

FACT SHEET: BROILER CHICKENS

This fact sheet is designed to provide teachers with the information they need to teach students about how chickens are raised for meat in Australia, and the animal welfare issues associated with different systems of production.



How are Chickens Raised for Meat in Australia?
Chicken Welfare in the Meat Industry.

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What are broiler chickens?



Broiler chickens, or ‘meat chickens’, are chickens bred for meat production. They are different to ‘layer hens’, who are bred to produce eggs for human consumption.

Chickens are social and intelligent birds. Although scientists are still discovering the extent of chicken intelligence, we already know quite a bit about the mental capacities of chickens. For instance, we know that they can form social hierarchies, known as ‘pecking orders’ which help them to determine the relative dominance of members of the flock.¹ These social structures are important to chickens, as chickens engage in social learning.² This means that they can learn behaviour from their flock mates, such as where and how to forage to find the best food. They have demonstrated the capacity to feel empathy,³ which is the ability to understand how a fellow bird is feeling and to empathise with that feeling. For instance, if a mother hen sees her chick in distress, she may empathise with that feeling of distress and exhibit signs of distress herself.⁴

Science has also shown us that chickens do not simply respond to their external environment purely out of reflex. They are capable of consciously making decisions and ‘thinking before they act’.⁵ Interestingly, chicken thoughts and decisions are not always benign. Sometimes, they deliberately set out to deceive and manipulate their fellow flock mates.⁶ Whether a chicken decides to act in this way depends upon their own unique personality traits – because chickens, like humans, have individual personalities.⁷

“

...scientists have learned that this bird can be deceptive and cunning, that it possesses communication skills on par with those of some primates and that it uses sophisticated signals to convey its intentions. When making decisions, the chicken takes into account its own prior experience and knowledge surrounding the situation. It can solve complex problems and empathizes with individuals that are in danger.¹

- Smith and Zielinski, *Scientific American*.

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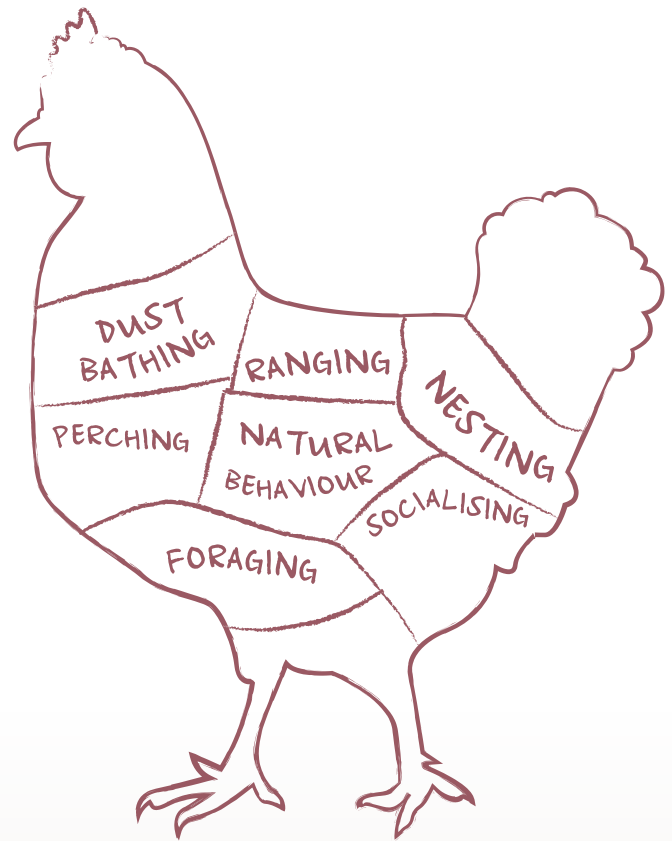
TEXT EXTRACT: CHICKEN INTELLIGENCE

Lori Marino, 'Thinking Chickens: A Review of Cognition, Emotion, and Behavior in the Domestic Chicken' (2017) 20 *Animal Cognition* 127, 141.

1. Chickens possess a number of visual and spatial capacities, arguably dependent upon mental representation, such as some aspects of...object permanence and illusory contours, on a par with other birds and mammals.
2. Chickens possess some understanding of numerosity and share some very basic arithmetic capacities with other animals.
3. Chickens can demonstrate self-control and self-assessment, and these capacities may indicate self-awareness.
4. Chickens communicate in complex ways, including through referential communication, which may depend upon some level of self-awareness and the ability to take the perspective of another animal. This capacity, if present in chickens, would be shared with other highly intelligent and social species, including primates.
5. Chickens have the capacity to reason and make logical inferences. For example, chickens are capable of simple forms of transitive inference, a capability that humans develop at approximately the age of seven.
6. Chickens perceive time intervals and may be able to anticipate future events.
7. Chickens are behaviorally sophisticated, discriminating among individuals, exhibiting Machiavellian-like social interactions, and learning socially in complex ways that are similar to humans.
8. Chickens have complex negative and positive emotions, as well as a shared psychology with humans and other ethologically complex animals. They exhibit emotional contagion and some evidence for empathy.
9. Chickens have distinct personalities, just like all animals who are cognitively, emotionally, and behaviorally complex individuals.

What is natural behaviour for a broiler chicken?

Natural behaviour can be defined as behaviour which has 'evolved either during the evolution of the species or during its domestication in order to increase the fitness... of the behaving animal'.⁸ In other words, natural behaviour refers to the behaviour that broiler chickens would exhibit if they were living under natural conditions. In the wild, they would live in small flocks and enjoy lifespans of approximately 10 years.⁹ Their natural behaviour includes such activities as *free ranging*, *nesting*, *dust bathing*, *socialising*, *perching* and *foraging* for food.¹⁰ For many of these behaviours to take place, it is necessary for chickens to have access to suitable space, and a natural environment.



NATURAL BEHAVIOUR

Free ranging refers to the chickens' ability to move freely about their environment. When chickens have space to move, they can walk, run, jump and sometimes fly.¹¹

Nesting refers to the chickens' instinct to create a nest for her young. Under natural circumstances, chickens will create nests out of materials from their surrounding environment.

Dust bathing refers to the chickens' natural habit of using dust from the ground to clean his or her feathers. They require the correct kind of floor material ('substrate') to dust bathe properly.

Socialising refers to the social behaviour of chickens. Chickens are generally found in groups of 3-30.¹² Within these flocks, there is a defined 'pecking order'. A pecking order is a social hierarchy where some members of the group are more dominant than others.

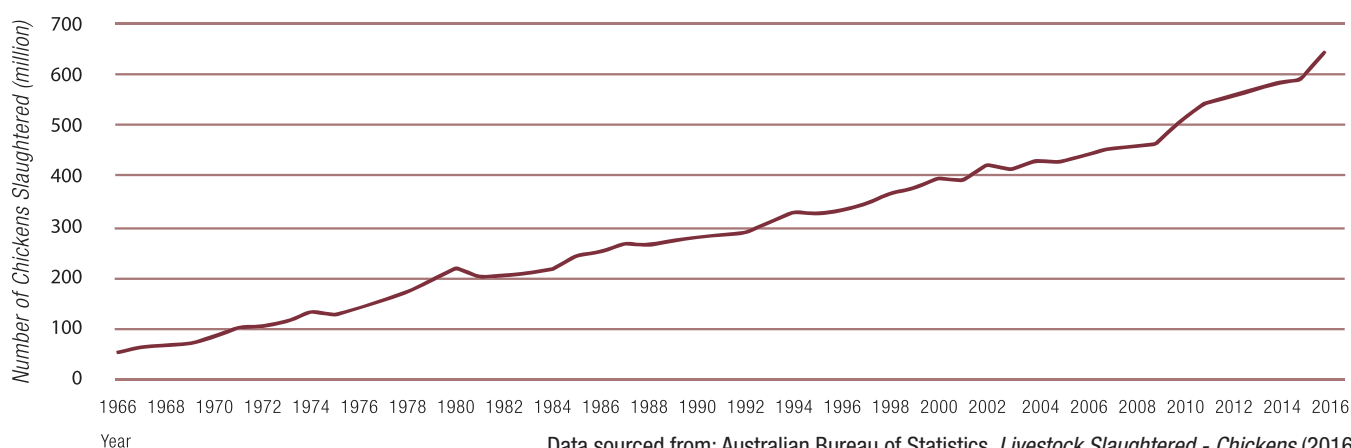
Perching refers to the chickens' natural instinct to perch on elevated branches. In a natural environment, perching above the ground provides them with a degree of safety from predators. From a higher vantage point they are more difficult to access and can see predators approaching.¹³

Foraging refers to the chickens' natural instinct to peck and scratch at the ground to uncover food.

How are chickens raised for meat in Australia?

Chicken meat is Australia's most popular type of meat for human consumption,¹⁴ with over 646 million broiler chickens slaughtered in Australia in 2016 alone.¹⁵ The majority of this meat is produced in intensive farming systems, with less than a quarter produced in free range systems.¹⁶

TOTAL NUMBER OF CHICKENS SLAUGHTERED IN AUSTRALIA EACH YEAR



Data sourced from: Australian Bureau of Statistics, *Livestock Slaughtered - Chickens* (2016) <<http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/7215.0Dec%202016?OpenDocument>>.

INTENSIVE FARMING

Intensive farming involves 'removing animals from their natural environments and keeping them housed or confined for all, or a large part, of their lives'.¹⁷ This type of farming was developed as a means of quickly producing a high volume of food for an increasing human population. In these farming systems, large numbers of animals are reared in a short period of time, and housed in close conditions. This ensures higher productivity for producers, as they are able to maximise the number of animals in their available space.

Various animal species are intensively farmed in Australia, including layer hens to produce eggs, and pigs to produce pork, ham and bacon. Most layer hens are housed in small wire battery cages, sometimes living within a space less than the size of an A4 piece of paper. In contrast, broiler chickens in intensive systems are not housed in cages in Australia. Rather they are housed in long sometimes windowless sheds, with high stocking densities. *Stocking density* refers to the concentration of animals within a particular area.



On an average chicken meat farm, there could be anywhere from 3-10 sheds, with each typical 150m x 15m shed housing approximately 40,000 chickens.¹⁸ Some sheds house up to 60,000 chickens.¹⁹

FREE RANGE FARMING

Free range farming generally involves chickens living within sheds with lower stocking densities than intensive systems, and having some degree of access to an outside run.²⁰ *The Model Code of Practice for the Welfare of Animals: Domestic Poultry* (4th ed) states that free range in this context means that chickens have 'access to an outdoor range and to indoor shelter'.²¹

Consumers may purchase chicken meat products produced in free range systems due to concerns about the high stocking densities in intensive systems and the lack of access to an outdoor environment. However, consumers may not always know exactly what 'free range' means, as there is no authoritative definition of the term. This means that consumers might think that they are supporting a farm that has allowed chickens to range freely, when in fact the stocking density may actually be quite high and outdoor access may be limited.



Photo of a free range chicken farm in Australia.

Source: ABC News, *Free-Range Chicken* (2016)

<www.abc.net.au/news/2016-10-15/free-range-chicken/7930324>.

To clarify this for consumers, an organisation called 'Free Range Egg & Poultry Australia' (FREPA) have created free range standards which producers must comply with in order to have their products endorsed as FREPA accredited poultry products.²² These standards are designed to ensure that the chickens have greater room to move within sheds, and have access to an outdoor range during daylight hours.²³

RSPCA APPROVED FARMING

RSPCA approved farming refers to the RSPCA's certification scheme, known as the RSPCA Approved Farming Scheme.²⁴ Under the Meat Chickens Standards for the Scheme, producers are not required to give chickens access to an outdoor range.²⁵ However, they do stipulate requirements intended to improve indoor environments, including 'space and good lighting', places to perch, and 'dry litter floor covering to scratch and dust bathe'.²⁶



Photo of an RSPCA approved intensive broiler farm. Source: Jessie Davis, *Rare Look at Intensive Chicken Production* (2014)
Farm Online National <www.farmonline.com.au/story/3374189/rare-look-at-intensive-chicken-production/>.

ORGANIC FARMING

Organic farming systems are often similar to free range systems, however they usually stipulate additional requirements regarding feed, supplements, medication and the use of synthetic substances. For instance, the *Australian Certified Organic Standard 2016 V.4* requires that all poultry production occurs 'under natural conditions, allowing for natural behaviour and social interaction and having access to open range or appropriately fenced and managed areas'.²⁷ Additionally, the Standard prohibits the use of synthetic nitrogen supplements, growth promotants, hormones and routine antibiotic use.²⁸ It also stipulates that there should be a 'preference for slower growing species for meat production and species which are able to perform their natural social and physical functions'.²⁹ It explains that for meat chicken species, they 'should be grown to a minimum age of 70 days'.³⁰ That is almost twice as long as species used in intensive systems (see '*Growth Rate*' on p.9).

What is 'animal welfare'?

'*Animal welfare*' is a complex concept, as it is difficult to define, assess and maintain good welfare in non-human animals. The Cambridge Dictionary defines 'welfare' as the 'physical and mental health and happiness, especially of a person'.³¹ As non-human animals cannot communicate with us through human language, it is more difficult to ascertain their levels of health and happiness. It is important that when we are assessing animal welfare, we do not presume that non-human animals feel and experience the external world in the same way that we do.³² There are various ways that animal welfare can be assessed, including through physiological and emotional indicators.³³ For example, scientists might try to evaluate the levels of chemicals associated with stress as a potential physiological indicator of reduced welfare.³⁴ Or, they might look at the emotional state of the animal, trying to determine whether the animal is feeling positive or negative emotions and how this is impacting on their overall welfare.³⁵

In determining the welfare of an animal, we can consider the 'five freedoms'.³⁶

THE FIVE FREEDOMS

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

Although humans and chickens may differ in terms of what is necessary for them to achieve health and happiness, we can use the five freedoms as a guide to help us understand how to achieve good welfare for chickens. It is important for us to consider whether chickens on Australian farms are able to express their natural behaviour, and enjoy freedom from hunger, thirst, discomfort, pain, injury, disease, fear and distress. A preliminary question is whether chickens are capable of experiencing 'pain'.

Pain perception

Chickens are capable of feeling pain and experiencing suffering. We know that chickens have the same 'receptor' cells for pain as humans,³⁷ and even though they may perceive pain differently to us, chickens are still capable of experiencing pain. Pain in non-human animals can be difficult to define and detect, as they are unable to communicate their subjective experience through human language.³⁸ However, they can communicate their experiences in other ways. For example, a chicken might avoid a painful experience, or actively select an experience which relieves pain.³⁹ Through this behaviour, the chicken is able to communicate his or her pain, discomfort, and suffering. Chickens can also experience other negative feelings, including 'fear, anxiety, boredom, hunger, thirst, discomfort and distress'.⁴⁰



Animal sentience

Sentience refers to the ability to 'perceive or feel things'.⁴¹ An animal is sentient if 'it is capable of being aware of its surroundings, of sensations in its own body, including pain, hunger, heat or cold and of emotions related to its sensations.'⁴² Like humans, these animals avoid suffering and seek positive experiences.⁴³ It is important to consider, whether in addition to the five freedoms outlined earlier, chickens in meat farming systems are able to experience positive experiences. These may include such things as sun baking, dust bathing, and raising their own chicks.

Are there welfare issues with meat chicken production in Australia?

WELFARE ISSUES – INTENSIVE CHICKEN FARMING

As intensive farming systems are subject to animal welfare laws and policies, producers are required to maintain a minimum standard of welfare for the chickens under their care. This requires them to make sure that the chickens live in a suitable environment and have adequate food and clean and accessible water. In Australian meat chicken farms, the quality of the environment within the shed is required to be monitored to ensure adequate air quality and temperature.

Whilst monitoring of the health and welfare of chickens is similarly required, there are a number of welfare issues associated with the way in which chickens are reared in these systems. These include, but are not limited to, the welfare issues raised by their increased growth rate, the buildup of ammonia within chicken sheds, hunger in broiler breeders, high stocking density, and catching and handling procedures.⁴⁴

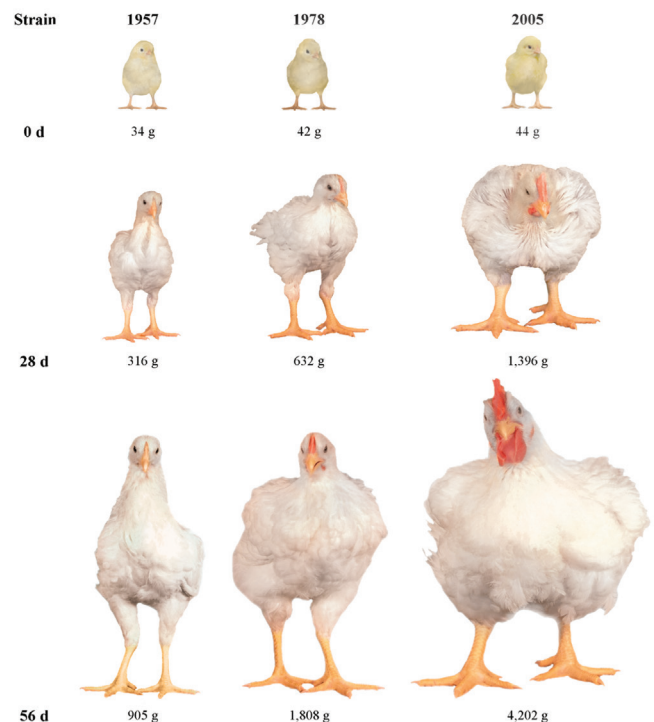
Growth rate

Due to selective breeding and diet, modern broiler chickens grow at a very fast rate compared to fifty years ago. Broiler chickens grow to a sufficient weight for slaughter by just 33-42 days of age.⁴⁵ This is a very young age given that chickens have a natural life span of approximately 10 years. This rate of growth has been achieved through selectively breeding chickens for specific genetic traits conducive to increased productivity.

Selective breeding is a common practice in agriculture, which involves 'selecting those plants or animals which show the desirable characteristics as the parents for the next generation in the breeding program, and to do so repeatedly over many generations'.⁴⁶

In chicken meat farming, this means breeding broiler chickens who will develop much larger muscles (meat) at a faster rate compared to chickens who are allowed to breed naturally. Selective breeding occurs across all chicken meat production, and breeding for high growth traits enables producers to maximise the amount of meat produced per bird within a shorter time period. Diet and feed composition also plays an important part in increasing growth rate.⁴⁷ Growing at such an increased rate can pose issues for their young bodies.

COMMERCIAL BROILERS FROM 1957, 1978, AND 2005



This picture demonstrates the significant increase in meat chicken growth rate over the past century, due primarily to selective breeding. Pictured are individual birds at 0 days, 28 days and 56 days of age, illustrating a substantial increase in weight gain over the 56 day time period between 1957 and 2005. Source: M J Zuidhof et al., 'Growth, Efficiency, and Yield of Commercial Broilers from 1957, 1978, and 2005' (2014) 93 (12) *Poultry Science* 2970, 2973.

HEALTH ISSUES ASSOCIATED WITH HIGH GROWTH RATE

- They may struggle to support their sudden weight gain, leading to problems with their legs and joints.⁴⁸
- It can contribute to heart and lung ailments.⁴⁹
- For chickens affected by these issues, it can be more difficult to walk and engage in normal behaviour (such as scratching and perching).⁵⁰
- A particularly concerning issue is the development of 'ascites' - a syndrome where the abdominal cavity of broiler chickens becomes filled with fluid.⁵¹
- Due to their fast growth rate and high metabolism, their 'heart and lungs are barely capable of producing enough oxygen to sustain the body.'⁵²

Ammonia buildup

The floor of chicken sheds is covered with litter material, such as wood shavings. Chickens defecate into the litter, and due to chemical breakdown by bacteria, a gas called 'ammonia' is produced.⁵³ In high concentrations, ammonia can be detrimental to the health of humans and animals. The following table demonstrates how high levels of ammonia in chicken sheds can impact on the five freedoms discussed earlier.

FREEDOM	EVIDENCE OF THE EFFECTS OF AMMONIA ON POULTRY
1. <i>Freedom from hunger and malnutrition</i>	Ammonia may reduce food intake in poultry and cause weight loss. Effects on thirst, feeding and drinking behaviour are not yet known.
2. <i>Freedom from discomfort</i>	Ammonia causes irritation to mucous membranes, which may cause discomfort.
3. <i>Freedom from pain, injury and disease</i>	Ammonia causes air sac lesions, keratoconjunctivitis and increases susceptibility to many diseases. Rapid diagnosis of disease may be delayed because of aversion to ammonia by the stockperson.
4. <i>Freedom to express normal behaviour</i>	Laying hens show preference for performing foraging, preening and resting in fresh air rather than ammoniated atmospheres.
5. <i>Freedom from fear and distress</i>	Future studies should investigate whether poultry find ammonia aversive.

Table sourced from: H H Kristensen and C M Wathes, 'Ammonia and Poultry Welfare: A Review' (2000) 56 *World's Poultry Science Journal* 235, 236.

Hunger

'Broiler breeders' are the chickens used to breed broiler chickens for slaughter. Due to the increased growth rate and therefore increased hunger of broilers, breeder chickens are unable to adequately self-regulate their feed intake.⁵⁴ In other words, if they were left with an unlimited supply of food, they would overeat to the point of obesity. This is problematic both in terms of its impact on their productivity as breeders, and from an animal welfare perspective as overweight birds face various health problems. To address this problem, producers heavily restrict the feed of broiler breeders.⁵⁵ Although restricting their feed helps avoid the development of obesity and its associated health problems, it also results in the chickens experiencing hunger.⁵⁶ This demonstrates the complexity of achieving animal welfare goals in intensive production systems.

Catching and handling

Broiler chickens are slaughtered by stunning, followed by bleeding out.⁶¹ However, prior to stunning they are caught and shackled. Australian animal welfare standards stipulate requirements to minimise stress and harm during this process.⁶² However, 'the catching process may cause the birds pain since they are caught by the legs, and meat chickens frequently experience leg disorders and painful joint conditions.'⁶³

Stocking density

Stocking density refers to the concentration of animals within a particular area. In intensive farming systems, there are high stocking densities which can impact on the welfare of chickens in various ways. It can impact on their ability to socialise with each other, and to move about the space with ease.⁵⁷ As a result of decreased movement, chickens can 'spend longer sleeping, congregate around feeders and become more fearful'.⁵⁸

Additionally, living in such close quarters with so many other chickens, can lead to the development of contact dermatitis. Hock burn and breast blisters are types of contact dermatitis which can develop on the hocks and breasts of broiler chickens, as a result of walking on wet litter containing chemicals.⁵⁹ This can be painful, and impact on their daily movement.⁶⁰



WELFARE ISSUES - FREE RANGE MEAT CHICKEN FARMING

As can be seen, there are various animal welfare issues associated with intensive meat chicken farming. In response to animal welfare concerns, some producers have turned to **free range farming systems**. However, there are also welfare issues with free range chicken meat farming. Having access to an outdoor range does not address all of the animal welfare issues associated with meat chicken farming, and often stocking densities within free range farms are still quite high.

Even though chickens may have access to an outdoor range, they may not feel comfortable accessing it for various reasons.⁶⁴ There can also still be issues with ammonia build up and lack of mobility due to increased growth rate. Furthermore, most chickens reared in free range systems come from the same broiler breeder stock as intensively reared chickens. Accordingly, the breeders experience the same issues with hunger resulting from feed restriction as previously discussed.

In terms of ability to express natural behaviour, this is also limited in free range systems. Although stocking densities are lower in these systems, it can still be difficult for birds to maintain social relationships due to the large number of birds in the space. The ability to engage in perching, dust bathing, nesting and foraging behaviour depends on the nature of enrichment provided. The ability to range freely can be impacted by fast growth rates, which can lessen mobility and cause pain and disease (as previously discussed).

Consider, for example, some of the issues raised by a small scale poultry producer in NSW:⁶⁵

Rearing fast growing meat chicks in a free-range environment does not make everything better. Because they have been developed for many years for intensive factory farming, they no longer cope as well outdoors as the hardier table poultry strains did before them...Even when given the opportunity to range outdoors, their huge appetite drives them to spend more time at the feed trough than foraging in the paddock, and their inherent health and welfare problems escalate when they are grown beyond the 35 days for which they were specifically developed. There is also increased mortality rates during periods of hot weather, due to the excessive muscling and fat they carry around their breast and body cavity. This problem is exacerbated by the fact that a genuine free-range poultry house cannot have the same level of environmental control as housing used by the intensive industry, because genuine free range birds need easy and constant access to the range area.

Despite these issues however, chickens in free range systems have the potential to enjoy generally higher welfare than intensively raised chickens. Whilst conditions and standards differ between facilities, having some access to an outdoor range and lower stocking densities can impact positively on chicken welfare.

Summary – key points

- Chickens are social and intelligent birds.
- Their natural behaviour includes such activities as free ranging, nesting, dust bathing, socialising, perching and foraging for food.
- Over 600 million chickens are slaughtered in Australia for human consumption each year.
- Most chickens bred for meat are raised in intensive farming systems.
- In intensive farming systems, chickens are housed in sometimes windowless sheds, with high stocking densities. They are reared quickly, able to reach slaughter weight by 35 days of age.
- Some broiler chickens are raised in different systems, such as free range and organic.
- There are animal welfare issues associated with all types of meat chicken production in Australia.
- Although the concept of animal welfare is complex, it is useful to consider the 'Five Freedoms':
 - > *Freedom from hunger and thirst*: by ready access to fresh water and a diet to maintain full health and vigour;
 - > *Freedom from discomfort*: by providing an appropriate environment including shelter and a comfortable resting area;
 - > *Freedom from pain, injury or disease*: by prevention through rapid diagnosis and treatment;
 - > *Freedom to express normal behaviour*: by providing sufficient space, proper facilities and company of the animal's own kind;
 - > *Freedom from fear and distress*: by ensuring conditions and treatment which avoid mental suffering.
- In intensive systems, these freedoms are impacted in various ways.
 - > Broiler breeders experience hunger as a result of feed restriction. Due to high growth rates and the associated absence of an ability to self-regulate feed intake, feed restriction is necessary to prevent obesity and other health problems.
 - > Ammonia can build up in chicken sheds, causing a range of negative health impacts.
 - > Due to increased growth rate (achieved through selective breeding), broilers gain significant weight over a short period of time, sometimes leading to health issues (including leg, joint and heart problems).
 - > High stocking densities in sheds can impact on their ability to socialise and engage in natural behaviour.
 - > Certain catching and handling procedures prior to stunning and slaughter can cause pain.
- There are welfare issues in free range and organic systems as well. However, in free range and organic systems which have lower stocking densities and access to an outdoor range, chickens have the potential to enjoy generally higher welfare than intensively raised chickens.

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- ⁴⁷ Poultry Hub, *Meat Chicken (Broiler) Industry* (2017) <www.poultryhub.org/production/industry-structure-and-organisations/chicken-meat/>.
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- ⁵⁰ Robins and Phillips, above n 48.
- ⁵¹ Gupta, above n 49, 457.
- ⁵² *Ibid.*, 458.
- ⁵³ Robins and Phillips, above n 48, 359.
- ⁵⁴ M P Richards et al., 'Feed Intake Regulation for the Female Broiler Breeder: In Theory and in Practice' (2010) 19 *Journal of Applied Poultry Research* 182, 182.
- ⁵⁵ *Ibid.* 183.
- ⁵⁶ RSPCA Australia, above n 44.
- ⁵⁷ Robins and Phillips, above n 48, 360.
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- ⁶² See generally: Primary Industries Standing Committee, *Model Code of Practice for the Welfare of Animals: Livestock at Slaughtering Establishments* (CSIRO Publishing, 2002).
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