

4-04
26 May 2004

INITIAL ASSESSMENT REPORT

PROPOSAL P282

PRIMARY PRODUCTION AND PROCESSING STANDARD FOR POULTRY MEAT

DEADLINE FOR PUBLIC SUBMISSIONS to FSANZ in relation to this matter:
7 July 2004
(See 'Invitation for Public Submissions' for details)

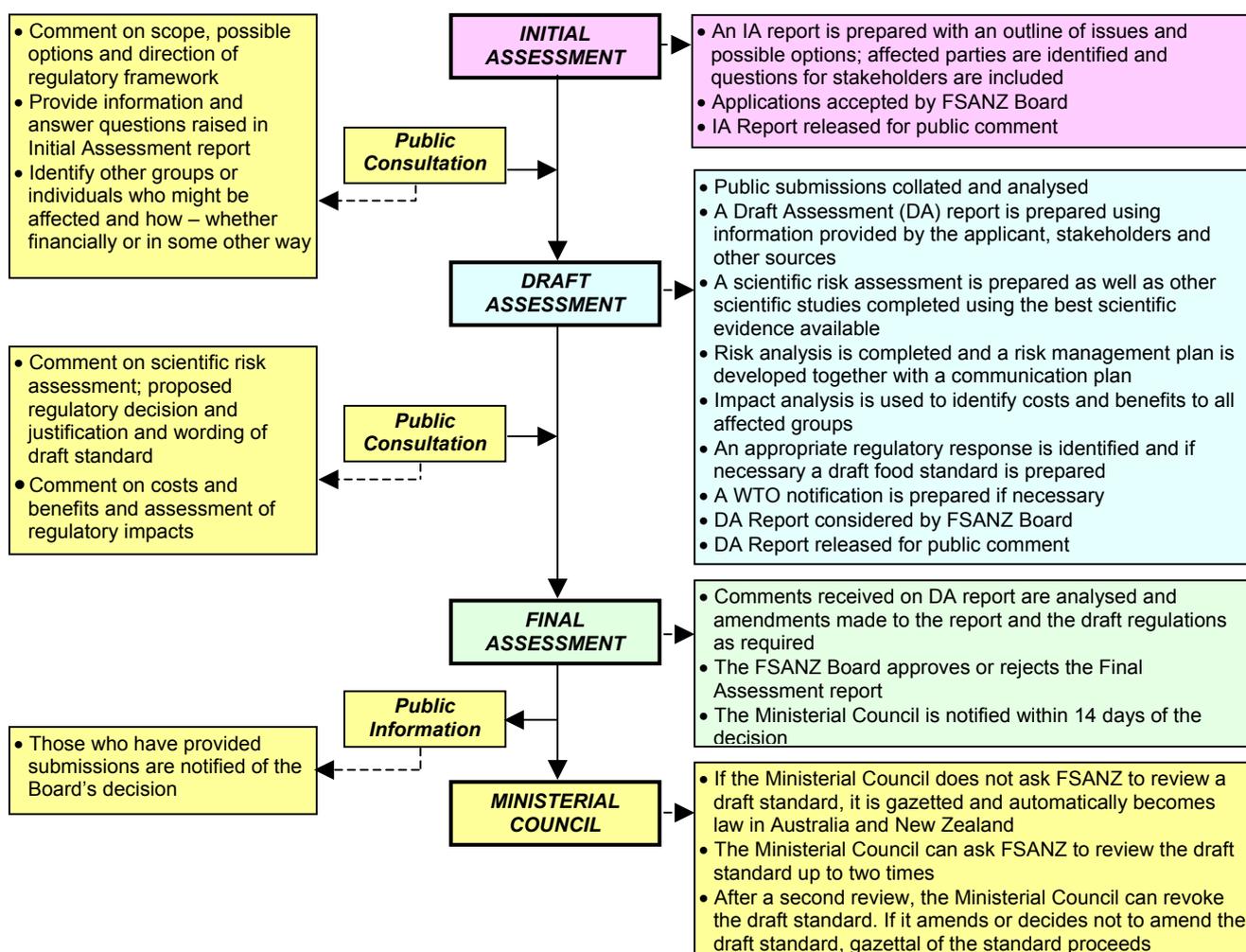
FOOD STANDARDS AUSTRALIA NEW ZEALAND (FSANZ)

FSANZ's role is to protect the health and safety of people in Australia and New Zealand through the maintenance of a safe food supply. FSANZ is a partnership between ten Governments: the Commonwealth; Australian States and Territories; and New Zealand. It is a statutory authority under Commonwealth law and is an independent, expert body.

FSANZ is responsible for developing, varying and reviewing standards and for developing codes of conduct with industry for food available in Australia and New Zealand covering labelling, composition and contaminants. In Australia, FSANZ also develops food standards for food safety, maximum residue limits, primary production and processing and a range of other functions including the coordination of national food surveillance and recall systems, conducting research and assessing policies about imported food.

The FSANZ Board approves new standards or variations to food standards in accordance with policy guidelines set by the Australia and New Zealand Food Regulation Ministerial Council (Ministerial Council) made up of Commonwealth, State and Territory and New Zealand Health Ministers as lead Ministers, with representation from other portfolios. Approved standards are then notified to the Ministerial Council. The Ministerial Council may then request that FSANZ review a proposed or existing standard. If the Ministerial Council does not request that FSANZ review the draft standard, or amends a draft standard, the standard is adopted by reference under the food laws of the Commonwealth, States, Territories and New Zealand. The Ministerial Council can, independently of a notification from FSANZ, request that FSANZ review a standard.

The process for amending the *Australia New Zealand Food Standards Code* is prescribed in the *Food Standards Australia New Zealand Act 1991* (FSANZ Act). The diagram below represents the different stages in the process including when periods of public consultation occur. This process varies for matters that are urgent or minor in significance or complexity.



INVITATION FOR PUBLIC SUBMISSIONS

FSANZ has prepared an Initial Assessment Report of Proposal P282, which includes the identification and discussion of the key issues.

FSANZ invites public comment on this Initial Assessment Report based on regulation impact principles and the draft variation to the Code for the purpose of preparing developing a Primary Production and Processing Standard for Poultry Meat for approval by the FSANZ Board.

Written submissions are invited from interested individuals and organisations to assist FSANZ in preparing the Draft Assessment for this Proposal. Submissions should, where possible, address the objectives of FSANZ as set out in section 10 of the FSANZ Act. Information providing details of potential costs and benefits of the proposed change to the Code from stakeholders is highly desirable. Claims made in submissions should be supported wherever possible by referencing or including relevant studies, research findings, trials, surveys etc. Technical information should be in sufficient detail to allow independent scientific assessment.

The processes of FSANZ are open to public scrutiny, and any submissions received will ordinarily be placed on the public register of FSANZ and made available for inspection. If you wish any information contained in a submission to remain confidential to FSANZ, you should clearly identify the sensitive information and provide justification for treating it as commercial-in-confidence. Section 39 of the FSANZ Act requires FSANZ to treat in-confidence, trade secrets relating to food and any other information relating to food, the commercial value of which would be, or could reasonably be expected to be, destroyed or diminished by disclosure.

Submissions must be made in writing and should clearly be marked with the word 'Submission' and quote the correct project number and name. Submissions may be sent to one of the following addresses:

Food Standards Australia New Zealand
PO Box 7186
Canberra BC ACT 2610
AUSTRALIA
Tel (02) 6271 2222
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Food Standards Australia New Zealand
PO Box 10559
The Terrace WELLINGTON 6036
NEW ZEALAND
Tel (04) 473 9942
www.foodstandards.govt.nz

Submissions should be received by FSANZ **by 7 July 2004**.

Submissions received after this date may not be considered, unless the Project Manager has given prior agreement for an extension.

While FSANZ accepts submissions in hard copy to our offices, it is more convenient and quicker to receive submissions electronically through the FSANZ website using the Standards Development tab and then through Documents for Public Comment. Questions relating to making submissions or the application process can be directed to the Standards Management Officer at the above address or by emailing slo@foodstandards.gov.au.

Assessment reports are available for viewing and downloading from the FSANZ website. Alternatively, requests for paper copies of reports or other general inquiries can be directed to FSANZ's Information Officer at either of the above addresses or by emailing info@foodstandards.gov.au.

CONTENTS

EXECUTIVE SUMMARY	7
1. INTRODUCTION.....	9
1.1. REGULATORY FRAMEWORK FOR THE DEVELOPMENT OF PRIMARY PRODUCTION AND PROCESSING STANDARDS	9
1.2. OVERVIEW OF THE POULTRY MEAT INDUSTRY	13
1.2.1. <i>Chicken meat sector</i>	15
1.2.2. <i>Poultry meat sectors other than chicken</i>	17
1.2.3. <i>Import and export of poultry meat products</i>	18
1.2.4. <i>The poultry meat supply chain</i>	19
1.2.5. <i>Comparison of the chicken and non-chicken meat sectors of the poultry industry</i> 19	
1.3. EXISTING FOOD SAFETY MANAGEMENT STRATEGIES.....	21
1.3.1. <i>Regulatory measures</i>	21
1.3.2. <i>Voluntary industry food safety management strategies</i>	23
1.3.3. <i>Poultry meat import and export regulations</i>	24
1.3.4. <i>Relationship between the existing measures in place to manage food safety</i> ..	24
2. RATIONALE FOR DEVELOPING THE PRIMARY PRODUCTION AND PROCESSING STANDARD FOR POULTRY MEAT	26
2.1. RATIONALE FOR THE DEVELOPMENT OF ALL PRIMARY PRODUCTION AND PROCESSING STANDARDS	26
2.2. PRINCIPLES OF PRIMARY PRODUCTION AND PROCESSING STANDARDS	28
3. FACTORS ASSOCIATED WITH THE POULTRY MEAT INDUSTRY THAT MAY IMPACT ON PUBLIC HEALTH AND WILL BE CONSIDERED DURING THE RISK ASSESSMENT PROCESS	28
3.1. HAZARDS ASSOCIATED WITH POULTRY MEAT	29
3.1.1. <i>Biological hazards</i>	30
3.1.2. <i>Chemical hazards</i>	31
3.1.3. <i>Physical hazards</i>	32
3.1.4. <i>Consideration of hazards in species other than chicken</i>	32
3.2. POULTRY MEAT AND HUMAN DISEASE IN AUSTRALIA	32
3.3. THE POULTRY MEAT SUPPLY CHAIN	33
3.3.1. <i>Definition of meat poultry</i>	33
3.3.2. <i>Primary production of meat poultry</i>	34
3.3.3. <i>Poultry processing</i>	40
3.3.4. <i>Retail and consumer-end section of the poultry meat supply chain</i>	43
3.3.5. <i>Summary of the stages of the poultry supply chain where hazards are potentially introduced</i>	45
3.3.6. <i>Measuring the overall effect of the potential hazards on public health and safety</i> 46	
4. IMPACT OF CURRENT ARRANGEMENTS	47
4.1. CONSUMERS.....	47
4.2. INDUSTRY	47
4.3. GOVERNMENT.....	48
5. OBJECTIVES	48

6. NEXT STEPS	49
6.1. FSANZ'S PROCESS FOR ASSESSING THE RISK TO PUBLIC HEALTH	49
6.2. FSANZ'S PROCESS FOR MANAGING THE RISK TO PUBLIC HEALTH	50
6.3. RISK COMMUNICATION	51
6.3.1. <i>World Trade Organization (WTO)</i>	51
7. CLOSING REMARKS.....	51

Executive Summary

Australia enjoys a high level of food safety protection, however, like many other nations we face the challenge of continually improving food safety and reducing food-borne illness. Globally, food-borne illness is a growing public health problem because of the increasing global trade in food, changes in the way food is produced and changes in consumer requirements. These changing patterns cause new challenges in the way food safety is managed.

A Whole of Government approach to the management of food safety is now being taken in Australia. Governments have agreed that food safety should be addressed throughout all parts of the food supply chain (i.e. from paddock-to-plate) to maximise food safety. This approach aims to improve public health and safety and ensure that consumers continue to have the highest confidence in the safety of the food they consume.

Poultry meat – particularly chicken – is a significant component of the diet of most Australians and consumer trends indicate that chicken meat will soon overtake beef as the preferred meat of Australian consumers. Food Standards Australia New Zealand (FSANZ) has commenced development of the Primary Production and Processing (PPP) Standard for Poultry Meat (Proposal P282). A Standard Development Committee (SDC) has been established to advise and assist FSANZ throughout this process and comprises representatives of the poultry meat industry, State and Territory governments, Australian Commonwealth Government agencies, research organisations and the Australian Consumers' Association.

Any new standard developed in this process will form part of Chapter 4 of the *Australia New Zealand Food Standards Code* (the Code) and will be nationally consistent and conform to the principle of minimum effective regulation, where requirements will only be put in place to the extent necessary to fulfil the stated goal. Chapter 4 does not apply in New Zealand.

The standard development process requires the risk of food-borne illness from poultry meat products to be assessed and also requires an understanding of the practical issues associated with the production and processing of poultry meat. This Initial Assessment Report summarises our current state of knowledge of these issues and raises a number of questions in relation to:

- the regulatory framework for the development of PPP Standards;
- the current operation of the poultry meat industry;
- the existing regulatory and non-regulatory food safety management strategies;
- the hazards potentially present in poultry meat that could result in food-borne illness;
- the stage of the poultry meat supply chain where hazards could be introduced; and
- poultry meat consumption and human disease in Australia.

FSANZ seeks contributions from stakeholders to ensure that any new standard is relevant, provides benefits to consumers, is cost-effective for industry and can be enforced in a nationally consistent manner. The data and information gathered from stakeholders at this initial stage will be considered in a step-wise process. The data will be evaluated in the risk assessment process, the outcomes of which will be considered, in conjunction with the information gathered from stakeholders, in the development of the draft assessment report which will set out a proposed food safety management strategy for the poultry meat industry. FSANZ will be seeking comment on the resulting draft assessment report at the end of 2004.

1. Introduction

FSANZ's primary responsibility is to protect the health and safety of consumers through the development of food safety standards. FSANZ intends to ensure that Australia's poultry meat industry is able to continue to provide consumers with some of the safest poultry meat products in the world – now and into the future.

Before FSANZ recommends any risk management strategies through a new standard, FSANZ will examine the poultry meat supply chain to understand the nature and effect on human health of potential hazards at all stages of the chain. FSANZ will then look at the effectiveness of current management practices in controlling those hazards and identify any areas in need of greater control. FSANZ seeks initial comment from stakeholders in relation to the development of Primary Production and Processing (PPP) Standards, the poultry meat industry and existing food safety management strategies, the public health hazards potentially present in poultry meat and the stage of the poultry meat supply chain where these hazards could be introduced. Any PPP Standard developed as part of this process will be part of Chapter 4 of the *Australia New Zealand Food Standards Code* (the Code), which is only applicable in Australia.

This section details the regulatory framework for the development of PPP Standards and the current state of knowledge regarding the poultry meat industry and existing food safety management strategies.

1.1. Regulatory framework for the development of primary production and processing standards

In 1997 the Commonwealth, State and Territory Governments agreed to a comprehensive review that examined the regulatory burden on businesses and the clarity and efficiency of food regulatory arrangements. The resultant Blair Report recommended a national 'paddock-to-plate' approach to food regulation to protect public health and safety.

The Council of Australian Governments (COAG) Senior Officials Working Group on Food Regulation (SOWG), formed in 1999, recommended that all existing domestic food standards, including standards that cover primary production and processing, be combined to produce a single set of national standards consistent with internationally recognised Codex Alimentarius Commission¹ ('Codex') standards. The development of the national 'paddock-to-plate' standards is the responsibility of FSANZ and aims to:

- ensure that food safety is addressed across the entire food chain;
- provide nationally consistent standards that will set a benchmark for industry obligations to produce safe food;

¹ The Codex Alimentarius is the international body whose purpose is protecting the health of consumers, ensuring fair trade practices in the food trade, and promoting coordination of all food standards work undertaken by international governmental and non-governmental organizations. The Codex Alimentarius commission develops food standards, guidelines and related texts such as codes of practice under the Joint FAO/WHO Food Standards Programme.

- provide minimum impost on industry to achieve the most effective food safety outcomes;
- harmonise with international standards; and
- increase public confidence in the safety of food products.

In developing PPP Standards, FSANZ works within the framework of the *Australia and New Zealand Food Regulation Ministerial Council (MINISTERIAL COUNCIL) Overarching Policy Guideline on Primary Production and Processing Standards* and *FSANZ's Protocol for the Development of Primary Production and Processing Standards*.² These guidelines emphasise the food safety nature of PPP standards. The different stages in the PPP Standard development process are detailed in Figure 1.

² These documents can be obtained from the FSANZ website <http://www.foodstandards.gov.au/>

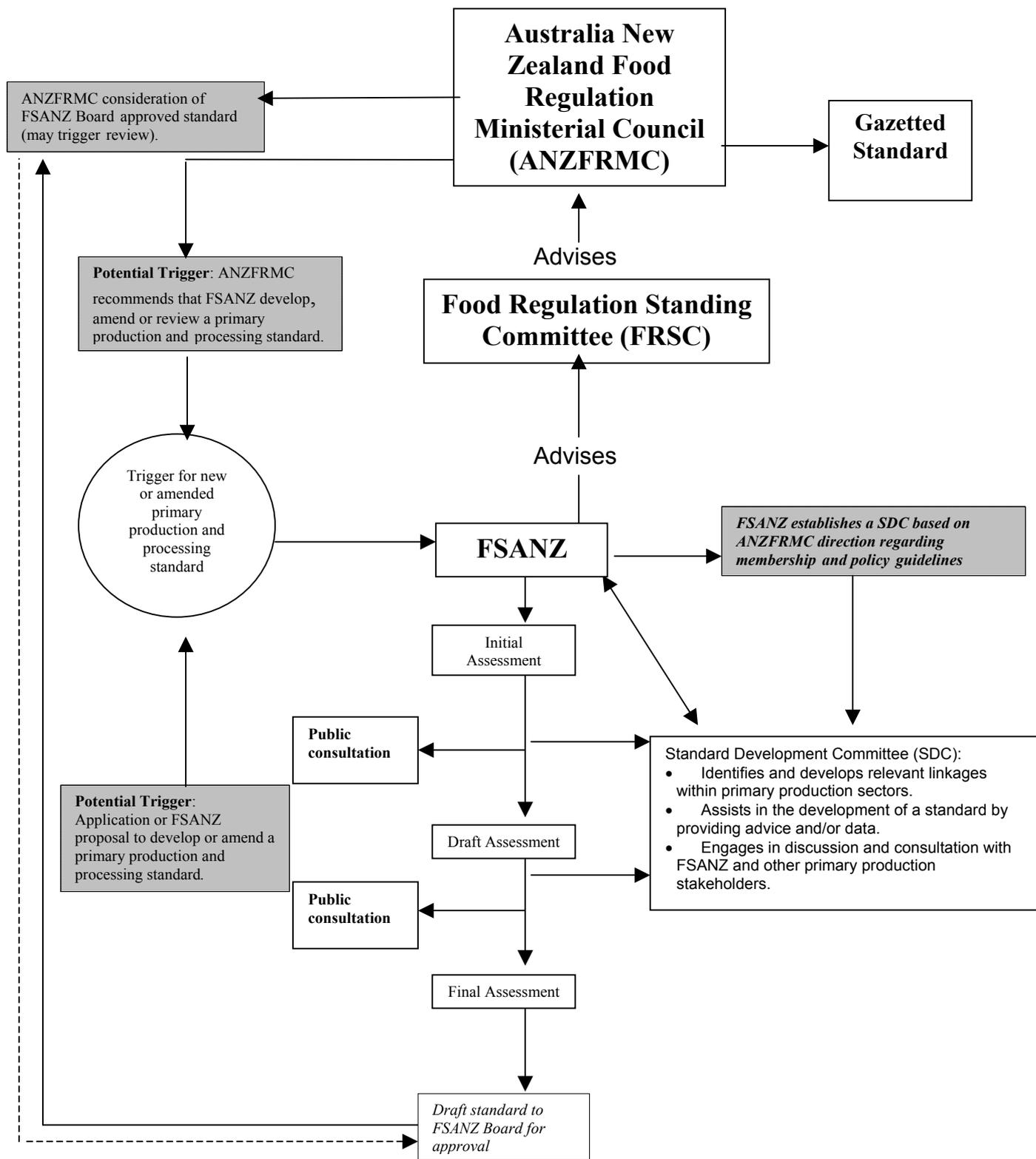


Figure 1. FSANZ’s standard development process for primary production and processing standards

When developing national standards FSANZ has statutory obligations with respect to section 10(1) of the *FSANZ Act*, which establishes the following objectives in descending order of priority:

- the protection of public health and safety;
- the provision of adequate information relating to food to enable consumers to make informed choices; and
- the prevention of misleading or deceptive conduct.

FSANZ also has a statutory requirement to consider the impact of any proposed standard on the food industry and requires FSANZ to have regard to:

- the need for standards to be based on risk analysis, using the best available scientific evidence;
- the promotion of international consistency in setting food standards;
- the promotion of an internationally competitive and sustainable food industry;
- the promotion of fair-trading in food; and
- any written policy guidelines formulated by the Ministerial Council and notified to FSANZ, e.g. the *Ministerial Council Overarching Policy Guideline on Primary Production and Processing Standards*

Under the Inter-Governmental Agreement, once any new standard has been approved and gazetted, it will automatically come into force by reference and without amendment under State and Territory legislation. Development and subsequent application of PPP standards to industry sectors will be dependent on an analysis of the public health and safety risks, economic, social and political risks and current regulatory practices. The primary consideration will be protection of public health and safety. This will be discussed further in Section 2.

Quality attributes or specific production methodologies that do not relate to food safety will, in general, be handled through industry mechanisms and not a PPP standard. Any PPP Standard for Poultry Meat would not include labelling, compositional or additive/contaminant/residue standards, which are largely in place already in Chapters 1 and 2 of the Code and which will continue to be developed through the usual FSANZ process for developing or amending these standards. However, exploration of issues at the primary production section of the food supply chain may point to the need for further work in relation to the existing standards. There are currently standards in Chapter 3 of the Code that cover general food safety requirements and food premises and equipment that apply to the secondary (further) processing of poultry meat products, which would also not be duplicated (see Section 1.3.1).

To assist in the development of PPP Standards, FSANZ establishes a Standard Development Committee (SDC) for each primary production and processing sector considered. The Poultry Meat SDC consists of representatives from the poultry meat industry, the Australian Consumers' Association, research organizations, jurisdictions and relevant FSANZ staff and are responsible for ensuring ongoing liaison with stakeholders and the gathering of necessary expertise. The Poultry Meat SDC has provided FSANZ with an insight into the current operations of the industry and the role of existing regulations in food safety matters. The SDC has also assisted FSANZ to prepare this Initial Assessment Report.

FSANZ's intention is that all relevant stakeholders are actively involved in the development of recommendations on PPP Standards and that transparency is maintained throughout the process. This Initial Assessment Report seeks comment, information and data from all relevant stakeholders regarding the issues and questions raised. The comments, information and data provided during this consultation will be considered during the development of the Draft Assessment Report, which is expected to be released for consultation towards the end of this year.

Regulatory impact analysis is a critical part of the standards development process and must take into account the impacts on, and views of all affected stakeholder groups – including industry, consumers, and governments of proposed regulatory options. FSANZ must also ensure that the cost of the overall system is commensurate with the assessed level of risks and benefits. These issues are explicitly discussed in this Initial Assessment Report (see Section 4) and will be also be considered in the Draft Assessment and Final Assessment Reports and meet the requirement of the guidelines provided by the Office of Regulation Review. FSANZ must also ensure that PPP Standards do not unnecessarily restrict trade and that they fulfil Australia's obligations to World Trade Organisation (WTO) agreements.

1.2. Overview of the poultry meat industry

The poultry meat industry accounts for approximately 10% of the gross value of Australia's total livestock production³ and encompasses a variety of species. Individuals involved in the production, processing and regulation of the poultry meat industry classify chickens, turkeys, ducks, quail, squab (pigeons), geese, pheasants, guinea fowl and other farmed avian species as poultry. Ratites (emus and ostriches) are excluded from the definition of poultry meat and the PPP Standard for Poultry Meat due to differences in production and processing and are also covered separately from poultry in other forums.⁴

The chicken meat sector is the largest sector of the poultry meat industry. In 2001-2002, this sector processed approximately 416 million birds⁵ and had a retail value greater than \$3,600 million.⁶ In contrast, the remainder of the poultry industry processed 17 million birds (~25-fold less) and had a retail value of \$314 million (~9 to 10-fold less).⁷ Figure 2 illustrates the differences in retail value of the different sectors of the poultry meat industry.

³ Australian Bureau of Statistics (ABS). 7503.0 Value of Agricultural Commodities Produced, Australia 2001-2002.

In this publication 'livestock' encompasses cattle, calves, sheep, lambs, pigs and poultry.

⁴ There is an Australian Standard for the hygienic production of ratite (emu/ostrich) meat for human consumption (AS 5010-2001), which is separate from that for the Australian Standard for the construction of premises and hygienic production of poultry meat for human consumption (AS 4465-2001).

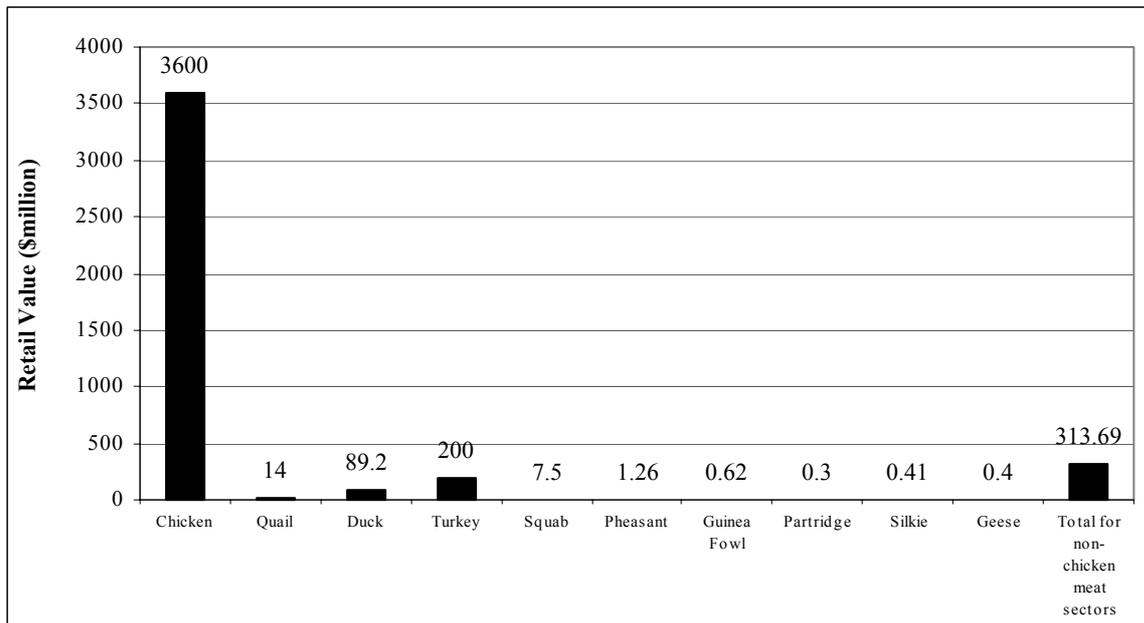
⁵ This figure has risen to 435 million birds in 2002-2003.

⁶ Data were obtained from the chicken meat industry.

⁷ Data were obtained from the poultry meat industry.

Figure 2. Retail value of poultry meat sectors

The retail value of the chicken, quail, duck, turkey, squab, pheasant, guinea fowl, partridge and goose meat sectors. Numbers represent the retail value in 2001-2002 of these sectors (\$million).⁸

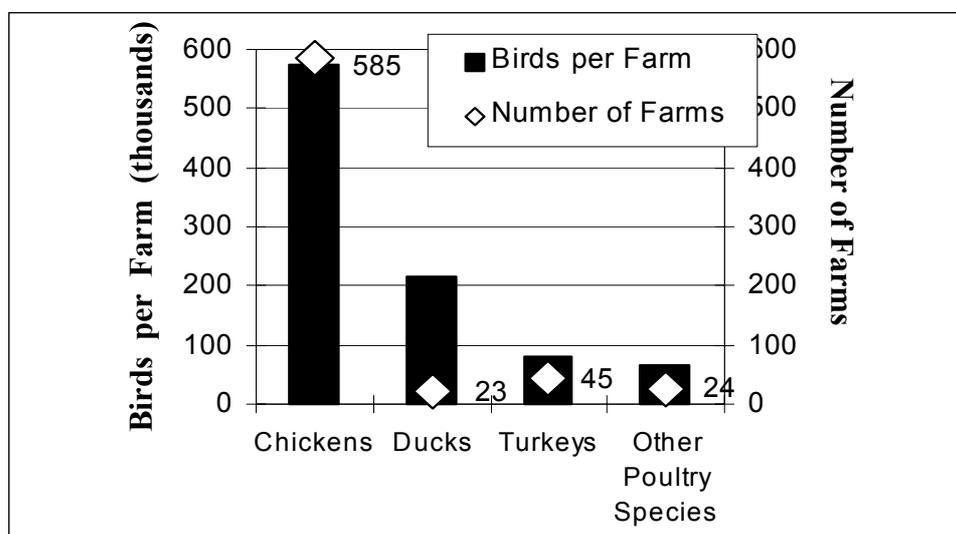


The greater value of the chicken meat sector is a direct reflection of the size and maturity of this sector compared to the other poultry meat sectors. The chicken meat sector is larger and operates on a greater scale than the other sectors. For instance, each chicken farm produces on average 570,000 birds per year; 3 to 9-fold more birds than any of the current farms for other poultry species. The number of farms and average number of birds per farm for the chicken and non-chicken poultry sectors is shown in Figure 3.

⁸ Data were obtained from the chicken meat and game bird meat industries.

Figure 3. Production from poultry farms⁹

The number of farms and number of birds per farm in different sectors of the poultry meat industry in 2000-2001. Numbers indicate the number of farms.



1.2.1. Chicken meat sector

Production in the chicken meat sector has grown rapidly over the past thirty years, around 5% per annum,¹⁰ and is expected to continue to grow at this pace.¹¹ This growth can be attributed to increased consumer demand, which has been facilitated by increased production efficiency due to genetic improvements in breeding stock, improved nutrition and bird/flock health, improved animal husbandry practices and flock management, and improved automation in processing. These advances have also enabled the price of chicken meat to reduce significantly, which, coupled with its convenience and flavour, has resulted in chicken continuing to be one of the most commonly consumed meats. The annual consumption rate of chicken meat is currently 36 kg per person¹² and is expected to rival beef consumption figures in 2003-2004.¹³

Approximately 70% by weight of a live meat chicken (broiler) can be recovered as chicken product for human consumption. Of these products, 80% are raw, either fresh or frozen whole bird and chicken pieces, with the remainder ready to cook or fully cooked¹⁴ One modern processing plant identifies 140 distinct chicken meat products available on the current market. The fastest growth in demand is for 'raw value added 'and' cooked further processed products, such as fillet, breast and drumstick portions, marylands, pate, patties, nuggets, schnitzels, Kiev, etc.

⁹ Data were obtained from ABS Agricultural Census 2001.

¹⁰ ABS. 8301.0 Manufacturing Production, Australia 2003.

¹¹ McDonald, D., Ashton, D., Gleeson, T., Shaw, I. and Davidson, A. (2003) Meat outlook to 2007-08. *Australian Commodities* 10(1);59-67

¹² Data provided by the chicken meat industry.

¹³ Australian Bureau of Agriculture Resource Economics (ABARE). Australian Commodity Statistics, 2003, Australia.

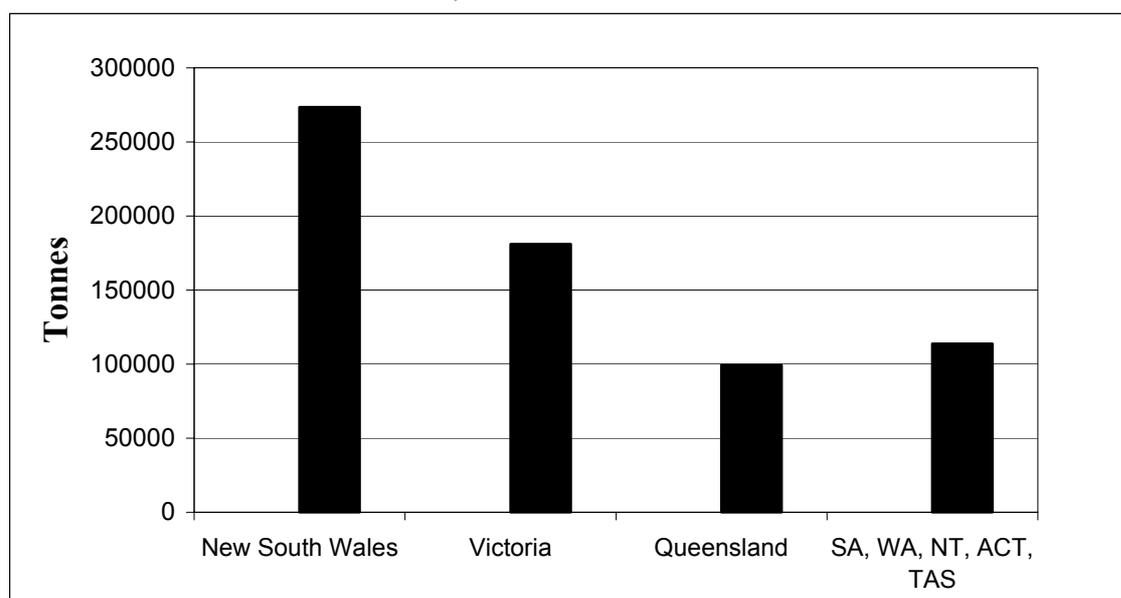
¹⁴ The type of chicken product may impact on the food safety risk as processing such as freezing or cooking would kill or inhibit the multiplication of the pathogens potentially present on the product.

Demand for fresh whole birds continues to be relatively static¹⁵. Most of the residual material not recovered for human food products is further processed for use in the livestock and pet food industries.

Chicken meat production occurs predominately in the eastern States of Australia and tends to be concentrated on the fringe of the capital cities, although some regional centres do exist. These locations enable producers to benefit from proximity to labour services and markets. The breakdown of chicken meat production by State is shown in Figure 4.

Figure 4. Chicken meat production¹⁶

Proportion of chicken meat produced per State/Territory in 2001-2002. The total production of chicken meat is estimated at 735,800 tonnes.



The chicken meat sector is highly concentrated, with 75% of all chicken meat produced by three processing companies. An additional seven processors account for a further 15% of chicken meat production, with the remaining 10% produced by a number of smaller processors and hatchery operators. The larger processing companies are geared to meet the demanding requirements of major customers of the chicken meat sector, such as the supermarket chains, take away food chains and the food service industry.

Approximately 80% of live birds are grown by independently owned and operated farms ('contract growers') that are under contract to major chicken processing companies. Under this system, the processor specifies chick-rearing conditions, which includes feed specifications and housing requirements. The contract grower rears the chickens, after which the birds are transported to the processor's plant. The chickens may be taken for processing at various ages throughout their growth and used for a variety of products; for example, young birds are primarily used as spatchcocks, whereas large birds, because of their size, are more suited to filleting and further processing. Table 1 describes the processing of chickens of various ages.

¹⁵ Information supplied by the chicken meat industry.

¹⁶ ABS 7215.0 Livestock Products

The remainder of the chickens (~20%) are grown on farms that are wholly owned by the processing companies.

Table 1. A description of chickens of various ages.¹⁷

Age of chicken	Description
Hatching to 18 days	Brooding - placed in sheds on the farm under a heater
18-22 days	Spatchcocks can be taken for processing
32-42 days	Smaller birds taken for processing
42-49 days	Average 'supermarket' whole bird taken for processing
49-60 days	Large birds for filleting and further processing

The integrated structure of the chicken meat sector has enabled the development of a consistent approach to the management of animal health and husbandry practices, resulting in consumer confidence in the quality and safety of poultry meat sold and consumed in Australia.

1.2.2. Poultry meat sectors other than chicken

The remainder of the poultry meat industry comprises a variety of bird species, including turkeys, ducks, quails, squab (pigeons), geese, pheasants and guinea fowl. Of these, the turkey and duck sectors are the largest with turkey comprising 70% and duck comprising 21% of the game bird industry.¹⁸ The annual consumption of turkey and duck in Australia is estimated at 1.6 kg and 0.5 kg per person respectively.¹⁹

These birds are more expensive to produce than chicken meat birds because of slower growth rates, generally higher feed conversion rates²⁰, shorter breeding season and lower egg-production rates.²¹ The higher costs involved in the production of these birds place these sectors in the higher-priced portion of the food market. As such, the market for non-chicken poultry, perhaps with the exception of turkey,²² mainly comprises gourmet restaurants and gourmet butcher shops. In addition, the turnover of non-chicken poultry meat products may be slower than that of chicken meat products.

This market typically demands whole birds, sometimes with the head and feet attached or with the digestive tract intact. These requirements will depend primarily on the poultry species in question and the wishes of the buyer. Some value-added products, such as fillet, breast, and drumstick portions, smoked portions, marylands, and pate are produced.

¹⁷ Table is adapted from information on the Australian Chicken Meat Federation website <http://www.chicken.org.au/home.html>

¹⁸ Leech, A., Shannon, P., Kent, P., Runge, G., Warfield, B. (2003) Opportunities for Exporting Game Birds. Rural Industries Research and Development Corporation (RIDRC). Report Number 03/106.

¹⁹ QDPI National Capability Survey 2002, Industry committee, RIRDC Game Bird Project.

²⁰ The feed conversion rate is defined as the number of kilograms of feed required to increase the live bird weight by one kilogram.

²¹ Leech et al. (2003) RIDRC. Report Number 03/106.

²² Excludes turkeys because they are not covered in the Bodger and Goulding paper.

These products are generally derived from duck or quail and tend to be more expensive per unit weight than a whole bird.²³

Production of some species of poultry is seasonal, and so food products from these species are not available all year round. However, the industry has overcome this to some extent by optimising bird reproduction through changing husbandry practice or by freezing whole birds when in season so that they can be sold at other times of the year.²⁴ Table 2 lists the approximate number of non-chicken poultry produced per year.

Table 2. Approximate number of non-chicken poultry produced per year²⁵ ('000)

Quail	Duck	Turkey	Squab	Pheasant	Guinea fowl	Partridge	Silky	Geese
6,500	5,720	4,700	936	60	40	18	52	5

Although production of poultry other than chicken is concentrated in the New South Wales and Victoria, every Australian State, with the exception of the Northern Territory and Australian Capital Territory has at least one processor of non-chicken poultry species.

Processing of non-chicken poultry typically occurs on the bird farm. Chicken meat companies produce approximately 77% of turkeys,²⁶ with a further 22% processed by large independent operators. Two main companies produce the majority of duck products and one company produces the majority of quail products. Small independent operators generally produce the other non-chicken poultry species.

Like chickens, other poultry species are also grown and processed in close proximity to the capital cities to take advantage of the proximity to labour services and markets.

1.2.3. Import and export of poultry meat products

Poultry produced in Australia is the primary source for the domestic poultry market. Only a minimal amount of poultry meat products are imported. For example, in 2001-2002, 737 tonnes of poultry meat products were imported²⁷. This is less than 1% of the total poultry meat production domestically. The imported poultry meat products were confined to canned meat, meat based flavours and dry pet foods. Fresh poultry meat is not imported into Australia.

The Australian poultry meat industry is also not a major exporter of poultry meat products,²⁸ with only 3.6% of the poultry meat²⁹ produced domestically being exported in 2002.³⁰

²³ Bodger, J. and Goulding, B. (2003) Distribution of meat products from prospective Australian animal industries: crocodiles, emus, game birds, rabbits, hares and snails. Rural Industries Research and Development Corporation (RIDRC). Report Number 03/023.

²⁴ Leech et al. (2003) RIDRC. Report Number 03/106.

²⁵ Data for turkeys provided by Leech et al. (2003) RIDRC. Report Number 03/106.

All other data provided by industry sources.

²⁶ Turkey production by these companies would have the same food safety controls as the chicken meat sector.

²⁷ ABS Import Data 2001-2002

²⁸ Information provided by industry sources.

1.2.4. *The poultry meat supply chain*

There are four main stages to the poultry meat supply chain; primary production, processing, retail and consumer (Table 3). Any PPP Standard for Poultry Meat could potentially cover any part of the primary production and processing³¹ stages not already covered in the Code. The scope of any PPP Standard for Poultry Meat will be determined on completion of the risk assessment process.

Table 3. Summary of the stages in the poultry meat supply chain

Stages of the Supply Chain	Activity
Primary Production	On-farm: Includes the production of live birds ready for slaughter and the transport of live birds to the slaughter facility.
Processing ³²	Includes slaughtering, processing, wholesale ³³ and value adding. Encompasses the supply chain up to the back door of retail.
Retail	Includes wholesale, restaurants, supermarkets, take-away food outlets, butcher shops etc up to the point of sale.
Consumer	Includes the handling practices at use in the consumer's home environment.

1.2.5. *Comparison of the chicken and non-chicken meat sectors of the poultry industry*

From this brief overview of the poultry meat industry, a comparison of the chicken meat and non-chicken meat sectors can be made and areas identified that may impact on the development of a PPP Standard for Poultry Meat (Table 4). Overall the chicken meat sector is a large industry sector in every sense while the other poultry meat sectors have the characteristics of a small, emerging industry.

²⁹ These statistics include chicken, turkey and duck only.

³⁰ ABARE. Australian Commodity Statistics, 2003, Australia.

³¹ For the processing stage, any PPP Standard would be focused on primary processing (see Section 3.3.3) as this section of processing is not covered in the Code. Primary processing includes the slaughter and dressing of animal carcasses.

³² There are a number of steps in the processing stage of the supply chain, each of which may involved a different operators. The greater the number of different operators the less control individual operators have on the management of food safety. This issue must be considered during further discussions of processing and will be discussed in more detail in Section 3.3.3.

³³ Wholesale is included in both the processing and retail stages of the supply chain as implementation of the current standard for the regulation of premises and production of poultry meat varies depending on the State or Territory.

Table 4. A comparison of the chicken and other poultry meat sectors

Similarities	Differences
<ul style="list-style-type: none"> • The majority of poultry meat production occurs in the eastern States of Australia. • The stages of the poultry meat supply chain are similar across poultry species (refer to Table 3). 	<ul style="list-style-type: none"> • The poultry meat industry comprises a variety of avian species. • The chicken meat sector has a greater retail value (~9-10 fold) than the remainder of the poultry meat sector (refer to Figure 1). • The scale of operation. The chicken meat sector produces 25 times more birds overall and 3-9 times more birds per farm than the remainder of the poultry meat sector (refer to Figure 2). • The consumption of chicken meat is significantly greater than for meat from other poultry species. • Non-chicken poultry are more expensive to produce than chickens and as such meat products from these birds are higher priced. • The major customer for chicken meat is supermarkets, takeaway food chains and the food service industry. In contrast, the primary market for meat from other poultry species is gourmet restaurants and butcher shops. • There is a seasonal demand and supply for some poultry species. The seasonal supply means that more birds of these species would be sold frozen when compared to chicken and other non-seasonal poultry species. • There are processing and presentation methods for some poultry species that are not used in the wider poultry meat industry (e.g. whole birds sold with the head and feet on, defeathering of ducks using wax etc). • The chicken meat industry tends to be highly concentrated and vertically integrated. The remainder of the poultry meat industry tends to be less vertically integrated and encompass a number of operators (with the possible exception of turkeys). • The processing of non-chicken birds typically occurs on the bird farm.

Comment is sought on the differences between the chicken meat and other poultry meat industries that may impact on food safety. For example:

- size of individual operations;
- differences in consumption of meat from different poultry species;
- different markets for chicken and non-chicken poultry meats which may have different food safety requirements;

- differences in processing and presentation of poultry products between poultry species which may impact on food safety; and
- extent of integration of industry.

1.3. Existing food safety management strategies

Government and industry currently manage food safety in the poultry meat supply chain in a variety of ways, as shown in Table 5 and briefly described in the following sections.

Table 5. Existing food safety management strategies for the poultry meat industry

Commonwealth Government	State and Territory Governments	Industry Practices
Australia New Zealand Food Standards Code: <ul style="list-style-type: none"> • Chapter 1: General food standards • Chapter 2: Food product standards • Chapter 3: Food safety standards 	State/Territory- specific Food and/or Meat Hygiene Acts: <ul style="list-style-type: none"> • Generally require compliance with the Australian Standard (AS 4465-2001) 	Compliance with the Australian Standard (AS 4465-2001) is required for membership of some industry bodies and is generally required under State and Territory legislation.
	Licensing and/or accreditation of poultry meat processors and food retail businesses	Industry guidelines (e.g. the Australian Chicken Meat Federation guidelines for the hygienic production of poultry meat products).
Import and Export Regulations	On-farm: <ul style="list-style-type: none"> • Animal health regulations only 	Quality assurance programs

1.3.1. Regulatory measures

1.3.1.1. *Australia New Zealand Food Standards Code*

FSANZ is responsible for developing, varying and reviewing standards in the Code.³⁴ State and Territory Governments are responsible for the enforcement of these standards.

Some aspects of the poultry meat supply chain are covered by the general standards in the Code. These general standards can be found in Chapter 1 of the Code and apply to all food, including poultry meat products, sold or traded at retail or wholesale level in Australia. Such general standards include labelling requirements and compositional standards. The labelling requirements in Chapter 1 provide general product information such as food identification, date markings, nutrition information panels and directions for use and storage. The compositional standards in Chapter 1 define the additives, vitamins, minerals and processing aids permitted to be added to food products. Some food safety aspects, such as chemical and microbiological limits for poultry meat products are also included in this chapter.

³⁴ Can be obtained from the FSANZ website <http://www.foodstandards.gov.au>

This chapter also describes the processing requirements for some poultry meat products, for example eviscerated poultry, dried meat, fermented comminuted meat products and semi-dry heat-treated processed meat (Standard 1.6.2).

Chapter 2 of the Code defines, for particular classes of foods, the labelling and compositional requirements. In this chapter, poultry is defined under the ‘Meat and Meat products’ class. Specific to poultry, this chapter sets a maximum limit of fluid loss from thawed poultry.

The Food Safety Standards in Chapter 3 of the Code specify food safety control measures for each food handling step and requirements for notification of food businesses, food handlers to have skills and knowledge of food safety, health and hygiene of food handlers and the cleaning, sanitising and maintenance of food premises, equipment and food vehicles. The Standards also specify design and construction outcomes for food premises, equipment and vehicles to facilitate compliance with the food safety requirements. The Standards apply to food businesses other than those engaged in primary production of food including the primary production of poultry. These Standards do not apply in New Zealand.³⁵

Chapter 3 of the Code also contains Standard 3.2.1— Food Safety Programs that sets out requirements for food safety programs that are based on Hazard Analysis Critical Control Point (HACCP) principles.³⁶ This Standard takes a risk-based and preventative approach to managing food safety. The Standard is currently voluntary except where mandated under specific State or Territory legislation. It does not apply to primary production and does not apply in New Zealand.

The Australian and New Zealand Food Regulation Ministerial Council in December 2003 gave policy guidance to FSANZ to mandate food safety programs (Standard 3.2.1) for specific sectors that pose a high risk to public health and safety. The high-risk sectors identified were:

- food service, whereby potentially hazardous food is served to vulnerable populations;
- raw ready to eat seafood (raw oysters and other bivalves);
- catering operations serving food to the general public; and
- production of manufactured and fermented meat.

Comment is sought on the sections of the poultry meat supply chain that are not covered by the Code.

³⁵ The treaty that was signed between the Australian and New Zealand Governments in 1995 to develop joint food standards did not include standards relating to food hygiene, for example the Food Safety Standards in Chapter 3. Thus these standards do not apply in New Zealand.

³⁶ The Codex Alimentarius Commission (Codex) defines HACCP as a system that identifies, evaluates, and controls hazards that are significant for food safety. It describes HACCP as a tool to assess hazards and establish control systems that focus on prevention rather than relying on end-product testing. Food Safety Programs, as defined by Standard 3.2.1 are based upon the HACCP system adopted by Codex and encapsulate the seven principles of the Codex HACCP system: conduct a hazard analysis; determine the critical control points (CCP); establish critical limit(s); establish a system to monitor control of the CCP; establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control.; establish procedures for verification to confirm that the HACCP system is working effectively; and establish documentation concerning all procedures and records appropriate to these principles and their application.

1.3.1.2. State and Territory regulations

Current State and Territory poultry meat regulation specific to food safety covers the slaughter, further processing, transport, and retail (including food service) of poultry meat products. There are three parts to these regulations: reference to the Code, mandating compliance with the *Australian Standard for Construction of Premises and Hygienic Production of Poultry Meat for Human Consumption (AS 4465-2001)*³⁷ (the Australian Standard) and mandating HACCP programs. The wholesale and retail of poultry meat products is regulated under the relevant sections of the Code as described in the previous section.

Jurisdictions (with the exception of the ACT) require the licensing and/or accreditation of poultry meat processing plants (from the slaughter house to backdoor of retail/wholesale) and mandate compliance with the Australian Standard. The Australian Standard is based on HACCP principles and is therefore consistent with Standard 3.2.1 of the Food Standards Code. However the Australian Standard is generally more prescriptive in nature than Standard 3.2.1.

There are two parts to the Australian Standard. Part A applies to the equipment and construction of the premises where poultry are slaughtered and processed. The Standard does not cover equipment and premises used in the poultry meat supply chain prior to the slaughter of birds.

Part B sets the requirements for the hygienic production and processing of human food products derived from poultry. Part B is limited to the processing section of the poultry meat supply chain from slaughter, but does not extend to either retail or to the food hygiene aspects of primary poultry production. Part B is primarily concerned with the food safety management of fresh poultry meat products. For further processed products, the Australian Standard states that all further processing of poultry meat products must be effectively controlled by the operator through an approved HACCP program and that rooms and other designated areas for further processing must comply with the *Australian Standard for the Hygienic Production and Transportation of Meat and Meat Products for Human Consumption (AS 4694-2002)*

Most State and Territory legislation also requires the processing stage of the poultry meat supply chain to comply with HACCP-based quality assurance programs.

Regulation of the poultry meat industry at the farm level does not address specific food safety requirements and is primarily concerned with animal disease control, animal welfare and environmental issues (air, water, soil, noise pollution).

1.3.2. Voluntary industry food safety management strategies

In addition to existing government regulations, the poultry meat industry is self-regulated through voluntary compliance with codes of practice and industry preferred standards, including food safety/quality assurance programs and guidelines.

³⁷ Can be obtained from the Standards Australian website
<http://www.standards.com.au/catalogue/script/search.asp>

Guidelines are generally developed by the peak industry bodies and are widely adopted by the members of these bodies. For instance, the Australian Chicken Meat Federation (ACMF) has developed voluntary guidelines for the hygienic production of poultry meat products. These guidelines set out HACCP plans for both the primary production (broiler farm) and for the processing of chicken meat. These plans have, with some variations, been largely adopted by ACMF members and are designed to minimise microbial and chemical contamination at the broiler farm and during processing.

Many poultry producers also have quality assurance programs in place. Some of these programs are required by the major customers of the industry (i.e. supermarkets, take-away chains etc). These programs ensure that the food products supplied to the company are safe and of the highest quality. The quality assurance programs can determine the production and processing practices that a company must implement (e.g. HACCP plans and good manufacturing and/or hygiene practices for food suppliers). In addition, some companies may lack technical personnel and expertise and require a simple HACCP plan.

1.3.3. Poultry meat import and export regulations

Imported poultry meat products must meet the requirements under the Code as described in Section 1.3.1. However, unless demanded by the importer, there is no requirement for the primary production and processing of imported poultry meat products to meet the Australian Standard or other measures developed by the Australian poultry meat industry or under State and Territory legislation.

The Australian Quarantine and Inspection Service (AQIS) administer the export regulations for poultry meat. Establishments involved in the production of poultry meat for export must be registered with AQIS. Meat for export must be produced in accordance with the appropriate domestic legislation as well as the current Export Control (Processed Foods) Orders, specifically the *Game, Poultry and Rabbit Meat Orders – 1985*.³⁸

Exported poultry meat must also meet specific requirements of the importing countries. These country requirements vary markedly, may involve specific testing requirements (e.g. for Newcastle disease) and range from a company inspection through to individual bird ante- and post-mortem inspection by an AQIS inspector.

1.3.4. Relationship between the existing measures in place to manage food safety

Figure 5 depicts diagrammatically, the extent of coverage of the current regulatory and voluntary industry food safety management strategies for the safe production of poultry meat products for human consumption.

³⁸ Can be obtained from the Department of Agriculture, Fisheries and Forestry <http://www.daff.gov.au>

Figure 5. The relationship between the existing food safety management strategies for the poultry meat industry

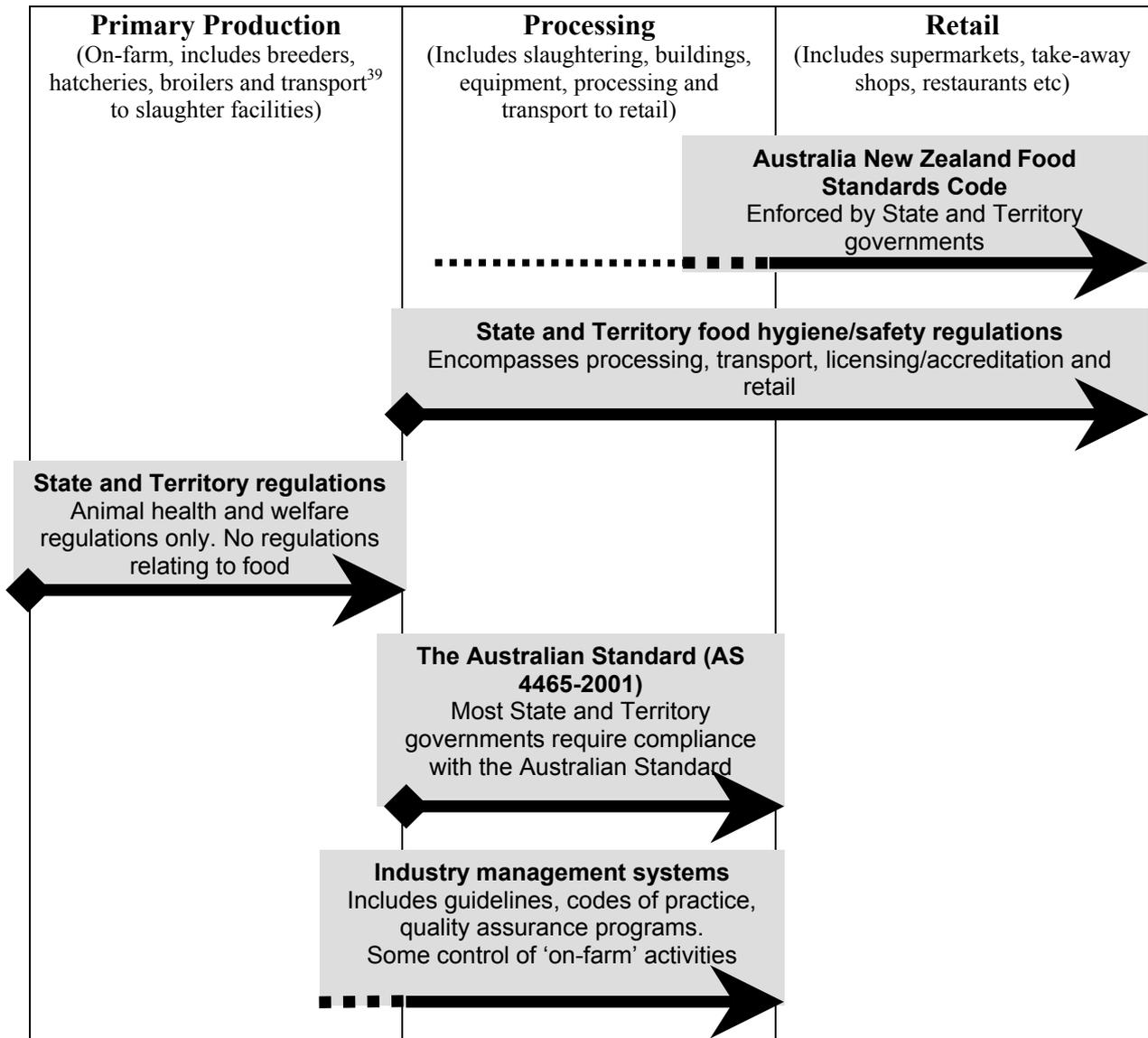


Table 6 identifies some similarities and differences in the existing food safety management strategies.

³⁹ Transport of live birds to the abattoir for slaughter is regulated under State-based animal welfare legislation.

Table 6. Similarities and differences in the existing food safety management strategies

Similarities	Differences
<ul style="list-style-type: none"> • Compliance with the Code is required for retail and some parts of processing regardless of the poultry species. • Compliance of the poultry meat industry with the Australian Standard: AS4465-2001 is required under most State and Territory regulations. • The primary production (animal health and welfare) regulations are similar across the poultry meat industry and across States and Territories (however, these do not cover food safety). 	<ul style="list-style-type: none"> • There are inconsistencies across State and Territories with respect to the implementation of Chapter 3 of the Code and the existing regulatory framework for the production and processing of poultry. • There may be some differences between poultry species in the existence of food safety management strategies. • Different processors may have different rates of compliance with existing food safety management strategies. This may be due to the different markets for chicken meat and non-chicken poultry meat or due to the varying sizes in the production and processing operation.

Comment is invited on the effectiveness of the current food safety management strategies with respect to the outcomes and objectives.

Information is requested on the guidelines and codes of practice used by operators, particularly producers and processors of poultry species other than chicken.

Data are requested on rates and levels of compliance with existing food safety management strategies.

Comment is sought on any gaps or duplications in the existing food safety management strategies used in the poultry meat industry, particularly in regulatory measures.

2. Rationale for developing the Primary Production and Processing Standard for Poultry Meat

2.1. Rationale for the development of all Primary Production and Processing Standards

Although Australia enjoys a high level of food safety protection, it, like many other nations faces the challenge of continually improving food safety. Australian Governments have agreed that food safety should be addressed throughout all parts of the food supply chain (i.e. from paddock to plate) to ensure appropriate food safety outcomes. All industry sectors, and not just the poultry meat industry, will be addressed in turn. This approach aims to improve public health and safety and ensure that consumers continue to have the highest confidence in the safety of the food they consume, but at the same time do this in a way that minimises impost on food businesses.

Conventional approaches to the management of food safety risks have often relied on end-point testing to ensure acceptable levels of microbiological and chemical hazards in food.

Testing often occurs after either people get sick or the food is consumed and, while it may lead to the prosecution of non-compliant food businesses, it does not necessarily prevent food-borne illness. End-point testing also focuses compliance and regulatory efforts on the consumption point of the food chain, neglecting the production and processing parts of the food chain. Other existing approaches to managing food safety risks include HACCP-based quality assurance programs carried out by industry, which are enforced by regulators in the processing area; however these programs apply variably in only some parts of the production chain.

It must be acknowledged that the traditional approaches to the management of food safety risks have contributed to the safety record of Australia's food supply. However, Australia still has an estimated 5.4 million cases of food poisoning⁴⁰ each year, mostly unreported and of short-term duration. This burden of food-borne illness needs to be reduced. The human cost through discomfort and distress is significant. The economic cost to the nation in terms of lost production and health services costs is estimated at \$3.75 billion⁴¹. The estimated annual cases of food-borne illness and the economic cost to Australia are a testament to the need to go beyond the conventional food safety management approach to one that is more capable of responding to the increasing burden of food-borne illness. Furthermore, it has been recognised globally that the conventional approach is not fully able to manage effectively the emerging food-borne pathogens resulting from changing food production, processing and consumption patterns.

In seeking to reduce the burden of food-borne illness, Australia, along with many other countries and the Codex Alimentarius Commission, is moving towards preventative approaches to more effectively manage food safety. These approaches identify food safety areas and activities that contribute significantly to the burden of food-borne disease and focuses on preventive management strategies across the entire food chain (i.e. 'paddock to plate'). The focus is on identifying and minimising food-borne hazards at the points in the food chain where those hazards are introduced, rather than relying on finding a problem at the end of the process. This through-chain preventive approach to food safety ensures that Australia addresses risks to public health in the food supply, builds consumer confidence, safeguards international trade in food and, in time, improves levels of food safety for the consumer.

Australia currently lacks a comprehensive set of nationally consistent food safety standards that cover the entire food chain, from 'paddock to plate', and that takes a preventive approach to food safety risks. In general, this is primarily due to the lack of consistent and mandatory food safety standards in the primary production section of the food supply chain. There are nationally consistent mandatory food hygiene standards in Chapter 3 of the Code that address food safety in a preventive manner across the majority of the food processing and retail sectors and that provides these sectors with a clear statement about their obligations in ensuring the safety of their product. There are various Australian State and Territory regulations that adopt certain Australian Standards or Codes of Practice for some primary production sectors, such as meat. However, these mechanisms do not address all sectors consistently across all jurisdictions.

⁴⁰ This figure represents the burden of food-borne illness from all food sectors and not just the poultry industry. The OzFoodNet Working Group (2003) Food-borne disease in Australia: incidence, notifications and outbreaks. Annual report of the OzFoodNet network, 2002. *Commun Dis Intell* 27;209–43.

⁴¹ Estimate provided by the Department of Health and Ageing.

2.2. Principles of primary production and processing standards

As described in Section 1.1, PPP Standards will be developed by FSANZ using scientific risk analysis and widespread stakeholder consultation, having regard to policy advice from the Ministerial Council. The SDC, a key component of the standard development process under the new national framework ensures, among other things, that the interests of each relevant primary sector are taken into account during the development of a PPP Standard for that sector.

The general emphasis of the PPP Standards is food safety, hygiene and handling using outcomes based, rather than prescriptive requirements and will be harmonised with the Food Safety Standards contained in Chapter 3 of the Code.

Any PPP Standard for Poultry Meat resulting from this process will be risk-based, mandatory and applied consistently across the entire poultry meat production and processing supply chain throughout Australia. This is consistent with international approaches to managing food safety.

3. Factors associated with the poultry meat industry that may impact on public health and will be considered during the risk assessment process

The safety of the Australian food supply is regulated through an evidence-based approach. FSANZ achieves this by utilising an internationally agreed risk analysis framework to inform its regulatory decision-making processes. The risk analysis framework consists of three components: risk assessment, risk management and risk communication. These components are outlined in Section 6.

Under this framework, FSANZ will first undertake a formal assessment of the risks to public health and safety through the poultry meat supply chain. This assessment will be based on the available information including current scientific evidence and epidemiological data relevant to the Australian situation and published Australian and international risk assessments and technical evaluations. Selections of risk assessments that may be relevant for this process are listed in Table 8.

Table 8. Examples of assessments undertaken on poultry meat

Agency	Title	Date
WHO/FAO ⁴²	Risk assessments of <i>Salmonella</i> in eggs and broiler chicken	2002
Institute of Environmental Research, New Zealand ⁴³	Risk profile: <i>Campylobacter jejuni/coli</i> in poultry (whole and pieces)	2003
Food Science Australia ⁴⁴	Chicken meat risk profiling study	2004
US Food and Drug Administration ⁴⁵	Risk assessment on the human health impact of fluoroquinolone-resistant <i>Campylobacter</i> associated with the consumption of chicken	2000

⁴² WHO/FAO (2002) Risk assessments of *Salmonella* in eggs and broiler chickens. World Health Organisation. Geneva, Switzerland.

⁴³ ESR (2002) Risk profile *Salmonella* (non typhoid) in poultry (whole and pieces). Institute of Environmental Science and Research Limited. Christchurch, New Zealand.

⁴⁴ This report is in its final drafting stage.

⁴⁵ Food and Drug Administration Centre for Veterinary Medicine (2000) Human health impact of fluoroquinolone resistant *Campylobacter* attributed to the consumption of chicken.

Access to appropriate data is essential for the risk assessment process as the risk assessor and risk manager requires a good understanding of the entire production chain (paddock to plate) and knowledge of the various factors that may impact on the safety of poultry meat. This includes data on:

- industry inputs;
- the level and extent of contamination of poultry meat with specific hazards at all points along the production/supply chain;
- epidemiological data linking adverse health outcomes to those hazards; and
- information on dietary exposure to the hazards in poultry meat products.

The following sections seek comment, information and data on many of these issues. Responses received will be used in the risk assessment process. The responses to the questions posed will be essential in determining the level of risk associated with specific hazards and the impact of production and environmental factors on these risks. FSANZ will work closely with the poultry industry and relevant agencies to ensure that as much relevant, Australian data as possible can be incorporated into its risk assessment process.

Comment is invited on the issues raised above relating to the risk assessment process.

Data and information are sought on technical aspects for incorporation into the scientific risk assessment process.

There are three main factors that need to be considered in the risk assessment process. First, the hazards associated with poultry meat need to be identified. It is then important to examine epidemiological and other data to determine whether these hazards have presented, or are likely to present, themselves as a public health risk through the human food chain. Once an association between a hazard and an incident of food-borne illness can be putatively identified, the stage of the food supply chain where that hazard could have been introduced can be examined. These three factors are discussed in the following sections and questions are posed seeking information and data that will aid FSANZ during the assessment of the risk to public health and safety.

3.1. Hazards associated with poultry meat

The development of a PPP Standard for Poultry Meat will need to focus on hazards that significantly contribute to a public health risk and include biological, chemical and physical agents.

There are other hazards associated with poultry that are of primary importance to animal health, and could also be present in poultry meat products. One such example is avian influenza, which is currently epidemic in East Asia, and does not pose a food safety risk in Australia. Where these hazards relate to animal health, but do not affect human health, the Department of Agriculture, Fisheries and Forestry (DAFF) is responsible.

3.1.1. Biological hazards

Poultry, like all animals, may carry a wide range of microorganisms, some of which are human pathogens. It is widely recognised that the organisms of greatest public health concern to the consumer of poultry meat products are *Salmonella* spp. and *Campylobacter* spp. These two organisms are the leading cause of zoonotic⁴⁶ intestinal infections in developed countries, including Australia, and have frequently been isolated from raw poultry and implicated in food-borne illness.⁴⁷

3.1.1.1. Salmonella

Many studies have been undertaken to determine the incidence and prevalence of *Salmonella* in poultry and poultry meat products. *Salmonella* is commonly isolated across the whole poultry production chain, from the farm through to the retail level.⁴⁸ The principal source of *Salmonella* on the dressed poultry carcass is faeces. Extensive faecal cross-contamination occurs during shed depopulation, transport and slaughter of the birds, and results in contamination of equipment and carcasses during processing.⁴⁹

Surveys of the microbiological quality of raw chicken meat in Australia have reported rates of *Salmonella* contamination of 41-53%, with a number of different serotypes isolated.^{50,51} New Zealand has recently undertaken a risk profile for *Salmonella* (non typhoid) in poultry, the results of which suggested poultry is a vehicle for some food-borne salmonellosis in New Zealand.⁵²

The WHO/FAO has recently published a quantitative risk assessment that estimates the risk of salmonellosis from the consumption of poultry.⁵³ The assessment includes modelling of parameters that impact on *Salmonella* on broiler carcasses during distribution and storage, preparation, cooking and consumption. Using this model, the change in the risk of illness following the implementation of *Salmonella* control measures could be estimated.

⁴⁶ A disease of animals that can be transmitted to humans.

⁴⁷ OzFoodNet (2003) Foodborne disease in Australia: incidence, notifications and outbreaks. Annual report of the OzFoodNet network, 2002. *Communicable Disease Intelligence*. **27**(2): 209-243.

⁴⁸ Bailey, J. S., Stern, N. J., Fedorka-Cray, P., Craven, S. E., Cox, N. A., Cosby, D. E., Ladely, S. and Musgrove, M. T. (2001) Sources and movement of *Salmonella* through integrated poultry operations: a multistage epidemiological investigation. *Journal of Food Protection*. **64**(11): 1690-1697.

WHO/FAO (2002) Risk assessments of *Salmonella* in eggs and broiler chickens. World Health Organisation. Geneva, Switzerland.

⁴⁹ WHO/FAO (2002) Risk assessments of *Salmonella* in eggs and broiler chickens. World Health Organisation. Geneva, Switzerland.

⁵⁰ Millard, G. and Rockliff, S. Microbiological Status of Raw chilled chicken. July 1999 - August 2000. ACT Health Protection Service.

Other unpublished data.

⁵¹ The vast majority of the *Salmonella* isolated is *Salmonella sofia*, which has not been reported as the cause of human illness in Australia.

⁵² ESR (2002) Risk profile *Salmonella* (non typhoid) in poultry (whole and pieces). Institute of Environmental Science and Research Limited. Christchurch, New Zealand.

⁵³ WHO/FAO (2002) Risk assessments of *Salmonella* in eggs and broiler chickens. World Health Organisation. Geneva, Switzerland.

3.1.1.2. Campylobacter

The principal reservoir of pathogenic *Campylobacter* spp. is the gastrointestinal tract of wild and domesticated mammals and birds. *Campylobacter* species most commonly associated with human illness are *C. jejuni* and *C. coli*.⁵⁴ These organisms are distinguished from other *Campylobacter* spp. primarily by their high optimum growth temperature (>42°C) and are therefore termed thermophilic Campylobacters.

International studies have shown that *C. jejuni* is frequently isolated from poultry and poultry products at all stages of production.⁵⁵ Of the limited published studies undertaken on the prevalence of *Campylobacter* spp. in Australian poultry meat, thermophilic *Campylobacter* spp. has been isolated from 20-73% of retail chicken meat sampled.⁵⁶

WHO/FAO is currently preparing a quantitative risk assessment for *Campylobacter* spp. in broiler chickens which attempts to model the levels of *Campylobacter* in broilers across the whole poultry production process including home preparation and cross contamination.

3.1.1.3. Other pathogens

Other microorganisms that are of public health significance and are potentially found on poultry meat products include *Listeria monocytogenes*, *Clostridium perfringens* and *Staphylococcus aureus*.

3.1.2 Chemical hazards

In comparison to microbiological contamination, the risk of exposure of consumers to chemical hazards via the consumption of poultry meat products is considered low.⁵⁷

There are a number of chemicals that may be introduced into the food chain during poultry meat production. Chemicals may be added deliberately during primary production and/or processing (e.g. antimicrobial agents), or unintentionally via environmental exposure (eg heavy metals, polychlorinated biphenyls). Maximum limits for these chemicals in poultry meat, and other poultry meat products, are set in Chapters 1 and 2 of the Code. Chemicals (including antibiotics) for on-farm use are registered by the Australian Pesticides and Veterinary Medicines Authority (APVMA) and the permitted residue levels in food offered for sale is set in Chapter 1 of the Code.

The use of chemicals during the processing of poultry is largely limited to the use of chlorine-treated water during washing and chilling of the carcass. The Code does permit the use of sodium acetate in the production of poultry meat but this is seldom used by the industry.

⁵⁴ International Commission on the Microbiological Specification of Foods (1996) Microorganisms in food – characteristics of microbial pathogens. Blackie Academic and Professional. London, UK.

⁵⁵ WHO/FAO (2002) Risk assessment of *Campylobacter* spp. in broiler chickens and *Vibrio* spp. in seafood. World Health Organisation. Geneva, Switzerland.

ESR (2003) Risk profile: *Campylobacter jejuni/coli* in poultry (whole and pieces). Institute of Environmental Science and Research Limited. Christchurch, New Zealand.

⁵⁶ Millard, G. and Rockliff, S. Microbiological Status of Raw chilled chicken. July 1999 - August 2000. ACT Health Protection Service.

Other unpublished data.

⁵⁷ The Australian Total Diet Survey. This report can be obtained from http://www.foodstandards.gov.au/srcfiles/Final_20th_Total_Diet_Survey.pdf

3.1.3. Physical hazards

The physical hazards associated with poultry meat products are intrinsic hazards (e.g. bones and bone fragments in fillets, feathers) and extrinsic hazards (e.g. metal inclusions, plastic, glass and other material that is foreign to the nature of the food).

Extrinsic physical hazards are potentially introduced at all stages along the poultry processing chain. Sources for such contaminants include badly maintained facilities and equipment, improper production procedures, packaging materials and poor employee practices. The various physical hazards may cause traumatic injury to the mouth, tongue, teeth, gums, throat, stomach and intestines, as well as presenting a choking hazard. Depending on the nature of the hazard and the poultry meat product, the products may be recalled from sale.

3.1.4. Consideration of hazards in species other than chicken

The above discussion has focused on the hazards potentially associated with chicken meat products, as very little information is available on the nature and extent of hazards associated with non-chicken poultry species. It is assumed in this report that the hazards of concern for these other poultry species are largely the same as those for chicken.⁵⁸ However, it must be acknowledged that some hazards are specific for a particular poultry species (i.e. certain strains of *Salmonella*).

Comment is sought as to whether the hazards associated with chicken meat are representative of the hazards associated with other poultry meat?

Comment and information is invited on other hazards, particularly chemical hazards, associated with poultry meat products that have not been identified in this report.

Quantitative data are sought on all hazards specific for individual or groups of poultry species.

3.2. Poultry meat and human disease in Australia

There are an estimated 5.4 million cases of food-borne gastroenteritis in Australia each year (Credible Interval: 4.2–6.9 million cases).⁵⁹ The specific pathogens, and the foods that are the vehicles for the pathogens, causing this level of illness are rarely identified and only a small proportion of cases that occur in the community are either notified to health departments or are part of recognised outbreaks.⁶⁰ The exact cause of illness is usually only determined when specific epidemiological studies are conducted or when an outbreak has occurred.⁶¹ Investigators often identify the specific food that people had eaten before becoming ill, but often do not identify the original source of product contamination, such as infected humans, animals or flaws in handling the food. The main underlying causes of these outbreaks include: poor food handling, undercooking, and cross contamination, although the relative importance of these food safety errors is generally not understood.

⁵⁸ This assumption is based on discussion with industry representatives and government officials.

⁵⁹ The OzFoodNet Working Group (2003) Foodborne disease in Australia: incidence, notifications and outbreaks. Annual report of the OzFoodNet network, 2002. *Commun Dis Intell* 27;209–43.

⁶⁰ The definition of outbreak used by OzFoodNet is 2 or more people who have shared a common meal or food.

⁶¹ Hall, G.V., D'Souza, R.M., Kirk, M.D. (2002) Foodborne disease in the new millennium: Out of the frying pan and into the fire? *Med J Aust* 177;614–618.

Poultry meat is a commonly consumed food in Australia, with 80% of people consuming chicken meat within any seven-day period.⁶² Similarly, poultry meat is one of the most commonly identified causes of food-borne illness by health departments.⁶³ During 2001 and 2002, OzFoodNet documented 20 poultry-associated outbreaks of intestinal illness across Australia affecting 314 persons of whom 19 were hospitalised. There was no single type of poultry meat product identified as the cause.⁶⁴ The microorganisms involved in poultry-associated illnesses include: *Salmonella* spp., *Campylobacter* spp., *Listeria monocytogenes* and *Clostridium perfringens*.⁶⁵

Comment and data is sought on human disease associated with the consumption of poultry meat products, particularly any illness associated with specific poultry species or poultry meat products.

Comment and information is invited on other hazards involved in human illness associated with poultry meat that have not been identified in this report.

3.3. The poultry meat supply chain

3.3.1. Definition of meat poultry

The commonly recognised meat poultry species are:

- chicken;
- duck;
- quail;
- turkey;
- squab (pigeons);
- geese;
- pheasants; and
- guinea fowl.

These species are all farmed and as such are produced in a relatively controlled environment. However, there are other poultry species that have a small domestic market but are ‘wild-caught’, e.g. mutton birds and magpie geese⁶⁶. The food safety hazards associated with the production and processing of these birds are likely to be similar to those of chicken and other poultry, but the primary production section of this supply chain would not be able to be regulated in a ‘wild-caught’ situation.⁶⁷

⁶² OzFoodNet unpublished data

⁶³ The OzFoodNet Working Group (2003) Foodborne disease in Australia: incidence, notifications and outbreaks. Annual report of the OzFoodNet network, 2002. *Commun Dis Intell* 27;209–43.

⁶⁴ *ibid.*

⁶⁵ Kirk, M. (In press) Foodborne disease surveillance needs in Australia: Harmonisation of molecular laboratory testing and sharing data from humans, animals, and foods. *NSW Public Health Bull*

⁶⁶ At present mutton bird processing is only undertaken in Tasmania. Magpie geese are currently not available for retail sale.

⁶⁷ If mutton birds were farmed any primary production standards would be able to be enforced.

However, the harvesting and processing of these birds is subject to applicable provisions of the Australian Standards for *Hygienic Production of Game Meat for Human Consumption (AS4464:1997)*, *Construction of Premises and Hygienic Production of Poultry Meat for Human Consumption (AS4465:2001)* and *Hygienic Production and Transportation of Meat and Meat Products for Human Consumption (AS4696:2002)*.

The Code currently does not have a definition for poultry.

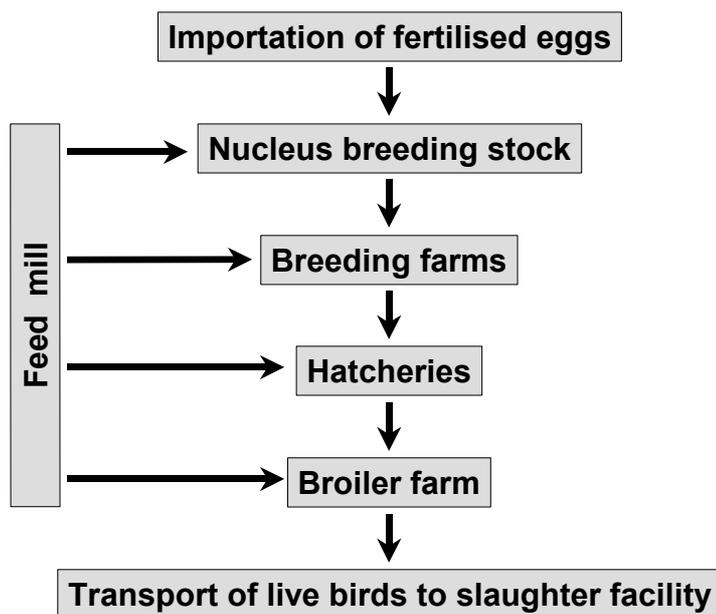
Comment is sought on the inclusion of the following species in the definition of poultry: chicken, duck, quail, turkey, squab (pigeons), geese, pheasants, guinea fowl and other farmed avian species (but excluding ratites).

Should other avian species (e.g. mutton bird, magpie geese and other wild-caught species) be included in the definition?

3.3.2. Primary production of meat poultry

Figure 6 outlines the primary production process that is generally followed for poultry meat species.

Figure 6. Stages in the primary production of poultry



The larger poultry producing companies have ownership of most stages of the production process. In Australia, fertilised eggs are imported from either the United Kingdom or the United States to produce the “nucleus breeding stock”. This process is undertaken under strict quarantine requirements. For some poultry species, the fertilised eggs are not imported, rather are obtained from domestic breeding facilities, but are still produced under strict quarantine requirements.

Chicks from the breeding stock are placed into breeding farms to become the breeding flock. These flocks provide the fertilised eggs, which are transported to the hatchery and subsequently grown to produce chicken meat.

Chicks are placed in the broiler grow-out farm at the age of approximately 1 day and remain on the farm until they reach slaughter weight, which is usually between 30 and 60 days. At this point depopulation occurs whereby all, or a proportion, of birds are removed and transported to the slaughter facility for processing.

Table 9 details some of the stages in the primary production of poultry.

Table 9. Details of the primary production of poultry

Step	Description
1. Nucleus breeding stock	<p>Fertilised eggs are imported to Australia under strict quarantine requirements to ensure the breeding background for Australia’s meat chickens is free from a number of pathogens (as determined by AQIS).</p> <p>The eggs are hatched and chicks grown to produce the nucleus breeding stock. The breeding facility produces the parent birds and fertile eggs (for additional nucleus breeding stock as well as for the breeding farms) rather than any direct food products.</p> <p>Production of nucleus breeding stock occurs under strict quarantine measures.</p>
2. Breeding farms	<p>Some live birds from the nucleus breeding stock are transferred to breeding farms to become the nucleus breeders. There is an emphasis on animal biosecurity measures within the breeding facility to prevent the spread of microorganisms, some of which are human pathogens. For example, feed is piped into the sheds so that feed trucks do not enter the facility. However, some microbial contamination of feed either at the feed mill or by rodents on-farm still does occur and insects, such as flies, could enter the shed.</p> <p>The nucleus breeders give rise to great grandparent breeders, which give rise to grandparent breeders. The eggs from this generation are sent to a hatchery and generate the parent breeders.</p> <p>The eggs from the parent breeders are collected 3-4 times a day. These eggs are treated with formaldehyde (or other sanitation methods) to reduce the level of bacteria. The eggs are then transferred to a refrigerated chiller (12-20 °C depending on the age of the egg, usually 13-15 °C) for at least 10 h before being transferring to the hatcheries.</p>
3. Hatcheries	<p>The hatcheries are subject to stringent animal biosecurity measures. Eggs are incubated at 37 °C for approximately 21 days. The hatching chicks are examined manually and poorly hatched chicks, which may be diseased, are removed.</p>
4. Broiler farm	<p>Chicks are placed in the broiler grow-out shed at ~1 day old and remain on the farm until they reach slaughter weight (usually 30 to 60 days). The grow-out sheds are light controlled and during brooding (14-21 days) are also temperature controlled. After brooding the sheds are ventilated by fans.</p>
5. Transportation of live birds to abattoir	<p>Once the chickens reach slaughter weight the entire or partial flock is transported to a slaughter facility. The grow-out sheds are cleaned prior to the next group of chicks arriving.</p>

The primary production of non-chicken poultry species varies significantly between species. The industry is generally less vertically integrated than the chicken industry, with most of the process, including breeding, hatching and growing occurring at the one location.

Differences in primary production between meat chicken and other poultry species are often observed in the type of housing/facilities used, composition of feed and age at which the birds are slaughtered.⁶⁸

Contamination of flocks with potential human pathogens such as *Campylobacter* often occurs at the farm level. Once a bird is infected with a pathogen, it will excrete large numbers of these pathogens in its faeces. Direct contact with the faeces is one mechanism by which the pathogens spread throughout a flock, but may also lead to contamination of the water and feed supplies. Therefore once introduced, a pathogen often spreads rapidly throughout the flock. Contamination of successive flocks can be prevented by effective clean up after depopulation of the contaminated flock.

3.3.2.1. Feed

Poultry are primarily fed a mixture of cereal grain (e.g. wheat, oats, barley and sorghum), protein meal (e.g. soyabean meal or meat meal) vitamins and minerals. Bacterial contamination of some feed ingredients may result in the finished feed being contaminated even though the feed is heat-treated. This in turn can result in live birds being infected, pathogens becoming endemic in the bird flock and the potential for the pathogen to be transmitted through the food chain to humans. This has been previously demonstrated in the United States where poultry feed contaminated with *Salmonella* was the source of infection for live birds.⁶⁹ Contaminated poultry feed is considered the major avenue *Salmonella* is introduced into poultry flocks.

State and Territory Governments regulate livestock feed. Legislative requirements apply to labelling and contaminant levels permitted in livestock feed. Labels must state the details of the manufacturer and the purpose of the stock food. The permitted levels of contaminants (maximum residue limits- MRL) are set by APVMA. Compliance with these regulations is determined by the National Residue Survey, which is managed by DAFF. Results from the National Residue Survey have shown excellent compliance with the use of antibiotics and pesticides in the poultry meat industry with no incidences in recent years of residue levels exceeding Australian MRL.

The livestock feed industry also uses the *Australian Standard for Hygienic Rendering of Animal Products (AS 5008:2001)*,⁷⁰ which is designed to provide consistent application of heat treatments in the rendering process to minimise the risk of survival of microorganisms that are hazardous to animal health. Quality assurance programs are also used to guide practices in the livestock feed industry.

Comment is sought on food safety issues resulting from poultry feed and feeding practices.

Other concerns that may be raised during stakeholder consultation regarding poultry feed are the use of hormones, antimicrobial agents and genetically modified organisms (GMOs). These are discussed in turn below.

⁶⁸ A summary of processes involved in the production of a number of different non-chicken poultry species is included in a report from the RIRDC Report Number 03/023.

⁶⁹ Crump, J.A., Griffin, P.M. and Angulo, F.J. (2002) Bacterial contamination of animal feed and its relationship to human food-borne illness. *Clinical Infectious Diseases* **35**:859-865

⁷⁰ Can be obtained from the Standards Australian website <http://www.standards.com.au/catalogue/script/search.asp>

Hormones⁷¹ have been banned from poultry feed in Australia for the past 35 years. However, at the request of industry, poultry meat products are tested for hormonal growth promotants in the National Residue Survey⁷² to allay consumer concerns in this area. The results of these surveys have demonstrated the continual absence of hormone residues in Australian poultry meat products.

The public health concerns regarding the use of antimicrobial agents⁷³ in the poultry meat industry are the emergence of antimicrobial resistant bacteria and the potential for residues of the antimicrobial agent(s) to be present in food products. These issues are not restricted to the poultry meat industry and are associated with all food-producing animals resulting from the use of antimicrobial agents in both animal and human medicine. There is a comprehensive system in place to address the public health issues of using antimicrobial agents that involves government health, agricultural and pharmaceutical Departments, expert advisory groups, industry guidelines and codes of practice and veterinary codes of practice. For these reasons, the use of antimicrobial agents will not be considered in the PPP Standard for Poultry Meat. Further information regarding the control of antimicrobial resistance and antimicrobial residues can be obtained from APVMA.⁷⁴

Some raw materials that are incorporated into livestock feed may have been derived from GMOs. Currently the regulatory arrangements in Australia that apply to genetically modified organisms do not extend to the feed of food-producing animals. As with the use of antimicrobial agents, the regulation of GMO feed use involves a cross-sectorial approach by a variety of government agencies and industry guidelines and so will not be considered in the development of PPP Standard for Poultry Meat. More information on the management of GMO feed in Australia can be obtained from the Office of the Gene Technology Regulator.⁷⁵

3.3.2.2. Animal welfare

Animal welfare is seen as increasingly important by consumers, both in Australia and internationally. In Australia, the issue of animal welfare is managed through legislative, regulatory and self-regulatory measures and involves cooperation between Commonwealth, State and local authorities. DAFF is responsible for the national coordination and international aspects of animal welfare. State and Territory governments are responsible for development and administration within their State and local government is responsible for matters such as the management of stray animals. Organisations involved with animal welfare either have an operational role or are concerned with the development and enforcement of community standards of care.

⁷¹ A substance, usually a peptide or steroid, that effects the physiological activity of an animal, such as growth or metabolism.

⁷² This survey monitors residues in meat, milk, dairy products, eggs, honey, grains, fruits, nuts, vegetables and seafood. For imported food products, residue monitoring is done by AQIS.

⁷³ An antimicrobial agent (commonly termed antibiotic) is a substance of microbial origin that specifically inhibits the growth of other microorganisms.

⁷⁴ Information regarding APVMA can be obtained from <http://www.apvma.gov.au>

⁷⁵ Information regarding the Office of the Gene Technology Regulator can be obtained from <http://www.ogtr.gov.au>

State and Territory Governments have the major responsibility for animal welfare legislation, supplemented by Codes of Practice and education. The Animal Welfare Working Group (AWWG), formerly the Animal Welfare Committee (AWC), provides advice to the Primary Industries Standing Committee's (PISC) Animal Health Committee on production and non-production animal welfare issues of national significance. The AWWG ensures consistent approaches are adopted by the State and Territory Governments on welfare issues for agricultural animals through the *Model Codes of Practice for the Welfare of Animals*.

A number of codes have been developed to cover the keeping of livestock in intensive and extensive conditions and their transport, sale and slaughter. Three codes relevant for the poultry meat industry are the *Australian Model Code of Practice for the Welfare of Animals - Domestic Poultry* 4th Edition, the *Model Code of Practice for the Welfare of Animals - Land Transport of Poultry* and the *Model Code of Practice for the Welfare of Animals - Livestock (including poultry) at slaughter establishments*.

The National Consultative Committee on Animal Welfare (NCCAW) is a non-statutory body that provides advice to the Federal Minister for Agriculture, Fisheries and Forestry on aspects of animal welfare that have national implications. Their draft National Animal Welfare Strategy (NAWS), currently available for public consultation, provides a strategic framework for animal welfare and will be considered by the Primary Industry Ministerial Council in April 2004. NAWS will be implemented through a number of action plans to ensure animal welfare is adequately addressed in commercial livestock production.

3.3.2.3. Welfare-driven poultry production systems

Welfare-driven primary production systems for poultry, such as free-range⁷⁶ and organic⁷⁷ poultry production, represents 1-2% of the overall poultry meat market. The majority of the free-range flock is farmed under organic practices.⁷⁸ Free-range animals are known to be subject to higher risk of disease, such as coccidiosis.⁷⁹ Other hazards specific to the production of free-range poultry include extreme weather, exposure to wild birds and other animals, access to unchlorinated water and miscellaneous environmental sources are additional hazards associated with this system.⁸⁰

⁷⁶ This term refers to birds that have access to paddocks or runs, and housing of either a permanent fixed nature or of movable sheds (Wastewater Management Guidelines for Intensive Animal Husbandry Activities. Department of Primary Industries, Water & Environment, Tasmania). The birds range outdoors and have indoor shelter for the night or poor weather. In the Australian context non-organic free-range systems differ only from the barns system in that the birds have access to the environment (Dawson, R.C., Cox, J.M., Almond, A. and Moses, A. (2001) Food Safety Risk Management in Different Egg Systems RIRDC Report Number 01/111, October 2001).

⁷⁷ This describes a production philosophy rather than a housing system. It utilises a free-range production system with a reliance on management practices for the control of pests and diseases rather than a reliance on substances (*National Standard for Organic and Bio-dynamic Produce*, Second Edition April 1998. Organic Produce Advisory Committee, Australian Quarantine and Inspection Service). Practices emphasise the use of renewable resources, conservation of energy, environmental maintenance and enhancement, and the recognition of animal welfare needs.

⁷⁸ Organic Food Chain. personal communication.; John Wylie of the Queensland-based organic poultry growers Wylie Farms quoted by Deborah Cameron in Sydney Morning Herald article, "Organic turkeys, golden eggs". December 13, 2003.

⁷⁹ Dawson, R.C., Cox, J.M., Almond, A. and Moses, A. (2001) Food Safety Risk Management in Different Egg Systems. RIRDC Report No. 01/111.

⁸⁰ *ibid.*

Industry self-regulation in the free-range and organic sectors is conducted through voluntary compliance with codes of practice,⁸¹ industry preferred standards including food safety and quality assurance programs, guidelines and accreditation and certification schemes. There are a number of industry bodies that offer certification for free-range and organic systems. However, it is unclear how many producers of free-range and organic poultry meat are certified by an industry body.

Existing food safety management strategies for free-range and organic systems include those previously described for the poultry meat industry in general (see Section 1.3). The Code does not distinguish free-range/organic poultry meat products from conventionally-reared and processed poultry meat products. However, Standard 1.2.2 Food Identification Requirements, Clause 1 (1) (a) stipulates that the name or description of the food must be sufficient to indicate its true nature. In addition, manufacturers must provide information in a way that is not, or likely, to be false, misleading or deceptive. Such conduct is prohibited by the *Trade Practices Act 1974* and the fair-trading and food acts of each State and Territory.

Labelling guidelines are detailed in the National Standard for Organic and Bio-Dynamic Produce for organic products. Other industry standards, such as, the Standards for Poultry Meat Production of the Free Range Poultry Association of Queensland Incorporated, may in their requirements for accreditation or general guidelines stipulate that labelling should conform to the Department of Weights and Measures and Public Health or other truth in labelling law.

Comment is sought on whether there are food safety issues in the free-range/organic production of meat poultry that are different to those in the production of other meat poultry? Information and/or data are sought in response to this issue.

3.3.2.4. Other avenues for live birds to enter the poultry meat supply chain

Poultry initially raised for egg production (layers) may also enter the poultry meat supply chain at the end of their economic life. These hens are usually between 72 and 120 weeks of age. The primary production of layers is regulated in a similar way to that of meat poultry, with standards, guidelines and codes of practice and will be reviewed as part of a PPP Standard for Eggs.⁸² Birds are sent to a poultry meat processor for slaughter and processing and follow the same procedures as for processing meat poultry.

Comment is sought on whether there are any different food safety risks associated with layers that are not associated with meat poultry.

Comment is sought on other factors on the farm that impact on food safety, such as water and biosecurity.

⁸¹ These codes of practice are concerned with animal welfare only. One such code of practice is the Model Code of Practice for the Welfare of Animals – Domestic Poultry. 4th Edition. Primary Industries Standing Committee. Report Series No. 83.

⁸² The development of a Primary Production and Processing Standard for Eggs is expected to begin later this year.

3.3.3. Poultry processing

Of primary concern during the slaughtering and processing of poultry meat is contamination of the carcass with faecal material and cross-contamination from pathogen-positive birds to pathogen-negative birds. This can occur at a number of stages of production such as during the unloading of birds, scalding, de-feathering, evisceration, washing and chilling. During storage and transportation, organisms, such as *Salmonella*,⁸³ on contaminated poultry meat may have an opportunity to multiply if temperatures are not maintained correctly (temperatures should be maintained at <4°C). The pattern of microbiological contamination during the processing stage is highly dependent on characteristics of the specific organism.

Two points that are important in any food safety program are the holding and hanging of live birds prior to slaughter. A delay during transport or these processes may increase stress on the live birds, and increase shedding of any microorganisms present in the bird, increasing the chance of cross-contamination between pathogen-positive birds and pathogen-negative birds.

Poultry meat processing facilities vary depending on the type of poultry species being processed, and the scale of operation. Larger chicken processing facilities are often highly automated and can process >1000 birds/hour. In comparison, processing of poultry in small-scale facilities may be largely manual or semi-automated and produce <1000 birds/day.

Information, data and comment are sought on the potential hazards in the poultry meat supply chain that are introduced during poultry processing.

Comment is sought on whether there are any other factors prior to slaughter that may impact on food safety.

Information, data and comment are sought on whether the size of the business impacts on food safety.

Although differences exist in the slaughtering and processing of various poultry species, the procedures are similar. A schematic of the steps in processing consistent across poultry species is shown in Figure 7 with greater detail of the primary processing of poultry in Table 10.

⁸³ This is not the case for *Campylobacter*.

Figure 7. Overview of poultry processing

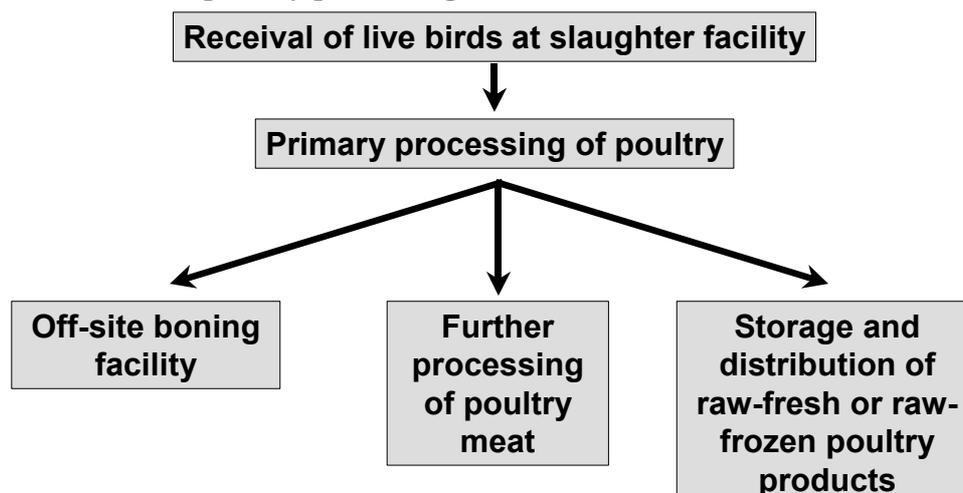


Table 10. Summary of the main steps in primary processing of poultry

Step	Description
1. Stun and kill	On arrival to the processing facility the birds are removed from their crates/cages and put onto the slaughtering line. For chicken, birds are usually hung upside down by their feet in shackles. Birds are put upside down in cones in manual production. The birds are stunned prior to slaughtering, most commonly via electrical stunning in a water bath, although other methods are available such as gassing. After stunning birds are slaughtered by the cutting of the neck and are allowed to bleed to death for up to two minutes. In manual production, birds are decapitated without stunning.
2. Scald	Once birds have been slaughtered the carcasses are immersed in a scald tank that loosens the feathers to facilitate plucking. The temperature of the scald tank is critical and varies between poultry species and production methods. The temperature needs to be high enough to loosen the feathers but not too high as to cause damage to the carcass. Water temperatures of the scald tank are generally between 50°C and 65°C.
3. Defeather	Defeathering is a mechanical process, which occurs immediately after scalding. Machinery for defeathering varies, but generally consist of either a bank of counter rotating steel discs (automated production line) or rotating steel drums (manual production) with mounted rubber fingers. Water is constantly sprayed onto the birds to flush out the removed feathers. Any remaining feathers are removed by hand.
4. Evisceration	Evisceration (removal of the internal organs) can be carried out either mechanically or manually. This is generally achieved by making a cut around the vent of the carcass, a spoon-shaped device is inserted into the opening and the viscera removed. It is important that the viscera are not damaged or ruptured during this process as this can lead to significant contamination of the carcass.
5. Wash	The eviscerated carcass is washed internally and externally, mainly to remove visible faecal contamination.
6. Chill	To limit the growth of microorganisms on the carcass it is important to chill the meat to <4°C as quickly as possible. Methods for carcass chilling include air-chilling, water immersion and spray chilling. Water immersion chilling is the most common method used and involves placing the carcass in a tank of cold water maintained at close to 0 °C (water flowing counter to the movement of the carcass) which is chilled by either adding ice or the use of a refrigerated coil jacket. To minimise the potential for cross contamination, the chill water should be chlorinated (50-70 ppm total available chlorine, 0.4–4.0 ppm free available chlorine).
7. Portioning	A growing proportion of poultry (especially chicken) meat is being processed as portions rather than whole carcasses. This process is commonly carried out using semi-mechanical or mechanical methods.
8. Grading and packing	Whole or portioned carcasses are weighed, graded (whole carcasses only) and packed.

9. Storage and distribution

Processed poultry meat may be stored and distributed as fresh or frozen product. Meat may be supplied direct to wholesale/retail or used for the manufacturing of processed poultry meat products (such as ready to eat products). Some carcasses are transported to off-site boning facilities for boning and subsequent distribution.

One species-specific difference in processing is for duck processing, which requires the use of wax to remove pinfeathers after the initial defeathering. Other differences include poultry species that are sold whole with the head and feet (squab) attached or with the digestive tract intact (pheasant). Although differences exist in the processing of specific poultry species, the food safety management strategies these processors operate under are the same.

The step in the poultry processing chain that may cause the largest food safety concern is chilling (Step 6). Water immersion chilling is the most common method used, but can leave a wet surface on the carcass that may be conducive for the survival of some microorganisms. The carcass may also take up water during this process. If the water used contains pathogens, the carcass may become contaminated at this point.

The speed of processing could also impact on the potential for microorganisms to grow. Cross-contamination between pathogen-positive carcasses and pathogen-negative carcasses, both between batches and within batches, could also occur during processing. Contamination of carcasses and products may also originate from operators in the processing stage. Contamination during processing has been previously shown as a source of exposure to *Salmonella* and *Campylobacter*,⁸⁴ and may be a source of *Listeria monocytogenes*.

In addition, some poultry carcasses are sent from the processing facility to a separate, off-site and often privately owned boning facility. The boning facility strips the meat off a poultry carcass and sells the meat to other processors (e.g. butchers, smallgoods producers etc). Concerns have been raised over the hygienic status of these operations.

Poultry meat may be further processed into other products after Step 9 of the above poultry processing outline. These further processed products include ready to eat poultry products, e.g. cooked poultry products. This further processing may happen at the same (for the larger companies) or different processing facility.

The hazards associated with raw, minimally and fully processed products will be examined as part of the risk assessment process. Decisions on the scope of the PPP Standard for Poultry Meat will be based on this examination.

Information is sought on the differences in poultry processing between poultry species and whether these impact on food safety.

Comment is sought on whether the processing stages for different poultry species have similarities that would enable the application of similar mechanisms to address food safety. Information, data and comment are sought on whether different chilling mechanisms have different impacts on food safety.

⁸⁴ Joint FAO/WHO Activities on Risk Assessment of Microbiological Hazards in Foods: Hazard identification, exposure assessment and hazard characterisation of *Campylobacter* spp. in broiler chickens and *Vibrio* spp. in seafood. WHO Headquarters, Geneva, Switzerland 2001.
WHO/FAO (2002) Risk assessments of *Salmonella* in eggs and broiler chickens. World Health Organisation. Geneva, Switzerland.

Information and comment is sought on whether and how the different steps and parameters for poultry processing impact on food safety.

Information is sought on the extent of 'off-site' boning.

Comment is sought on the impact such facilities have on food safety in the poultry meat industry.

Information is sought on the extent that further processing of poultry products occur at a different site to the initial processing.

Comment is sought on whether the further processing of poultry meat products adds extra opportunities for product contamination.

Comment is sought on which poultry meat products should be considered under any risk management strategy developed through this process.

3.3.4. Retail and consumer-end section of the poultry meat supply chain

In addition to hazards such as *Salmonella*, *Campylobacter* and *Listeria*, being introduced during the production and processing of poultry meat, these hazards may also be introduced at the retail and consumer-end, either through cross-contamination or inadequate cooking at the retail outlet or consumer household.⁸⁵ All food-borne illness resulting from fresh or frozen raw poultry meat could be prevented by adequate cooking or minimising the potential for cross-contamination⁸⁶. Contamination of poultry meat products with other bacterial pathogens, such as *Clostridium perfringens* and *Staphylococcus aureus*, could be due to handling poultry meat products at the retail and/or consumer level.

Some of these factors at the retail and consumer-end of the poultry meat supply chain that impact on the safety of poultry meat products are listed below. It must be remembered that a standard is not a possible food safety management option for consumers; instead other strategies, such as education campaigns, could be used.

3.3.4.1. Retail

- storage conditions of poultry meat products
 - time
 - temperature
 - separation of uncooked and cooked poultry products

⁸⁵ Joint FAO/WHO Activities on Risk Assessment of Microbiological Hazards in Foods: Hazard identification, exposure assessment and hazard characterisation of *Campylobacter* spp. in broiler chickens and *Vibrio* spp. in seafood. WHO Headquarters, Geneva, Switzerland 2001.

WHO/FAO (2002) Risk assessments of *Salmonella* in eggs and broiler chickens. World Health Organisation. Geneva, Switzerland.

⁸⁶ Although this comment implies that the poultry meat industry are not to be blamed for food-borne illness from fresh or frozen raw poultry meat products, the poultry industry can help to reduce food-borne illness resulting from consumption of these products by reducing the numbers of microorganisms on their products.

- cross-contamination during the preparation, storage, handling or selling of poultry meat products
- personal hygiene of retail workers and their knowledge and compliance with food hygiene and food safety requirements
- transportation of poultry meat products from retail to the consumer household

3.3.4.2. Consumer

- storage conditions of poultry meat products
 - time
 - temperature
 - separation of uncooked and cooked poultry products
- cross-contamination during the preparation, storage or handling of poultry meat products
- heat treatment of poultry meat products
- personal hygiene and knowledge of food hygiene and food safety practices

Comment is sought on the impact of the storage and handling of poultry meat products in the retail sector on the risk of food-borne illness.

Comment is sought on the impact of consumer handling practices on the risk of food-borne illness.

Comment is sought on whether there is a difference in retail and consumer handling between poultry meat products compared to other human food products and whether this impacts on food safety.

In order to investigate the source of contamination of any food product that has been implicated in food-borne illness there needs to be a mechanism to trace food products throughout the various steps that are most likely to contribute to the public health and safety risk. The larger retailing chains have procedures in place to identify and trace-back to suppliers of raw materials for poultry meat products. In addition, some poultry processors are able to trace poultry meat products to a particular shed and batch of birds killed on a particular day. Although there are mechanisms for poultry meat products to be traced, many public health officials are not able to trace such products to their origins.

Comment is invited on the practicality of tracing poultry meat products from retail to earlier stages of the poultry meat supply chain.

The turnover for meat products from poultry other than chicken is generally slower than for chicken meat products. In this instance food safety and food hygiene standards and guidelines could be considered of the utmost importance during product distribution, further processing, food preparation and sale as there will potentially be a greater opportunity for any micro-organism to divide.

Information, data and comment are sought on whether the turnover of poultry meat products impacts on food safety.

3.3.5. Summary of the stages of the poultry supply chain where hazards are potentially introduced

The relative importance of each potential source of hazard is difficult to estimate, and is dependent on the type of poultry species being produced, conditions during production and processing, the characteristics of the hazards of concern and consumer handling. However, routes of exposure of the different poultry species to these hazards are similar. Table 11 summarises each of the factors in each stage of the poultry meat supply chain that may impact on food safety.

Table 11. Factors that may impact on food safety in the poultry meat supply chain

PRIMARY PRODUCTION
<ul style="list-style-type: none"> • poultry feed; • vertical transmission from parent and grand parent flocks; • carry-over from a previous flock; • cross-contamination of pathogen-positive birds to pathogen-negative birds (i.e. through faeces, litter etc); • contact with humans, domestic, wild and farm animals, including pet dogs and cats, wild birds, cattle, sheep, pigs, other poultry species; • contact with vectors i.e. insects (beetles, flies) and rodents (mice, rats); • personal hygiene of primary producers and their knowledge and compliance with food hygiene and food safety requirements; • environment (contaminated soil, air, water); • contaminated transport crates, vehicles and personnel at flock thinning; • stress of birds; and • pathogen growth during bird transport (organism and temperature dependent).

PROCESSING
<ul style="list-style-type: none"> • contaminated transport crates, vehicles and personnel; • stress of birds; • unloading of birds; • bird and carcass contamination with faeces; • cross-contamination of pathogen-positive carcasses to pathogen-negative carcasses; • contamination during scalding, de-feathering, evisceration, washing and chilling either from equipment or human contact; • contamination of carcasses with visceral contents during evisceration; • contaminated wash water; • inappropriate wash solutions and inadequate rinsing of carcasses exposed to chemicals; • inappropriate time before chilling; • contact with vectors i.e. insects (beetles, flies) and rodents (mice, rats); • environment (contaminated soil, air, water, building); • personal hygiene of processors and their knowledge and compliance with food hygiene and food safety requirements; • contamination during portioning, further processing and packaging; and • pathogen growth during storage and transport (organism and temperature dependent).
RETAIL
<ul style="list-style-type: none"> • storage conditions; • cross-contamination; • inadequate cooking of product; • personal hygiene of retail workers and their knowledge and compliance with food hygiene and food safety requirements; and • transportation of poultry meat products from retail to the consumer household.
CONSUMER
<ul style="list-style-type: none"> • storage conditions; • cross-contamination; • inadequate cooking of product; and • personal hygiene and knowledge of food hygiene and food safety practices.

Information, data and comment are sought on the extent of each of these to impact on the safety of poultry meat products.

3.3.6. *Measuring the overall effect of the potential hazards on public health and safety*

When poultry meat is consumed at the end of the supply chain, the combination of all the hazards has the potential to affect the health and safety of the Australian population. The final risk to consumers depends on the nature of the hazards, how these hazards have been controlled throughout the supply chain and finally on the handling practices of consumers in the home and restaurateurs and caterers that serve poultry dishes. The overall risk to the Australian population will be assessed as part of this proposal.

4. Impact of current arrangements

The following sections list questions for consumers, industry and Government regarding the impact of the current food safety management strategies. FSANZ must consider the impact of any food safety management strategies proposed in later stages of the standards development process on all sectors of the community when it considers measures to mitigate public health and safety risks, including the poultry meat industry, governments, and consumers.

Comment, information and data supplied in response to the questions listed below will be considered in the impact analysis.

4.1. Consumers

What are the potential public health risks attributable to the consumption of poultry meat products?

What impact does household food handling and food preparation practices have on the risk of food-borne illness from the consumption of poultry meat products? Which practices are the most important for preventing food-borne illness associated with poultry meat products?

Do you know what safe food handling and preparation practices are? Where would you go to find out about safe food handling and food preparation practices?

Are you aware of any education campaigns regarding safe food handling and food preparation practices? Do you think these adequately cover the risks potentially associated with poultry meat?

4.2. Industry

What major public health and safety risks are you aware of that have been associated with poultry meat products? How could any new regulatory measures, if developed, help minimise these risks?

Which stages of the poultry meat supply chain have the food safety risks been associated with? How have you gone about minimising these risks? Is there any regulatory measures that could be put in place to help minimise these risks?

Have food safety risks impacted on your operation? How?

How are food safety risks controlled in your operation?

What is the value of consistency in compliance with food safety management strategies (e.g. regulations) across the poultry meat industry? Can current regulations be consistently applied nationally? If not what new strategies would help achieve national consistency?

Are the current national and State/Territory food safety regulations:

- too prescriptive?
- necessarily prescriptive?
- commensurate with the food safety risks they are addressing?
- easy to understand?

- easy to implement?

Why/why not?

Are the answers to the above questions likely to change depending on the size of the operation?

Are there issues associated with the cost of the current regulations to your business?

Are there any gaps in the current food safety regulations for poultry meat production, processing and retail?

Can you describe the safety of your poultry product through the supply chain?

4.3. Government

To what extent are current food safety regulations enforceable in the poultry meat supply chain?

What effect does resource constraints have on enforcement of food safety regulations? Could anything be put in place to ease resource constraints (if applicable)?

To what extent are the current food safety regulations delivering the outcomes they were designed for? Could any other measures be used to help deliver the outcome?

5. Objectives

As previously discussed, any PPP Standard for Poultry Meat will be developed with regard to Ministerial guidelines from the Ministerial Council and FSANZ's statutory obligations under the FSANZ Act.

The specific objective of any agreed PPP Standard for Poultry Meat will be to develop a food safety management strategy:

- that helps protect public health and safety from potential illness due to the consumption of poultry meat products.

In addition, the standard would aim to:

- complement existing food safety management strategies to ensure complete coverage of the poultry meat supply chain;
- be based on a comprehensive scientific risk analysis, using the best available scientific evidence;
- be outcome-based and minimal effective regulation;
- be nationally consistent thereby facilitating trade in poultry meat and poultry meat products between States and Territories;

- promote consumer confidence in an industry that is already highly regarded;
- have the overall system costs commensurate with the assessed level of risk associated with the poultry meat industry and commensurate with the benefit to the poultry meat industry;
- be consistent with internationally recognised poultry meat standards and internationally recognised principles of food safety; and
- encourage collaborative action among enforcement agencies to optimise the use of resources and to optimise the effectiveness of food safety standards in the poultry meat industry.

6. Next steps

The aim for the development of a PPP Standard for Poultry Meat is to ensure that food safety is addressed across the entire poultry meat supply chain. Any standard will be incorporated in Chapter 4 of the Code, will not duplicate provisions already present in the Code and will be complementary to the Code.

As identified in Section 3, the next step in the standards development process after the public consultation on this Initial Assessment Report is the assessment of risk to public health and safety. This process is outlined in Section 6.1. The conclusions of the public health risk assessment will be considered, in conjunction with information and data obtained in response to the questions asked in this Initial Assessment Report and analysis of the economic, social and political risks and existing regulatory and non-regulatory food safety management strategies, in the development of risk management options and strategies (see Section 6.2).

6.1. FSANZ's process for assessing the risk to public health

Risk assessment is a scientific process undertaken to characterise the risk to public health and safety posed by food-borne hazards associated with a food commodity. There are a number of tools that can be used in this process such as risk profiling, quantitative and qualitative assessment and scientific evaluations. The application of these tools to the assessment of the risk to public health resulting from the consumption of poultry meat is dependent on the purpose of the assessment and on the quality, quantity and availability of relevant data. The outcome of the risk assessment process for poultry meat will be used by FSANZ to inform risk management decisions.

The risk assessment process has been well established internationally by the Codex Alimentarius Commission, the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO). The risk assessment process used by FSANZ is consistent with international protocols and consists of four distinct steps: hazard identification, hazard characterisation, exposure assessment and risk characterisation.

At the core of the risk assessment is an evaluation of all available relevant scientific data concerning the safety of the commodity under consideration and the properties of the hazard. This requires utilisation of appropriate and rigorous scientific data and includes procedures to address uncertainty in the conclusions drawn from scientific data.

The assessment includes consideration of the scope, relevance, and quality of the data as well as the veracity of their sources. Uncertainty in the conclusions drawn from the data is considered.

The outcome of the risk assessment process is a statement on the probability and severity of an adverse health effect due to the consumption of a food containing a particular biological, chemical or physical agent. The risk assessment process may identify where in the process, from production to consumption, controls over the particular hazard will have the greatest impact in minimising risk i.e. where risk management intervention will be most effective.

6.2. FSANZ's process for managing the risk to public health

As discussed in the previous section, FSANZ will first be focusing on assessing the risk to public health and safety from the consumption of poultry meat products. Once this assessment process has been completed the next step will be to develop possible food safety management strategies. The Draft Assessment Report will include the findings of the public health and safety risk assessment, identification of potential food safety management strategies and the regulation impact statement (RIS) for the proposed strategies.

The RIS includes a statement of the issue and objective that the strategy is addressing and identifies a range of food safety management strategies that may be used to control food safety risks. These include: industry self-regulation; quasi-regulation (e.g. accreditation schemes, industry-government agreements); co-regulation; explicit government regulations; 'do nothing' option and codes of practice. The RIS also includes a cost/benefit analysis of the possible food safety management strategies identified and a section detailing how the strategy should be administered, implemented and enforced. The RIS is externally reviewed by the Office of Regulation Review.

Risk management not only entails a process of evaluating the level of risk, assessing the regulatory alternatives to manage that risk and, if appropriate, selecting and implementing specific hazard control measures, but also requires extensive consultation with all primary industry sectors, stakeholders and interested parties. Such consultation has already been initiated by FSANZ and the SDC for Poultry Meat which are developing consultation strategies for:

- Poultry meat industry (growers, suppliers and processors) and industry representative bodies (ACMF, AVPA)
- Regulatory system (State and Territory agencies, local government, Australian Government / State Departments, Ministerial Council, individual Ministers, DAFF, the PPP Standards Working Group, Meat Standards Committee, AQIS)
- Consumers (including ACA) and media and international stakeholders (WTO, Codex)
- Internal stakeholders (FSANZ Board, Poultry Meat SDC)
- Researchers, experts/specialists

There will also be a period for public comment after the release of the Draft Assessment Report later this year.

6.3. Risk communication

Risk communication is an interactive exchange of information about risk amongst assessors, managers, consumers and other interested parties and can include explaining risks, how to control risks, the scientific evidence underpinning risk assessment and education on managing risks.

All of FSANZ's communication takes place in an environment of transparency, independence, timeliness, scientific integrity and inclusiveness. These desirable traits are implicit in the communication objectives for the PPP Standard for Poultry Meat and underpin the standards-setting process in FSANZ. Much of the risk communication will be undertaken through the consultation strategies developed as part of the risk management process.

Comment is invited on appropriate communication tools or mechanisms for consultation with specific target audiences.

6.3.1. World Trade Organization (WTO)

As members of the World Trade Organization (WTO), Australia and New Zealand are obligated to notify WTO member nations where proposed mandatory regulatory measures are inconsistent with any existing or imminent international standards and the proposed measure may have a significant effect on trade.

This issue will be fully considered at Draft Assessment and, if necessary, notification will be recommended to the agencies responsible in accordance with Australia's and New Zealand's obligations under the WTO Technical Barrier to Trade (TBT) or Sanitary and Phytosanitary Measure (SPS) Agreements. This will enable other WTO member countries to comment on proposed changes to standards where they may have a significant impact on them.

7. Closing remarks

This Initial Assessment Report provides the first opportunity for stakeholders to comment on and supply information and data to FSANZ regarding a PPP Standard for Poultry Meat. FSANZ welcomes and encourages stakeholder input. The comments, information and data provided during this consultation will be considered during the development of the Draft Assessment Report, which will be the next formal opportunity for stakeholders to comment.