



## Submission to Inquiry into Pig Welfare in Victoria

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## Contents

1. About AMIC.....	2
2. Executive Summary.....	2
3. Regulatory Framework for Animal Welfare in Processing Establishments .....	3
3.1 State Regulation .....	4
3.2 PrimeSafe .....	4
3.3 Australian Standard - AS4696:2023 .....	5
3.4 Model Code of Practice.....	5
3.5 Australian Livestock Processing Industry Animal Welfare Certification System .....	5
3.6 Australian Animal Welfare Standards and Guidelines for Livestock at Processing Establishments .....	6
3.7 Federal Legislation .....	7
4. Overview of approved stunning methods for pigs in Australia and overseas.....	7
4.1 Controlled Atmosphere Stunning (CAS).....	8
4.1a Carbon Dioxide stunning.....	8
4.1b Inert gas stunning .....	9
4.1c Low Atmosphere Pressure Stunning .....	9
4.5 Electrical Stunning.....	10
4.6 Penetrative Captive Bolt.....	10
4.7 International Best Practice.....	11
4.8 Summary of stunning methods.....	12
5. Implications of banning carbon dioxide stunning for pigs .....	12
5.1 Victorian pork production in the Australian and global context.....	12
5.2 Pork is a staple in the Australian diet .....	13
5.3 Impact of banning CO <sub>2</sub> stunning in Victoria.....	14
6. Recommendations to the Committee.....	14
6.1 Recommendation: Need for a fit for purpose, outcomes-based minimum animal welfare standard for livestock processing.....	14
6.2 Recommendation: recognition that CO <sub>2</sub> stunning of pigs is best practice and meets regulatory requirements.....	15
6.3 Recommendation: recognition of the role Victorian pork plays in underpinning jobs, rural communities and affordable food.....	16
7. References.....	17

## 1. About AMIC

The Australian Meat Industry Council (AMIC) is the Peak Industry Council representing the post-farm gate meat industry. AMIC members include businesses processing livestock for domestic and export consumption, smallgoods manufacturers, boning rooms, cold stores, wholesalers and distributors through to exporters and independent retail butchers.

AMIC does not currently have a Victorian pig processor within the membership. However, our members include pig processors in other states, Victorian processors of other livestock species, and smallgoods manufacturing and retailers purchasing and distributing Victorian pork. Hence, this submission does not speak directly on behalf of Victorian pig processors but, rather, the indirect interests and concerns from a wide pool of our membership.

AMIC is pleased to make this submission to the *Legislative Council Economy and Infrastructure Committee* (hereafter referred to as the Committee) to highlight the work our organisation and the wider industry has undertaken to bolster animal welfare outcomes for livestock processed in Australia. Recognising the need to lift the bar and provide a pathway for commercial channels to source livestock processed under a higher standard, AMIC developed the *Australian Livestock Processing Industry Animal Welfare Certification System (AAWCS)*, which has now been in use for over a decade and covers >80% of livestock processed in Australia annually. As both the Peak Industry Council for livestock processors and the owner of AAWCS, AMIC is in a unique position to comment on how animal welfare is regulated and managed at the point of slaughter. This submission does not speak to the on-farm components in the terms of reference of this inquiry.

## 2. Executive Summary

The Australian pork industry contributes over \$6 billion to the Australian economy and employs about 34,600 people across production, processing and retail alone<sup>1</sup>. Pork accounts for an important and growing part of the average Australian diet<sup>2</sup>. Pig processing is part of a broader world-leading Australian livestock processing sector.

According to ABS data, Australia processed 5.64 million pigs, 6.29 million cattle and 31.40 million sheep in 2022-23<sup>3</sup> – all underpinned by sophisticated integrity systems. As discussed in this submission, the livestock processing sector takes animal welfare extremely seriously and has taken pre-emptive steps to lift standards and minimise animal welfare risks.

Animal welfare is the responsibility of each state and territory however there are differences in how animal welfare is regulated across jurisdictions and between export and domestic processing establishments. A single harmonised and legislated minimum animal welfare standard across all jurisdictions to bolster animal welfare outcomes at the point of slaughter has been lacking for some time, but not due to industry obstruction or objection. AMIC has actively engaged in the current and previous attempts to write a national standard, advocating for a science and outcomes-based approach. With such a standard lacking, industry pre-emptively put in place its own voluntary standard in 2005 to promote best practice animal welfare outcomes.

Approved livestock slaughter practices in Australia are based on scientific evidence. There are no current alternatives to Carbon Dioxide (CO<sub>2</sub>) stunning in pigs, which can minimise the risk of injury, pain and suffering and offer the least practicable disturbance to animals in most commercial settings. Importantly, CO<sub>2</sub> stunning allows for animals to be handled in batches and requires the least amount of human interaction – important features for minimising pig stress. For these reasons, CO<sub>2</sub> stunning remains the global best practice and most commonly used method in pig processing around the world,

including in Europe, the US and Canada. While it is recognised that some pigs can be averse to CO<sub>2</sub> under certain conditions, research has proven that this risk can be minimised via appropriate pre-slaughter and stunning management and monitoring.

Commercial pig production is highly dependent on the use of CO<sub>2</sub> stunning. Prematurely banning this stunning technology, without the availability of a commercialised alternative with scientifically proven higher welfare outcomes, would result in the closure of many pig processing establishments due to the sheer lack of viability.

Australia's consumption of pork is growing and while market demand for pork products remains, businesses will find ways to fill any gaps created through the closure of Victorian pig processing facilities. Hence the banning of CO<sub>2</sub> stunning of pigs in Victoria alone is likely to only drive Victorian businesses, which currently represent up to 21% of Australia's national pork production, to other jurisdictions which permit the use of the method.

The pig industry plays an important role in Australian and Victorian society. Pig production and processing employs thousands of people and supports livelihoods in rural communities. In a typical regional community, pig production contributes around \$4,500 per sow to the local economy. The presence of a pig processing facility within the community creates 37 jobs per 1000 sows and has a local economic contribution of almost \$6,500 per sow<sup>1</sup>. In the 2022-23 financial year, over 1.2 million pigs were processed across Victoria.

Pork is an important and growing part of the Australian diet, being the second most consumed meat nationally, and offers families an affordable, healthy meat option in an environment of growing cost of living pressures.

AMIC duly advocates that in reviewing Victorian pig welfare, particularly at processing establishments, consideration is best given to how holistic livestock and systems management practices culminate in observable welfare outcomes at the point of slaughter, and how awareness and training can support the effective application of the globally recognised best practice CO<sub>2</sub> stunning method.

This submission provides comment to the Committee regarding:

- I. The current regulatory framework in Victoria and nationally regarding animal welfare in processing establishments;
- II. A review of the approved stunning methods for pigs in Australia and overseas; and
- III. The wider implications of banning CO<sub>2</sub> stunning for pigs.

This submission also makes three recommendations:

- I. The Committee recognise the need for a fit for purpose, outcomes-based minimum animal welfare standard for livestock processing;
- II. The Committee recognise that CO<sub>2</sub> stunning for pigs is best practice and meets current regulatory requirements; and
- III. The Committee recognise the role Victorian pork plays in underpinning jobs, rural communities, affordable healthy food, and Victorian food security.

### 3. Regulatory Framework for Animal Welfare in Processing Establishments

Victoria's meat processing establishments consist of 28 export abattoirs and 14 domestic abattoirs<sup>4</sup>. Animal Welfare in Victorian abattoirs is regulated by PrimeSafe and compliance with animal welfare is

a condition of the establishment's license. PrimeSafe directly audits domestic abattoirs, but regulation of export establishments is the responsibility of the Commonwealth with audits managed under a Memorandum of Understanding between the two jurisdictions. All livestock processing, domestic or export, is underpinned by the Australian Standard *Hygienic production and transportation of meat and meat products for human consumption* (or AS4696), which includes coverage of animal welfare.

Most export establishments are certified under the *Australian Livestock Processing Industry Animal Welfare Certification System* (or AAWCS), a voluntary best-practice program independently audited and administered by AUS-MEAT<sup>5</sup>. In Victoria, there are 19 abattoirs certified under AAWCS.

### 3.1 State Regulation

State regulation across Australia for processing establishments currently occurs through two different legislative instruments: (1) food safety legislation and (2) specific animal welfare legislation.

Legislation relating to animal welfare varies across jurisdictions; in Victoria, this is through the following:

- [Meat Industry Act 1993](#) and Meat Industry Regulations 2015
- [Prevention of Cruelty to Animals Act 1986 \(POCTA\)](#) and the Prevention of Cruelty to Animals Regulations 2019 (*Noting a superseding exposure draft of the Animal Care and Protection Bill is open to comment*)

Currently, the POCTA Act does not apply to the slaughter of animals in accordance with the *Meat Industry Act 1993*, or any Commonwealth Acts. In the *draft Animal Care and Protection Bill*, the exemption does not apply specifically to the Act, however slaughter to produce food for human consumption is considered a specified reason for killing animals.

Under the *Meat Industry Act*, all meat processing facilities in Victoria require a license issued by PrimeSafe to operate. To be licensed by PrimeSafe, processing establishments must comply with the Australian Standard for the *Hygienic Production and Transportation of Meat and Meat Products for Human Consumption (AS4696:2023)*.

### 3.2 PrimeSafe

PrimeSafe is a statutory authority established under the *Meat Industry Act*. PrimeSafe approved auditors assess processing establishments against a number of criteria, including animal welfare. As well as conducting unannounced inspection on all licensed processing establishments, PrimeSafe also investigates formal complaints against processing establishments.

There are several enforcement actions which can be taken by PrimeSafe, dependent upon the level and/or extent of non-compliance or breach identified. These actions could include:

- Corrective action request
- Direction to take specific action (including to stop processing)
- Penalty infringement notice (including fines)
- Increased regulatory presence, including increased audit frequency
- Licence suspension
- Licence cancellation
- Prosecution of an individual or the company

### 3.3 Australian Standard - AS4696:2023

In addition to the State based legislation, the nationally enforceable standard underpinning regulation of processing establishments is AS4696. AS4696 requires the application of Hazard Analysis and Critical Control Point (HACCP) plans in the form of an Approved Arrangement which are intended to manage the slaughtering of animals.

AS4696 principally focuses on the food safety and hygiene elements of meat processing. It describes outcomes sought regarding management of product wholesomeness, operational hygiene, cross-contamination, supply and admission of animals, ante-mortem inspection, post-mortem inspection and other food production matters. However, it does also encompass animal welfare, in particular the requirement to minimise the risk of injury, pain and suffering and ensure the least practical disturbance to livestock. AS4696 provides specific direction regarding the handling, stunning and slaughter of livestock.

While AS4696 is referenced by various pieces of state and Commonwealth legislation and is therefore legally enforceable, the scope of animal welfare outcomes it includes is insufficient to address all risks that could emerge. Because of this gap in AS4696, the following further steps have been taken to enhance animal welfare outcomes in processing:

1. the model code of practice has been adopted in some jurisdictions or has been referred to in certain prosecutions,
2. industry has taken the initiative to develop and promote its own best practice animal welfare standard and certification program (AAWCS), and
3. government, industry and other stakeholders have been engaged in drafting the *Australian Animal Welfare Standards and Guidelines (AAWGS) for Livestock at Processing Establishments* to establish a consistent minimum standard across all jurisdictions.

### 3.4 Model Code of Practice

The [Model Code of Practice for the Welfare of Animals - Livestock at Slaughtering Establishments \(2001\)](#) is a recognised industry guideline that covers humane handling, stunning and slaughtering of animals at processing establishments. It is not currently referenced in Victorian legislation, as it is in some other jurisdictions.

Whilst it provides a greater level of detail in relation to animal welfare than AS4696, including some details which apply to certain species, the Model Code is considered outdated and not reflective of current best practice or the latest science. Industry has been aware that the Model Code has needed updating for many years and has advocated strongly for a processing specific *Australian Animal Welfare Standards and Guidelines (AAWSG)* to be developed and subsequently underpinned by legislation in each jurisdiction. With an AAWSG not forthcoming for livestock processing, industry self-regulated and adopted the AAWCS program.

### 3.5 Australian Livestock Processing Industry Animal Welfare Certification System

The [Australian Livestock Processing Industry Animal Welfare Certification System \(or AAWCS\)](#) is an independently audited certification program used by livestock processors to demonstrate compliance with industry best practice animal welfare standards, the *Industry Animal Welfare Standards for Livestock processing Establishments Preparing Meat for Human Consumption* (hereafter referred to as the Industry Standard), from receipt of livestock to the point of humane processing. Now widely adopted, the AAWCS program was developed by industry and interested stakeholders in 2013 to address an increasing gap in livestock welfare requirements at processing establishments, following the unsuccessful adoption of a draft National Standard by regulators in 2012.

The first edition of the Industry Standard was developed, with support via the Victorian Government's *Naturally Victorian Initiative*, in 2005 by a specialist group comprised of:

- industry representatives,
- animal welfare scientists,
- researchers and technical experts,
- standards writing and conformity assessment experts,
- non-governmental organisations, and
- regulators with an interest in animal welfare.

The Industry Standard was initially aimed at showcasing industry's commitment to animal welfare and the fulfilment of community expectations surrounding the welfare of livestock at Australian processing establishments, particularly in the absence of a National Standard. Now in its third edition, published in 2020 and effective from 1 January 2022, the Industry Standard continues to set modern best practice standards and guidelines for the management of livestock welfare at Australian processing establishments.

Underpinned by the AAWCS program, the Industry Standard has grown to support industry in continually improving animal welfare outcomes at processing. The program can be incorporated into existing livestock processing industry quality assurance programs for food safety and meat quality, and provides support towards demonstrating existing industry regulatory requirements. The addition of animal welfare principles to these quality assurance systems provides a more comprehensive approach than managing welfare as a standalone issue and assists industry to continually improve animal welfare outcomes.

There are now 66 AAWCS certified meat processing establishments across Australia, 19 of which are in Victoria. Most (84%) export establishments are currently AAWCS certified, with the Commonwealth Department of Agriculture Fisheries and Forestry (DAFF) formally recognising the role of AAWCS and AUS-MEAT (as the independent auditor) in auditing certified export registered establishments for welfare since 2014. The parameters around DAFF formal recognition are set out within the publicly available [Conditions of Recognition](#).

In line with the industry's commitment to continually improving animal welfare outcomes, an Animal Welfare Certification Sub-Committee (AWC SC) was established in October 2022 to increase scrutiny of regular program reporting, enhance the management of critical non-conformances, and manage AAWCS routine governance. The AWC SC is a small expert group comprised of industry, regulators, AUS-MEAT and an independent animal welfare expert.

### 3.6 Australian Animal Welfare Standards and Guidelines for Livestock at Processing Establishments

While widely adopted and encompassing the vast majority of livestock processed in Australia (i.e. 66 abattoirs covering >80% of sheep, cattle and pigs processed in Australia), AAWCS is not a mandatory requirement, and it does not cover many small domestic facilities. Hence, AMIC has engaged in and supported the AAWSG process, provided it is rooted in scientific evidence and is outcomes based, to ensure that all animals processed in Australia are sufficiently protected by fit for purpose regulation.

Currently, the AAWSG for Livestock at Processing Establishments is being drafted by the Queensland Department of Agriculture and Fisheries (QDAF) under the purview of the jurisdictional Animal Welfare Task Group. This process started in 2022 and AMIC has formally engaged, along with other industry, welfare and consumer representatives via the Stakeholder Advisory Group. A draft has not yet been

released for public consultation, nor has a Regulation Impact Statement been produced. Industry has supported the AAWSG process despite frustrations that the previous attempt in 2012 failed to be adopted by the states, prompting industry to embrace AAWCS. A national standard is highly desirable for processors – but this standard must be rooted in scientific evidence and focus on animal welfare outcomes. A national standard strongly supports the industry’s commitment to good animal welfare practices and outcomes and means that processors with plants in more than one state can understand and apply the same standards at all facilities.

### 3.7 Federal Legislation

Export registered processing establishments must comply with State legislation, but they must also meet any additional regulation by the Department of Agriculture, Fisheries and Forestry (DAFF).

Export establishments must comply with the [Export Control Act 2020](#) and its delegated regulations, the Export Control Rules 2021, which detail commodity specific requirements. This includes compliance with an ‘Approved Arrangement’ and standard operating procedures, weekly verification of animal handling practices, regular auditing, and for ‘Teir 2’ export establishments, the presence of an On-Plant Veterinarian (employed by DAFF) during export production.

In terms of animal welfare, the guidelines for Approved Arrangements require the outcome that *‘Procedures are in place to ensure the humane and considerate treatment of livestock, and the use of good husbandry and management practices to improve the welfare of livestock at processing establishments’*<sup>6</sup> to be met. The guidelines provide details on performance indicators and a checklist on how the outcome can be met. On-Plant Veterinarians are required to verify animal welfare compliance against the Approved Arrangement during their daily ante-mortem inspections and monthly verification of animal handling practices and slaughter procedures.

Under the *Export Control Act 2020* and the associated *Export Control (Meat and Meat Products) Rules 2021*, the Department can suspend or revoke the export registration of a processing establishment. This would include if provisions under AS4696, which include animal welfare and are not exempt from the export legislation, are not being met. However, as noted earlier, these provisions are not sufficient to address all risks posed through the processing of animals.

As animal welfare is under the jurisdiction of State and Territory authorities, the DAFF staff who carry out verification tasks and compliance audits at export establishments are also required to report any major breaches in animal welfare through submitting an Animal Welfare Incident Report to the appropriate state or territory authority<sup>7</sup>.

## 4. Overview of approved stunning methods for pigs in Australia and overseas

In Victoria, as within the rest of Australia, there are currently three approved stunning methods of pigs. These three methods are:

- Controlled Atmosphere Stunning (CAS),
- Electrical, and
- Penetrative Captive Bolt.

A significant amount of research has been conducted into the stunning methods of pigs for slaughter. This has included looking at the effect of stunning on the animal’s physiological response and other welfare indicators, as well at the quality of the final product. All methods have advantages and disadvantages that need to be carefully considered.

This submission outlines the current information and scientific evidence regarding each of the above methods, as well as current alternatives or experimental stunning methods. A table is also provided to compare the methods used internationally.

#### 4.1 Controlled Atmosphere Stunning (CAS)

Controlled Atmosphere Stunning (CAS) is a method in which the ambient atmospheric gas concentration is changed to induce unconsciousness, generally due to hypoxia, or less frequently, due to anoxia.

Hypoxia is the process in which there is very low oxygen, compared to anoxia which is complete absence of oxygen. Hypoxia can occur by immersing into a gas, by displacing existing gas, or also by exposing to a low atmospheric pressure. Hypoxia can also be induced by hypercapnia when carbon dioxide replaces the oxygen in the atmosphere.

##### 4.1a Carbon Dioxide stunning

Carbon Dioxide (CO<sub>2</sub>) stunning induces *acute hypercapnia* in pigs via exposure to a high concentration of CO<sub>2</sub>. This is the most commonly used stunning method of pigs in Victoria, Australia and most developed countries.

In conventional CO<sub>2</sub> stunning, pigs are loaded into a gondola crate in a dip-lift system, which then descends into a pit where the CO<sub>2</sub> concentration gradually increases to around 90% (minimum 80% recommended) at the bottom. Loss of sensibility and consciousness is not immediate, but immersion of pigs into 80 to 95% CO<sub>2</sub> usually leads to the induction of unconsciousness within 30 - 60 seconds<sup>8</sup>.

The main advantage of this method is that the system allows for small groups of pigs to be moved together as a unit during preslaughter handling and stunning, respecting the natural instincts of pigs to remain in social contact with each other. This minimises the fear and stress caused by both isolation and close human contact<sup>9</sup>. Furthermore, it removes the need for restraint, which is a known stressor for pigs.

The disadvantage of this method of stunning is that research has shown there is a period before loss of unconsciousness which can be considered aversive, and stressful. This has been indicated by a series of observed behaviours such as gasping and vocalisation<sup>10</sup>.

Research has demonstrated that aversive responses to CO<sub>2</sub> stunning is often linked with several pre-slaughter factors, both on-farm and at processing<sup>11</sup>. These factors include pig breed and genetic makeup, habituation of pigs to human interaction, and training and use of low-stress stock handling techniques. In turn, aversive reactions to CO<sub>2</sub> can be reduced through improved training and awareness of the management practices that are known to minimise stress to pigs on farm and through to the point of stunning.

Of all the potential factors known to impact pig welfare at processing, there is consistent agreement throughout literature that handling is the most crucial, particularly in the last 15 minutes prior to stunning. *ProHand Abattoir* is a science-based and widely utilised training package, developed by APL, to educate stock-people on how to handle pigs in a way that reduces fear and stress of the animals. Further and ongoing utilisation of *ProHand Abattoir* will help minimise aversive reactions to CO<sub>2</sub>.

Studies show that minimising direct human contact and applying low stress handling immediately prior to stunning reduces the occurrence of stress indicators at the point of stunning and slaughter. CO<sub>2</sub> stunning remains the only method which can practically minimise human contact without segregating individual animals in the lead up to stunning. AMIC therefore urges the Committee not to consider the

potentially aversive nature of CO<sub>2</sub> stunning in isolation. Consideration must be given, instead, to how holistic management practices culminate in observable welfare outcomes at slaughter and how awareness and training can support the effective application of this globally recognised best practice stunning method.

#### 4.1b Inert gas stunning

Inert gases are stable gases that do not readily react with other substances, and are free from smell, colour and taste. The inert gases include not only all noble gases, such as argon, but also stable gas molecules with strong covalent bonds, e.g. nitrogen (N<sub>2</sub>). Exposure to inert gases is not used commercially and only data on experimental studies have been reported.

The stunning mechanism of inert gases is hypoxia, with the inhalation of gases such as argon or nitrogen depriving the brain of oxygen. In contrast to hypercapnia, the exposure to inert gases is non-aversive and does not appear to cause the same breathlessness during the induction of unconsciousness<sup>12</sup>. However, other research indicated that hypoxia and hypercapnia have equal potency for air hunger<sup>13</sup>.

A significant disadvantage of inert gas stunning is that the time to reach unconsciousness is longer than in CAS systems, and the time to regain some level of consciousness is shorter (i.e., the exposure to sticking interval or 'stun to stick' interval is limited). The exposure to sticking interval for gases such as argon is 25-45 seconds<sup>14</sup> when less than 5 minutes of exposure to the inert gas occurs, compared to >60 seconds when exposed to CO<sub>2</sub> for a lesser amount of time. Therefore, sticking and bleeding must be applied very swiftly which, when combined with the need to perform all necessary checks to confirm a lack of consciousness, is essentially unachievable in a commercial setting. Aside from the increased risk to animal welfare posed by this method, particularly the potential for sticking of conscious animals that have swiftly recovered from gas exposure, extended time to unconsciousness has also been associated with extended convulsion time and subsequent negative impacts on meat quality<sup>15, 16</sup>.

Other gases such as helium have also been researched and, whilst it showed promise with no adverse behaviour shown and a low exposure time of only 180 seconds<sup>17</sup>, the low density of the gas makes it very challenging to use in commercial applications, including increased safety risks for staff.

Because of the above reasons, the commercial application of inert gases as a stunning method is unlikely to be developed further.

#### 4.1c Low Atmosphere Pressure Stunning

Low atmosphere pressure stunning (LAPS) is a method where the pressure in a stunning chamber is lowered by removing the air, thereby reducing the oxygen levels, resulting in stunning by hypoxia<sup>16</sup>.

Early studies with LAPS as an on-farm euthanasia method found that although pigs showed minimal aversive behaviours, the time to death was much longer (approx. 9–14 min) than current CO<sub>2</sub> systems. Furthermore, it did not reliably euthanise all pigs<sup>18, 19</sup>.

It would also require more complex pig-handling systems compared to current CO<sub>2</sub> stunning, since multiple LAPS systems will be needed to reach an adequately high capacity for commercial application. Large vacuum pumps, tubing and airtight seals needed for a LAPS system would require significant investment and ongoing operational and maintenance costs<sup>17</sup>.

A major study into the viability of using LAPS for the humane slaughter of pigs was conducted in 2020. While initial studies on anaesthetised pigs appeared promising, follow up treatments using conscious pigs found that pigs were exhibiting adverse behaviour to LAPS of a similar nature to pigs exposed to

CO<sub>2</sub> in the same study. These behaviours were not able to be reliably relieved by administration of either analgesic or anxiolytic medication. Pathological examination of the pig carcasses subject to the LAPS treatment showed a high severity and incidence of haemorrhage and congestion of the lungs as well as the majority of pigs having ruptured ear drums which was likely to have caused pain<sup>20</sup>. Additional pain may be caused of pigs if intestinal gas or existing respiratory problems are present<sup>16</sup>.

Because of these reasons, LAPS is not currently considered a commercially viable alternative.

#### 4.5 Electrical Stunning

The principle of electrical stunning is the application of sufficient current through the brain to induce generalised epileptiform activity in the brain (epileptic seizure), so that the animal becomes immediately unconscious and unable to feel pain.

Head-only electrical stunning can be performed in combination with or immediately followed by passing an electrical current through the body to generate fibrillation of the heart or cardiac arrest (head-to-body stunning). The main commercial method of electrical stunning for pigs is head-only stunning. For electrical stunning, pigs are usually individually restrained using a V-restraint.

However, pigs are very resistant to being handled individually. Therefore, to move pigs into the restraint that is needed for electrical stunning increases the likelihood of distress for pigs<sup>21</sup>. Furthermore, with electrical stunning the placement of electrodes and the electrical parameters used are critical to ensuring stun effectiveness. If placed incorrectly, pigs can receive pre-stun shocks and be ineffectively stunned. In addition, electrical head-only stunning systems induce a shorter period of unconsciousness compared to CO<sub>2</sub> stunning, which means there is an increased risk of pigs regaining consciousness during bleeding if there is any delay after stunning<sup>21</sup>.

Commercially, the requirement to handle and restrain pigs immediately before electrical stunning, and the process of electrical stunning itself induces physiological changes which can negatively affect the quality of the final product compared to CO<sub>2</sub> stunning<sup>22</sup>. Stress immediately before slaughter impacts post-mortem muscle metabolism and the incidence of pale, soft exudative meat can increase. The process of electrical stunning causes higher incidence of blood splash within the meat.

Whilst electrical stunning can be used commercially, it is not appropriate for most large processing establishments in Australia and requires increased animal handling, which can be detrimental to animal welfare.

#### 4.6 Penetrative Captive Bolt

Pigs in Victoria can also be stunned using a penetrative captive bolt gun. Pigs are usually individually restrained as the penetrating captive bolt is applied to the forehead of the pig, causing irreversible unconsciousness through physical damage to both the skull and the brain.

However, pigs are very difficult animals to stun with captive-bolt equipment. To ensure correct placement of the captive bolt gun, pigs must be individually handled and restrained, which is often stressful for pigs<sup>16</sup>. Furthermore, due to the shape and thickness of the skull of some pigs (e.g., boars and sows have very thick skulls), correct placement of the captive bolt gun is challenging and increases the risk that pigs will be ineffectively stunned<sup>23</sup>. Effective penetrative captive bolt stunning relies on staff competency and is prone to human error because there is no automated system currently available<sup>16</sup>.

Only penetrating captive bolts can be used on pigs; non-penetrating bolts are not used. Commercially, only cull breeding sows are stunned with a penetrating captive bolt under slaughterhouse conditions

due to the animal's large size. The method is otherwise restricted to emergency slaughter and as a back-up method when other methods fail, or in very small-scale slaughterhouses<sup>16</sup>.

#### 4.7 International Best Practice

Internationally, CO<sub>2</sub> stunning is widely used and accepted as best practice in most countries, especially those that export large volumes of pork onto the global market.

To date, there has been significant amount of research done globally, yet a viable alternative stunning method for pigs has not been identified. The below table outlines the international allowances regarding stunning of pigs.

Country	Stunning methods			
	Carbon dioxide	Mechanical	Electrical	Legislation / Source
<b>Australia</b>	<b>Permitted</b>	<b>Permitted</b> for pigs but should only be practiced in special situations (emergency slaughter, or for large sows or boars.) Smaller slaughterhouses may use a captive bolt for stunning all animals.	<b>Permitted</b> , with the head-to-chest electrical stunning method recommended	<a href="#">Primary Industries Standing Committee Model Code of Practice for the Welfare of Animals Livestock at Slaughtering Establishments</a> (2.6.2.9;2.6.2.12)
<b>New Zealand</b>	Not currently carried out	Captive bolt and/or suitable firearm <b>permitted</b>	<b>Permitted</b>	<a href="#">NZ Code of Welfare- Commercial slaughter</a>
<b>United Kingdom</b>	<b>Permitted</b> for slaughter (i.e. non-recoverable from CO <sub>2</sub> application)	Captive bolt and/or concussion permitted	<b>Permitted</b>	<a href="#">The Welfare of Animals (Slaughter or Killing) Regulations 1995</a>
<b>United States</b>	<b>Permitted</b>	Captive bolt and gunshot <b>permitted</b>	<b>Permitted</b>	<a href="#">US Code of Federal Regulations - Animals and Animal Products</a>
<b>Canada</b>	Exposure to a gas or a gas mixture <b>permitted</b>	Delivering a blow to the head with a mechanical device <b>permitted</b>	Applying an electrical current <b>permitted</b>	<a href="#">Safe Food for Canadians Regulations</a>
<b>Europe</b>	CO <sub>2</sub> at high concentration; CO <sub>2</sub> associated with inert gases; and inert gases, <b>permitted</b>	Penetrative captive bolt, firearm with free projectile, and percussive blow to the head (piglets up to 5kg only) all <b>permitted</b>	Head-only electrical stunning, head-to-body electrical stunning <b>permitted</b>	<a href="#">Council Regulation (EC) No 1099/2009 of 24 September 2009 on the protection of animals at the time of killing</a>

#### 4.8 Summary of stunning methods

While CO<sub>2</sub> is recognised as sometimes being aversive to pigs, there are several aspects of the CO<sub>2</sub> stunning method that provide advantages to pig welfare compared with alternative methods.

This includes that pigs can be handled and moved in groups with little restraint, that induction of insensibility is rapid and well-maintained ensuring animals are unconscious for slaughter, and it is commercially feasible.

Alternative stunning methods have been studied, some of which show improvement to pig welfare in reduced aversive responses. However, factors such as other negative welfare indicators, availability, cost effectiveness, and carcase quality preclude or limit their use.

### 5. Implications of banning carbon dioxide stunning for pigs

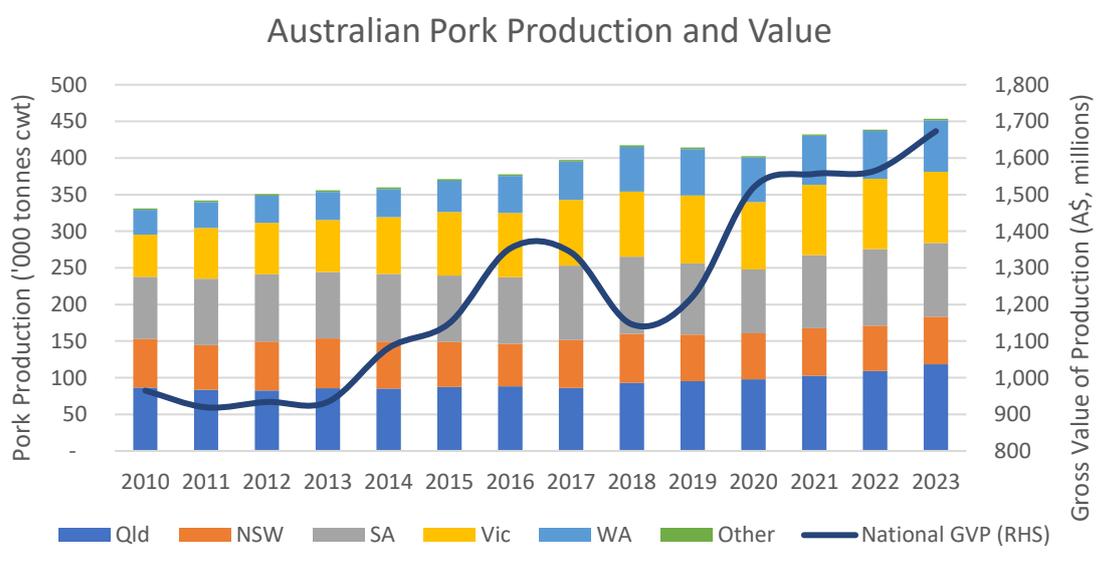
CO<sub>2</sub> stunning of pigs, when appropriately managed and monitored, is considered best-practice in Australia and overseas. With the scientific literature indicating there are no current alternative stunning techniques for commercial-scale pig processing, banning such practices in Victoria would make many large plants unviable, resulting in the closure of facilities and loss of thousands of jobs up and down the supply chain. Moreover, it would not actually address the perceived animal welfare concern, as the shortfall of pork production in Victoria would be replaced by product from other Australian jurisdictions or from overseas where CO<sub>2</sub> stunning is permitted.

Proponents of banning CO<sub>2</sub> recognise these wider implications and appear to be using this issue as a means to promote an anti-livestock agenda, driven by the ultimate goal of closing down the Victorian pig industry.

#### 5.1 Victorian pork production in the Australian and global context

The Australian pig industry is an agriculture success story. The gross value of pig production (on-farm) has steadily grown over the past decade, almost doubling to A\$1.67 billion in 2022-23<sup>24</sup>. As the industry has grown, so has the number of jobs, tax receipts and meals it has produced. The Victorian pig industry is estimated to have contributed A\$1.38 billion to the local economy in 2022-23<sup>1</sup>.

Victoria has played an important role in this national growth, accounting for 21% of pork production in 2022-23, the third largest producing state behind Queensland and South Australia.



Source: ABARES and ABS, compiled by AMIC; GVP = Gross Value of Production

If CO<sub>2</sub> was banned in Victoria, pig processing would expand interstate and be gradually absorbed by facilities that could utilise this technology and operate at a lower cost base. Those pigs still grown and finished in Victoria would need to be transported greater distances to facilities interstate, creating new animal welfare challenges and opening additional biosecurity risks. Victoria being over reliant on food items produced interstate would also create supply chain vulnerabilities, as evident during the COVID-19 pandemic and highlighted in the recent *Inquiry into Food Security in Australia*<sup>25</sup>.

If Victoria tried to mandate animal welfare requirements on pork produced in other states, this could create internal trade barriers and challenge core elements of Australia's Federation, especially if those requirements are not based on science and evidence.

The Australian pig industry operates within a global marketplace. Australia imported 154,000 tonnes (shipped weight) of pork in 2022-23, strictly for utilisation in smallgoods manufacturing. Pork imports compliment Australian production, as domestic capacity is unable to produce sufficient quantity of certain specification cuts used in smallgoods production.

In 2022-23, 99% of pork imports came from countries where CO<sub>2</sub> stunning is widely practiced, including Denmark (27%), the US (26%), the Netherlands (24%), Ireland (15%) and Canada (7%). If Victoria or other Australian jurisdictions restricted use of CO<sub>2</sub>, it is likely there would be some diversion to imported-smallgoods pork channels, as domestic fresh pork supply declined and became more expensive. Any attempts to impose trade restrictions on these imported channels of pork on grounds that were not scientifically justified could contravene Australia's obligations under the World Trade Organization and other trade agreements.

These trade dynamics have played out in New Zealand where CO<sub>2</sub> is not currently utilised. New Zealand pork production is a relatively modest small-scale industry, producing about 45,000 tonnes per annum or just 10% the volume of the Australian industry.

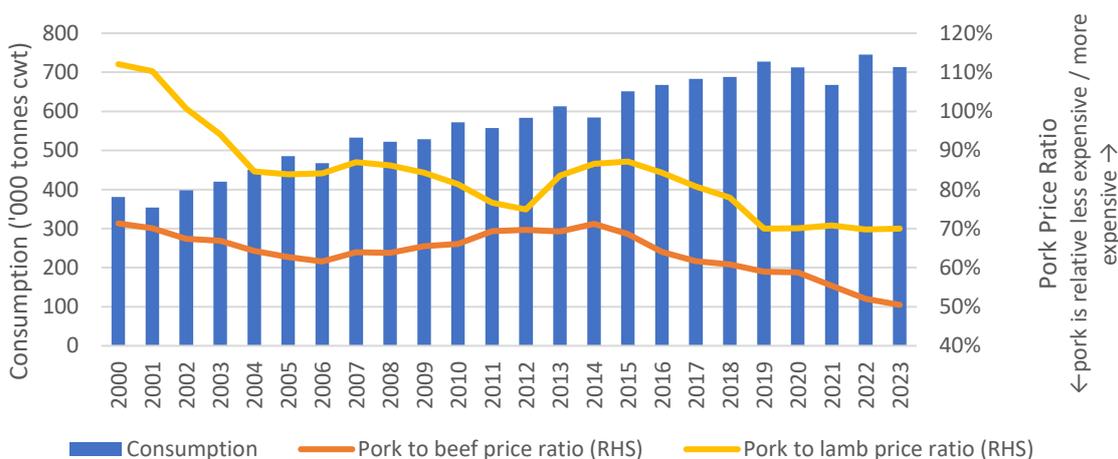
According to OECD data, Australia and New Zealand consume comparable volumes of pork per capita (about 20kg per person on a retail weight basis)<sup>26</sup>. While New Zealand has been promoted by welfare groups for not using CO<sub>2</sub> stunning on pigs, this simply ignores the fact the vast majority of pork consumed in the country comes from countries using CO<sub>2</sub> stunning, including Australia. New Zealand increasingly imports and consumes pork from countries where CO<sub>2</sub> is widely practiced: in 1990, pork imports accounted for 10% of consumption; in 2022, pork imports accounted for 64% of consumption<sup>27</sup>.

## 5.2 Pork is a staple in the Australian diet

Consumers enjoy eating pork and it plays an increasing role in the Australian diet. Australian pork consumption has steadily increased over the last two decades, with a large driver of increased popularity being its affordable price point for many families, compared to other meat proteins. As household incomes are stretched by rising inflation and interest rates, affordable and healthy food options are critical for Australian families.

The chart below highlights the growth in Australian pork consumption and its declining price point relative to beef and lamb. In 2000, indicative pork prices were 71% the price of beef and at a premium to lamb; by 2023, indicative pork prices were 50% the price of beef and 70% the price of lamb. Total Australian pork consumption has nearly doubled over that period. On average, Australians now consume about the same amount of pork (including smallgoods) as beef and lamb combined, and ABARES expect this to gradually increase in coming years<sup>27</sup>. As the cost of producing meat in Australia increases across the board, pork is a product that has been able to remain affordable to many consumers.

## Australian Pork Consumption



Source: ABARES and MLA, AMIC calculations

### 5.3 Impact of banning CO<sub>2</sub> stunning in Victoria

A ban on CO<sub>2</sub> stunning, would effectively mean the closure of many commercial pig processing facilities and a subsequent reduction in supply. If a ban was limited to Victoria, the subsequent decline in processing would be replaced by interstate capacity and, to a degree, imports. Attempts to prevent this diversion through trade barriers, especially when not rooted in scientific evidence, could undermine fundamental features of Australia's Federation and our international commitments. As such, a ban would not actually address any perceived animal welfare issues – it would simply move processing elsewhere, creating new animal welfare issues.

Victorian farmers and the rural communities they support, and those employed throughout the supply chain would bear the cost of a misplaced ban. Moreover, an unjustified ban would undermine confidence in the broader Victorian livestock processing sector, creating less investment and innovation in facilities, which ultimately leads to less growth and fewer jobs.

While production would be diverted outside of Victoria under a ban, the disruption would ultimately lead to reduced supply, especially during the period of structural adjustment, which would push up the retail price of pork, hurting lower income families, which spend a higher proportion of their household income on groceries.

Hence, a ban on CO<sub>2</sub> stunning of pigs in Victoria would hurt producers, employees, rural communities, processors, and consumers, and not actually guarantee any improvement in animal welfare.

## 6. Recommendations to the Committee

AMIC would like to make three recommendations for this Committee's consideration in its review of pig welfare in Victoria.

### 6.1 Recommendation: Need for a fit for purpose, outcomes-based minimum animal welfare standard for livestock processing

A fundamental requirement for good animal welfare outcomes are well-designed and fit for purpose standards, which can be adopted by each jurisdiction as a tool for the relevant regulator. All meat produced in Australia is done so under AS4696. While the animal welfare elements of AS4696 were

once sufficient, community and consumer expectation have evolved and industry has proactively sought to add to the regulatory toolkit to raise the bar of minimum animal welfare outcomes.

On top of AS4696, most meat produced in Victoria and across Australia is certified under AAWCS, and this program has been recognised and adopted as a commercial requirement by many customers. However, this leaves a gap for those plants not AAWCS accredited in Victoria. AMIC has engaged in the ongoing development of the draft AAWSG for Livestock at Processing Establishments, along with representatives from industry, welfare groups and each state government. The draft AAWSG for Livestock at Processing Establishments or an alternative fit for purpose standard will be a core element needed to give teeth to the draft *Animal Care and Protection Bill* and supporting regulations.

The Standards cannot be written without industry at the table. Livestock processing is complex and overly prescriptive requirements that don't reflect the diversity of livestock and processing facilities will only create loopholes and inconsistencies. AMIC encourages this committee to acknowledge the need for an outcomes-based minimum animal welfare standards for livestock processing, to cover non-AAWCS accredited facilities, and recognise the importance of having industry at the table in their design.

## 6.2 Recommendation: recognition that CO<sub>2</sub> stunning of pigs is best practice and meets regulatory requirements.

While CO<sub>2</sub> is recognised as being aversive to pigs, there are several aspects of the CO<sub>2</sub> stunning method that provide advantages to pig welfare compared with alternative methods. This includes that pigs can be handled and moved in groups with little restraint; that induction of insensibility is rapid and well-maintained ensuring animals are unconscious for slaughter; and, it is commercially feasible.

Alternative stunning methods have been studied, some of which show improvement to pig welfare in reduced aversive responses. However, factors such as other negative welfare indicators, availability, cost effectiveness, and carcass quality preclude or limit their use. Australia's current stunning techniques reflect international best practice and, to date, no other country has developed alternative techniques that are commercially viable.

Furthermore, CO<sub>2</sub> stunning meets the current regulatory requirements in AS4696, as it minimises the risk of injury, pain and suffering to pigs, with the least practical disturbance.

AMIC notes, however, that CO<sub>2</sub> stunning could be improved, by reducing the risk of adverse reaction to CO<sub>2</sub> stunning and supports use of management practices and training packages at processing establishments that minimise stress to pigs and therefore risk of aversiveness to CO<sub>2</sub>. AMIC supports further research and development being undertaken where viable and not duplicative to ensure that industry can continue to use the best practice stunning techniques and technologies available.

This committee should recognise the use of CO<sub>2</sub> stunning in pigs as currently best-practice in most applications. CO<sub>2</sub> stunning remains the only method which can practically minimise human contact without isolating individual animals in the lead up to stunning. AMIC therefore urges the committee not to consider the potentially aversive nature of this stunning method in isolation. Consideration must be given instead to how holistic management practices culminate in observable welfare outcomes at slaughter and how awareness and training can support the effective application of this globally recognised best practice stunning method.

### 6.3 Recommendation: recognition of the role Victorian pork plays in underpinning jobs, rural communities and affordable food

The Victorian pig industry is critically important to the people it employs and feeds. Banning technologies, such as CO<sub>2</sub> stunning, or enforcing overly prescriptive requirements will only damage the local industry, see production diverted elsewhere and not actually address perceived issues.

With pig production contributing over \$4,500 per sow to local regional economies, and up to \$6,500 per sow<sup>1</sup> wherever a processing facility is present, serious consideration must be given to the damage that could be caused should pig processing become unviable in Victoria. Over 1.2 million pigs were processed across Victoria last year, the impact a loss of this magnitude would have on communities across Victoria cannot be ignored.

Pork is now the second most consumed meat in Australia and it is often purchased as an affordable alternative to beef or lamb. Many Australia households are struggling under cost-of-living pressures and constrained household budgets. A misguided ban on CO<sub>2</sub> stunning would drive up the cost of fresh pork, hurting all Australian consumers, but particularly low-income families. Victoria producing less food for Victorians also creates vulnerabilities and risks – evident by supply chain disruption during the COVID-19 pandemic.

The committee must recognise the valuable role the pig industry plays in Victorian society and its importance in supporting economic growth and jobs in rural communities, in underpinning affordable meal options and in shoring up Victorian food security.

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