, present and planned projects. While brief project summaries, a select few reports, and some published papers are available, the record is incomplete. It has taken Questions on Notice at Budget Estimates to even obtain an accurate figure on the amount of taxpayer funds handed to APL[50]. The Australian public is paying for this research, and as such is a key stakeholder. Therefore, complete information about exactly what work is being conducted with these funds should be made publicly available.

> "***There is nothing good about the life of an industrially farmed pig****…though some of the visible cruelties relating to animal rearing and slaughter have gone, many of them still happen. So it's arguable that we haven't removed cruelty from our society, just hidden it better*" – Dr Helen Cowie on *Animals in World History*

The cruelty may be "hidden better" but this year alone, the world has seen multiple exposes from intensive pig farms and abattoirs, including (but not limited to):

- **February 2023 – USA –** Footage released of pigs suffering inside a CO_2 system – "the resulting videos are horrifying they show the pigs squealing desperately, thrashing about and gasping for air before eventually succumbing"[156].

[156] Kristof N (2023) Spy cams show what the pork industry tries to hide. The New York Times, 4 Feb.

- **March 2023** – **UK –** On farm footage released of pigs suffering in squalor with painful injuries[157].

- **April 2023 – Australia** – Footage released of pigs suffering inside CO_2 systems at three Victorian abattoirs[45].

- **May 2023** – **UK** - Footage released of pigs suffering in a CO2 system - "The pigs in the video react to the first inhalation of carbon dioxide with fear and obvious discomfort," said Donald Broom, an animal welfare professor at the University of Cambridge. "They try to escape but cannot"[158].

- **August 2023** – **USA** - New York Times columnist Nicholas Kristof, who grew up on a 'hog farm', published a major feature on an investigation into pig production in the US which – "*reinforces my view that today's mass production of pork is intrinsically inhumane… the pregnant sows are confined in narrow pens called gestation crates. These vary but are typically a bit shorter and narrower than a human coffin, so that a sow can barely move and certainly can't turn around. "A gestation crate is like living in an airline seat," Temple Grandin, a leading livestock scientist, told me. When the sows are ready to give birth, they are transferred to farrowing crates, which are similar but have areas to the side for piglets. Then after a few weeks, the sow is taken away to be artificially inseminated and returns to a gestation crate, and this is repeated until she is no longer productive. And then she is killed*."[159].

- **December 2023 – Australia** – Footage released showing widespread animal cruelty across five Tasmanian abattoirs including the state's largest pig abattoir[160].

6.16 Lack of positive welfare

> "*…the majority of global commercial pig production units fall short in terms of promoting positive pig welfare. For example, if we assume that species-typical behaviours such as exploration, foraging, play, nesting and maternal–offspring interactions are largely synonymous with positive welfare (Bracke and Hopster, 2006; Špinka, 2006), then most pig production facilities around the world fail to provide adequate opportunities for their expression. Similarly, it is our contention that most intensive pig production systems globally do not provide sufficient levels of enrichment materials to facilitate substantial expression of behaviours such as exploration (Pedersen et al., 2014; see also Chapter 13 on enrichment)"*[2, 161, 162]

The intensive pig industry still appears to be struggling with the concept of prevention of harm, but animal welfare science has already moved on. No longer is animal welfare conceptualised as only the prevention of negative experiences. There is growing recognition of the importance of providing animals with positive experiences, quality of life and 'a life worth living'.

> "*Animals should have a pleasurable life, an engaged life and a meaningful life*"[2].

In 2009, the Farm Animal Welfare Council (FAWC) which advises the UK Department for Environment, Food and Rural Affairs (DEFRA), recommended that "*on-farm animal welfare*

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[157] Montague B (2023) This farm is the epitome of squalor. Ecologist, 18 Mar.

[158] Colley C, Wasley A (2023) Suffering of gassed pigs laid bare in undercover footage from UK abattoir. The Guardian, 2 May.

[159] Kristof N (2023) The truth about your bacon. The New York Times, 5 Aug.

[160] Tasmanian Times (2023) Surprise! 5 Tasmanian Abattoirs Abusing Animals. 8 Dec.

[161] Mullan S et al (2011) A pilot investigation of poss ble positive system descriptors in finishing pigs. Animal Welfare 20(3), 439–49.

[162] Rowe E, Mullan S (2022) Advancing a "good life" for farm animals: development of resource tier frameworks for on-farm assessment of positive welfare for beef cattle, broiler chicken and pigs. Animals 12 (5), 565.

should move beyond conventional incremental improvements and consider more dramatic improvements in order to ensure a life worth living for every farm animal and a good life for a growing number of farm animals"[2]. Over a decade later, there is still limited research on assessing and providing positive welfare for pigs in commercial production[11] because industry is still grappling with phasing out unacceptable practices. System transformation is urgently needed so industry can face up to their next challenge, which will be to fully grasp the importance of positive experiences for all pigs throughout their lives[2].

6.17 Loss of social licence

> *"The social license (i.e., society's permission for the functioning of animal production systems) of animal production can be compromised when public concerns are not considered by the industry. The pig industry would therefore benefit from adopting alternative farrowing systems based on scientific evidence and addressing all stakeholders' concerns about pig welfare"*[163]

The 2018 FutureEye report, commissioned by the Commonwealth Department of Agriculture and Water Resources (DAWR)[164], found "*a high level of agreement that animals are sentient and have a right to a humane and pain free life and death, even if bred for consumption*". They advised DAWR that *"the Australian public's view on how farm animals should be treated has advanced to the point where they expect to see more effective regulation…95% of people view farm animal welfare to be a concern and 91% want at least some reform to address this…65% of respondents were willing to pay more to ensure better conditions and welfare for farmed animals*…[and] *not responding to changing societal expectations creates a social licence threat".*

A more recent 2023 study confirms that the majority of Australians (8 in 10) view commonly farmed animals including pigs as sentient, and almost 9 in 10 affirm that the law should require all sentient animals to be provided with good animal welfare[165]. A recent international study also indicates that consumers across multiple countries are willing to pay more for improved pig welfare[166].

In terms of social licence, regulators have done industry no favours by failing to prohibit unacceptable practices, and industry has done itself no favours by failing to cease these unacceptable practices. The longer practices like extreme confinement, painful husbandry procedures, and inhumane CO_2 gassing continue, greater are the risks of loss of social licence.

As Australians become more aware of and disturbed by the realities of intensive pig production, they are withdrawing their support of the pork industry, and animal agriculture broadly. This is evident in the messages Animals Australia receives from concerned members of the public, a small snapshot of which is provided below:

> *"Now I know how pigs are treated, I can no longer eat them."* (December 19, 2022)

> *"I ordered my first veggie pack after the ABC report last night* [on CO_2 gassing of pigs]. *Never again am I going to eat another animal"* (March 28, 2023)

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[163] Vandresen B (2022) Pig welfare in farrowing housing systems: linking scientific approaches and stakeholders' expectations. Post-graduate thesis, Universidade Federal de Santa Catarina, Brazil.

[164] FutureEye (2018) Commodity or sentient being? Australia's shifting mindset on farm animal welfare. A report commissioned by the Commonwealth Department of Agriculutre and Water Resources.

[165] Saeri A, Grundy E (2023) Animal welfare policy barometer. A study by BehaviourWorks Australia commissioned by the Australian Alliance for Animals.

[166] Denver S et al., (2023) Willingness-to-pay for reduced carbon footprint and other sustainability concerns relating to pork production – a comparison of consumers in China, Denmark, Germany and the UK. Livestock Science 276, 105337.

"This is shocking and appalling that this cruel method of killing pigs is actually happening – and no one cares! I'm definitely not eating pork…in fact decided not to eat meat all together" (May 4, 2023)

"I saw the ABC report [on CO_2 gassing of pigs] *and have decided I can't eat pigs anymore, perhaps meat altogether"* (June 5, 2023)

"Every time I even think of buying bacon…I think of the 'advertisement' with a mother and small child going from supermarket to caged pig pens and don't buy it" (August 30, 2023)

6.18 The need for system transformation

Undoubtedly, industry will highlight their investments (e.g., in 'quality assurance schemes', training programs, designed individual farrowing pens), as proof of their commitment to improving pig welfare. However, there is persistent failure to recognise that systematic poor welfare practices are embedded in the very foundations of their operating model. The Australian commercial pig industry is entrenched in an operating model that prioritises production and profit. They accept the unacceptable because it is seen as commercially necessary. So long as this model predominates pigs will continue to suffer unnecessary and preventable harm.

For example, industry's sow stall 'commitments' reflect a "*selective focus on one component in a multiplex system* [which] *enables industry co-optation of social movement concerns via small incremental reforms that can then be represented as if they were transformative*". However, rather than transforming a system, these incremental shifts allow "*the concept of pig welfare to be corporatised in a way that maintains the dominant model of factory farmed pig meat production*"[167]. Entrenched systems of intensive confinement are reflected in the small proportion of sows housed in confinement-free farrowing systems[79], and the majority (>95%) of pigs in Australia who are confined indoors their entire lives with no access to the outdoors.

System transformation is urgently needed. It is no longer acceptable for regulators and industry to ignore animals' interests. Housing, husbandry, and slaughter systems must consider what is best for sows and piglets above all other concerns. System transformation will require changes in laws, policies, market incentives, infrastructure, sow genetics, training, and management[98,168].

As Animals Australia has highlighted over decades of advocacy and in this submission, pigs are suffering at every stage of their lives from birth to slaughter. As a society, we must ask ourselves – are these practices consistent with our values, and can we continue to allow animals to be treated this way?

Regulatory reform, in line with available scientific evidence and community expectations, is needed now.

We commend this comprehensive submission to the Inquiry.

Animals Australia is willing and available to appear at any hearings related to this Inquiry.

[167] Carey R et al (2020) How free is sow stall free? incremental regulatory reform and industry co-optation of activism. Law & Policy 42(3), 284–309.
[168] Molnár M (2022) Transforming intensive animal production: challenges and opportunities for farm animal welfare in the European Union. Animals 12(16), 2086.

Yours sincerely,

[redacted]

Glenys Oogjes
Chief Executive Officer
Animals Australia Federation

[redacted]