

# **Modifying egg production systems to meet changing consumer needs**

**A report for the Australian Egg Corporation  
Limited**

by G A Runge

October 2003

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*Modifying egg production systems to meet changing consumer needs*  
*Project No. DAQ-279A*

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# Foreword

In August 2000 ARMCANZ (Agriculture and Resource Management Council of Australia and New Zealand) made important decisions on layer cage housing that will have a long term impact on the Australian egg industry. The main thrust of the decisions is that all cage systems that do not meet 1995 standards are to be scrapped on or before 1 January 2008 unless they are modified by then to meet the contemporary standards at that time. At 2008 the cages that meet the 1995 standards must provide a floor space of 550cm<sup>2</sup> per bird including the baffle area for three or more birds per cage and 675cm<sup>2</sup> for cages to hold less than three birds.

A survey of the Australian egg industry was undertaken to ascertain the facilities presently available for egg production in Australia, determine the effect of the August 2000 ARMCANZ decision on the current egg production facilities, determine the future intentions of egg farmers and to assist egg farmers to determine if their cages will meet the Model Code of Practice for the Welfare of Animals – Domestic Poultry, Third Edition 1995 at 1 January 2008 (1995 Code).

This report presents information on the structure of the Australian egg industry, the effect of the ARMCANZ decision on cage facilities, farmers future intentions and how these will impact on the ability of the industry to meet the ARMCANZ requirements at 2008 and maintain egg production at current levels.

This project was funded from industry revenue that is matched by funds provided by the Federal Government.

This report, a new addition to AECL's range of research publications, forms part of our R&D program, which aims to support improved efficiency, sustainability, product quality, education and technology transfer in the Australian egg industry.

For information on the AECL R&D Program visit our web site at [www.aecl.org](http://www.aecl.org)

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# Executive Summary

In August 2000 ARMCANZ (Agriculture and Resource Management Council of Australia and New Zealand) considered the reports on the 'Review of Layer Hen Housing and Labelling of Eggs in Australia' and the 'Layer Hen Housing Conference' and made decisions on layer cage housing that will affect the future of the Australian egg industry.

The Australian egg industry is presently valued at \$337 million with production of 189.4 million dozen eggs per annum.

A survey of the egg industry was conducted to provide data for estimating the impact of the ARMCANZ decisions on the industry and to assist future planning. The objectives of the survey were to:

- Ascertain the facilities presently available for egg production in Australia.
- Determine the effect of the August 2000 ARMCANZ decision on the current egg production facilities.
- Determine the future intentions of egg farmers.
- Assist egg farmers to determine if their cages will meet the Model Code of Practice for the Welfare of Animals – Domestic Poultry, Third Edition 1995 at 1 January 2008 (1995 Code).

A total of 709 farmers were surveyed by mail and followed up by telephone interview if necessary. Six hundred and ninety seven farms or 98 percent of known egg farms returned survey forms or indicated that they had left the industry. Of these 252 farmers had left the industry, 297 forms were received from cage farms and 148 from non cage farms. Seven cage farmers refused to complete the forms. Sixty-six of the cage farms that returned forms did not supply complete information. This left 231 fully completed forms from cage farmers.

There are 445 egg farms surveyed in Australia that have a combined cage capacity and hens housed in non cage systems of 13.05 million hens. Eighty-seven percent were housed in cages, 7.8 percent in free range facilities and 5.0 percent in barn facilities. About 80 percent of the hens housed in barn facilities and 41 percent in free range are either on cage farms or on farms owned by or associated with cage farms.

The data collected provides a detailed profile of the structure of the production sector of the Australian Egg Industry at the time of the survey. Forty-five percent of the layer capacity (5.80 million hens) is on 6.5 percent of farms that are greater than 100,000 hens in size. Operators may own multiple farms. Forty-one percent of non-cage production capacity is on cage farms. Others are sourcing their requirements from independent free range or barn operators.

Two hundred and thirty-one cage farms with a cage capacity of 9.85 million hens returned fully complete questionnaires. They represent 78 percent of the cage farms and 87 percent of the cage capacity. Farmers with cage facilities who returned fully completed forms were asked to indicate:

- What their future intentions were.
- What their intentions were if they intended to stay in the egg industry after 2008 and had cages that did not meet the 1995 Code.
- What changes they would make to their future intentions if financial assistance were available from Government.

Fifty-eight percent of farmers (134 farms) with 39 percent of layer cage capacity (3.81 million hens) indicated that they were unsure about their future intentions. They had not decided whether to stay or leave the industry. Thirty-nine farmers (17 percent of farmers) indicated that they would leave the industry by 2008 and 25 percent said they would stay. The data suggests it is the smaller farmers who expect to leave and mainly the small to medium size farmers who are unsure about what to do in the

future. The data also suggests that the small cage farmers feel pressured to leave the industry due to the ARMCANZ decision and the effect of low egg prices.

Almost all of the cage layer farmers who indicated that they would stay in the industry indicated they had definite plans for upgrading their layer facilities. Their intention is to replace the majority of facilities with cages that meet the standards applying at the time. The survey does not clearly differentiate what farmers' intentions were on upgrading their facilities prior to the August 2000 ARMCANZ decision. There is some indication in the data that some farmers did intend to upgrade but over a longer time frame.

When asked if they would change their future intentions if financial assistance were offered, some farmers indicated that they would retire earlier or commence or expand another business enterprise. Others, already intending to stay would put new cages, barn or free range equipment in new sheds rather than use current shedding. For some who were still considering their options a financial offer may make it viable for them to update their facilities. The offer of financial assistance increased the number of farms still considering the options available for updating facilities.

Analysis of the data on farmers' future intentions suggests that the cage farms with less than 20,000 hens are most likely to leave the industry.

Comments made by farmers unsure about staying in the industry after 2008 indicated that their decision to stay in the industry will be affected by the future prospect for egg prices. Other considerations would be their ability to borrow money and meet repayments and if local authority rezoning as a result of urbanisation would allow building new facilities on the same site.

Cage farmers who completed the full survey form were asked if they had any additional comments to make on the subject of the survey. Low egg prices combined with the effect of the ARMCANZ decision was expressed as providing no secure future by 55 percent of cage farms who made comments. Twenty-one percent of farms said they had insufficient assets to borrow money against for reinvesting in the industry. The value of their farm and therefore their asset base had been reduced as a result of the ARMCANZ decisions.

Nominated cage features are required to meet set criteria under the 1995 Code. Sixty-two sets of cages with a capacity of 3.07 million hens (31 percent of cage capacity) meet all the criteria. The most significant single feature disqualifying cages was inadequate door width. Three hundred and sixty-four sets of cages (76 percent of cage sets) housing 5.49 million hens (56 percent of cage capacity) are disqualified because the door is not the full width of the cage front or at least 50cm wide. These cages may also have been disqualified for other reasons.

It was estimated that twenty-three percent of the cages are over 30 years old and forty-one percent of the cages are over 20 years old.

The temperature range in which laying hens will perform most efficiently is 20-25°C. Sixty-eight percent of the hens in the surveyed farms are housed in layer cage sheds where the temperature is above 28°C on hot days in summer. If stirring fans are installed then the effective temperature, which the hens sense may be lower due to wind chill effect. Temperatures above 28°C will reduce egg size and shell quality. The severity and duration of the effect depends on temperature, the duration per day and how many days or weeks it lasts. If the high temperature is prolonged there is also the potential for a reduction in rate of lay.

Thirty-five percent of the hens were housed in sheds where the temperature was 10°C or less at night during cold weather. Hens housed at these temperatures will eat more feed to maintain their body temperature. This represents a cost to the industry of about 7 cents or more per dozen eggs depending on feed price. If this 35 percent of hens were housed in insulated sheds with an effective minimum ventilation system there is a potential saving to the industry in feed of 4.95 million dollars annually.



There is also a potential saving in feed cost for the 37 percent of hens experiencing temperatures between 10-20°C.

Layer farmers with cages that did not meet the 1995 Code were asked if they had considered how these cages could be modified, if they planned to apply the modification and if they would like to participate in a research project to investigate the feasibility of cage modification. Eleven farms with 226,000 cage capacity (hens) said they planned to modify the affected cages. Thirty-two farms with 1.41 million hens indicated they would like to participate in the project.

Three farms indicated that they considered changing the cage front as an option. Several farms made comments indicating that modifying the cages was not feasible because it would weaken the cage structure, was not cost effective, there was not enough life left in rest of the cage structure, nor was it practical or efficient to do so.

Of the 6.78 million cage hen capacity not meeting the 1995 Code, cages with a capacity of 0.62 million hens (9 percent) have the potential to be modified to meet the 1995 Code. Another 1.14 million cage capacity (17 percent) has some potential for modification.

The cost of modification is not expensive in comparison with new cage cost. However; farmers need to seriously consider the useful life left in the cages, the effect on production costs due to the inefficiencies inherent in old cage systems and the effect of the reduced stocking density on the farms hen capacity. These factors all affect the farms viability in the longer term.

At January 2008 when the cage floor space requirement will increase to 550cm<sup>2</sup> per hen for three or more birds per cage, the cage capacity of all farms represented in the survey (11.39 million hens) will fall by 23.6 percent to 8.70 million hens.

At January 2008 when all cages must meet the 1995 Code, existing cages that meet the Code on all the surveyed layer cage farms will be able to house 2.83 million hens at the new stocking density. This represents a 75.1 percent loss in laying facilities for hens currently housed in cages at the current density.

Farmers with cages housing 5.50 million hens at the current stocking density indicated that they would stay in the industry by investing in either new cages or non-cage systems. Adding this figure to the 2.83 million cage capacity meeting the 1995 Code gives a capacity of 8.34 million hens likely to be housed in facilities meeting the 1995 Code at 2008. This leaves a shortfall of 3.05 million hens or 26.8 per cent of the current layer flock housed in cages. It is assumed that the farms staying will replace their current capacity estimated at the current stocking density. There are indications by some farmers that they intend to increase their current hen capacity as they gradually replace existing cage facilities with either cage or non-cage facilities. South Australia and Tasmania will have a much larger shortfall of 45.1 and 50.0 percent respectively.

The impact on a farm business plan for financing the replacement of facilities is significant. Farmers will have to modify plans for replacement of facilities, determine the effect on farm cash flow and perhaps restructure current loans. Their ability to finance the facility replacement and to service a loan is an issue for many farms.

The scale of investment needed for new facilities is high. The cost for new cages installed in an existing shed is estimated at \$16-18 per hen. To replace all the cage capacity not meeting the 1995 Code with new cages would cost approximately \$145 million. New cages and a new controlled environment shed is estimated at \$30-34 per hen housed including installation and erection. The replacement cost for new cages and shedding is approximately \$274 million. This does not include the cost of land, provision of services (internal roads, water supply and electricity), local authority and environmental approvals, site preparation, staff residences and standby electrical generation

equipment. These costs will vary depending on State, local authority area, topography and other local factors.

To ensure that there is sufficient egg production facilities that meet the 1995 Code at 2008 the Australian egg industry needs to develop and implement a strategy that will encourage farmers to invest in sufficient upgraded facilities that will enable it to meet expected consumer demand for eggs at 2008. The strategy must provide outcomes that will enable current farmers to see a future in the industry and that prices will be adequate to reward them for re-investing in the industry.

In summary the survey of Australian egg farmers was conducted to determine the impact of the August 2000 ARMCANZ decision on the egg industry. The survey results received represent 98 percent of the estimated layer farms in Australia.

- New cage, barn or free range facilities that will meet the 1995 Code at 2008 are needed to replace 75 percent (8.55 million hens) of the hens housed in cages that will not comply at January 2008.
- The cost to replace the non-complying cages with new cages and shedding is estimated at \$274 million exclusive of the cost of land, services, approvals, site preparation etc.
- Farmers expressed concern that their ability to borrow funds to upgrade facilities has been reduced following the ARMCANZ decisions due to devaluation of their asset base.
- There will be 3.05 million or 27 percent shortfall in laying capacity at 2008 due to farmers intending to leave the industry.
- Fifty-eight percent of farmers with 39 percent of the cage capacity are unsure about whether to retire or to invest in new facilities because of low prices, market disruption and uncertainty about the future prospects in the industry.
- Fourteen farmers with 0.48 million layer capacity indicated they will stay in the industry if financial assistance were available. Twenty-four farmers with 2.03 million cage capacity who are already prepared to stay indicated that they would put new equipment in new shedding instead of using existing sheds.
- The most significant feature disqualifying cages from meeting the 1995 Code was door width (56 percent of cage capacity). Another 13 percent of cages had adequate door width but other disqualifying features.
- There is a potential for reducing feed costs in the egg industry by \$4.95 million if the 35 percent of hens experiencing temperatures of less than 10°C at night were housed in insulated sheds with an effective minimum ventilation system.
- Cages with 9 percent of the cage capacity have the potential to be modified to meet the 1995 Code. Another 17 percent of cage capacity has some potential for modification.
- Cage modification is not expensive. However farmers must consider the effects that production inefficiencies inherent in old cages and the reduced stocking density will have on the farms long term viability.
- Forty-one percent of the cages are over 20 years of age.
- Some cages were recorded as having flat deck cages with a door in the top of the cage rather than in the cage front. Clarification is required as to whether a larger door is acceptable or if the door must be the full width of the cage to comply with the 1995 Code.

# 1 Introduction

In August 2000 ARMCANZ (Agriculture and Resource Management Council of Australia and New Zealand) considered the reports on the 'Review of Layer Hen Housing and Labelling of Eggs in Australia' and the 'Layer Hen Housing Conference' and made the following decisions on layer cage housing.

- 1) All new cage systems commissioned from 1 January 2001 must provide a floor space of 550cm<sup>2</sup> per bird including the baffle area for cages with three or more birds per cage and 675cm<sup>2</sup> for cages with less than three birds per cage.
- 2) All cage systems that do not meet 1995 standards are to be scrapped on or before 1 January 2008 unless they are modified by then to meet the contemporary standards at that time. At 2008 the cages that meet the 1995 standards must provide a floor space of 550cm<sup>2</sup> per bird including the baffle area for cages with three or more birds per cage and 675cm<sup>2</sup> for cages with less than three birds per cage.
- 3) All cage systems that comply with 1995 standards, or if constructed after 1995 the standards current at the time of construction, are to have an economic operative life of 20 calendar years from established date of purchase but must comply with the contemporary standards after that time. Cages, which cannot be adapted to meet these new standards, must be scrapped.
- 4) ARMCANZ agrees any decision to further revise standards for conventional cages should await the outcome of the research and development result indicating that furnished cages, a barn laid system and/or a free range system can support a commercially viable egg production industry.

These decisions are subject to endorsement by each State and Territory Government and are the basis to achieve improved hen welfare outcomes in Australia.

There is a large variation in the estimates of the number of laying hens housed in cages, which do not meet the 1995 standards. Estimates vary due to different interpretations of the ARMCANZ decision and estimates of the numbers of different cage types and sizes in use. It is important to establish the number of each cage type so that an estimate can be made of the cost of the impact on the industry of the ARMCANZ decision and to assist planning for the future.

The Australian egg industry is presently valued at \$337 million with production of 189.4 million dozen eggs per annum.

## 2 Objectives

A survey of the Australian egg industry was undertaken to:

- Ascertain the facilities presently available for egg production in Australia.
- Determine the effect of the August 2000 ARMCANZ decision on the current egg production facilities.
- Determine the future intentions of egg farmers.
- Assist egg farmers to determine if their cages will meet the Model Code of Practice for the Welfare of Animals – Domestic Poultry, Third Edition 1995 at 1 January 2008 (1995 Code).

### 3 Methodology

The questionnaire was designed to provide information to egg farmers on the impact of the ARMCANZ decisions on cage specifications, to assist egg farmers in making decisions about their future and to collect information on the following items –

- Type of enterprise
- Farm size (number of hens)
- Farm changes made due to the ARMCANZ decision
- Dimensions, number and age of cages
- Future intentions
- Cage modification
- Type of housing used
- Ventilation system used in the house
- Shed temperatures

Information on the 1995 Code regarding cages and how to apply it in their situation was attached to the questionnaire. See Sections 9.02, 9.03 and 9.04.

Both the AEIA and PISC (Primary Industries Standing Committee) working groups were consulted to ensure that the survey form design would collect information these bodies required. Both groups are considering possible assistance that may help the industry to overcome the impact of the 2000 ARMCANZ decision on labelling and cage welfare requirements.

A total of 709 farmers were surveyed during the period November 2001 to July 2002. Initially, survey forms were mailed to 641 egg farmers in Australia for whom addresses were available. Due to a poor response to the first mail out two further mail outs were made approximately four weeks apart. Farmers who had not responded were then contacted by telephone and encouraged to complete the survey forms. Up to three telephone contacts were made. Farmers were also encouraged to complete the questionnaire over the telephone. The biggest stumbling block for a farmer to fill in the form was providing the cage dimensions. Many farmers did not have this information on hand and had to go down to the shed and measure. The pressure on their time and more pressing issues meant this was a low priority for them.

During the course of the survey, industry members provided 68 names of egg farmers not on the initial address list. These people were contacted by telephone and if required the questionnaire was faxed or mailed to them. Free range and barn egg farmers were asked to complete the first page only of the questionnaire.

The information from the questionnaires was entered into an electronic database, collated and analysed. Cage capacity was calculated as the potential capacity when stocked at 450cm<sup>2</sup> of floor space per hen. For one or two bird cages it was calculated at 675cm<sup>2</sup> per hen. The capacity for non cage systems was reported as the actual hen numbers housed in these systems at the time of the survey.

Twenty of the thirty-two farmers who completed the questionnaire and had considered how to modify cages to meet the 1995 Code requirements and/or had indicated that they wished to participate in a research project on modifying cages were selected for a more detailed investigation into the feasibility of modifying cages. These farms were visited and the possible ways to modify the cages discussed in the shed.

The farms were selected from Queensland and New South Wales to keep travel costs to a minimum. Farms in other States who had indicated their willingness to participate did not appear to have any different features or ideas in their cages compared to the farms selected.

Discussions were also held with an Australian cage supplier with experience in cage design, manufacture and installation on how cages may be modified and what costs were involved in making these changes.

## **4 Results**

### **4.1 Survey Return Rate**

Completed survey forms or some farm information from 697 farms (or 98 percent of known egg farmers) were received by mail, fax or telephone. Of these, 252 farmers indicated they had left the industry before 2000. Two hundred and ninety-seven forms were received from farms with cage facilities and 148 from non-cage farms with barn and/or free range facilities. Twelve known farms did not respond to phone calls or letters.

Of the 297 returns from farms with cages, 66 farms did not supply complete information. Seven of these refused to participate and are estimated to carry approximately 155,000 hens. The others indicated whether they are staying in or leaving the industry and the type of facilities and numbers of hen housed in each on their farm. They were not prepared to provide details on their cages or future intentions because of the time involved in collecting it. This leaves 231 fully completed cage returns. The cage farms may also have non-cage egg production systems. Some questionnaires contained data for two or more farms because the lessee and not the owner supplied the data (35 farms)

### **4.2 Treatment of and confidentiality of farm data**

The data from the fully completed cage returns only was used in sections 4.07 (enterprise changes since August 2000), 4.08 (farms and cages meeting the 1995 Code), 4.09 (farmers' future intentions), 4.10 (sets of cages on farms), 4.11 (cage sizes), 4.12 (responses to questions on features disqualifying cages), 4.13 (features disqualifying cages), 4.14 (top opening doors), 4.15 (cage stocking density change), 4.16 (age of cages), 4.17 (cage modification), 4.18 (how to modify cages), 4.19 (modifiable cages), 4.20 (cost of modification), 4.21 (removal of cage partitions), 4.22 (layer cage occupancy) and 4.23 (comments by layer cage farmers), 4.24 (future shedding plans), 4.25 (cage style or configuration), 4.26 (cage condition), 4.27 (shed style and ventilation type), 4.28 (shed temperature). In other sections the data from the partially and fully completed returns was combined.

Due to the small number of farms and hens in the Northern Territory and Tasmania the figures for these States are not disaggregated in all tables. This has been done to preserve confidentiality of information. Farms in the Australian Capital Territory are included with the New South Wales data.

### **4.3 Cage Farms Surveyed**

Information according to farm size on the number and percentage of farms and hens for all the cage layer farms that were contacted and still in the industry at August 2000 is presented in Table 1(a) and on cage capacity at the current stocking density in Table 1(b) and 1(c). It includes the estimated hen capacity for the seven farms that refused to complete the questionnaire.

In total 297 layer cage farms with capacity for 11.39 million hens were contacted.

**Table 1(a) Number and percent of cage farms by farm size for all cage layer farms surveyed.  
(Percent bracketed).**

State	1- 999	1,000- 9,999	10,000- 24,999	25,000 - 49,999	50,000 - 99,999	100,000 plus	Total
NSW	0 (0%)	15 (16%)	36 (39%)	12 (13%)	19 (20%)	11 (12%)	93 (100%)
QLD	1 (2 )	20 (35 )	16 (28 )	14 (25 )	1 ( 2 )	5 ( 9 )	57 (100 )
SA	2 (8 )	8 (31 )	9 (35 )	3 (12 )	3 (12 )	1 ( 4 )	26 (100 )
VIC	0 (0 )	18 (26 )	20 (29 )	10 (14 )	10 (14 )	11 (16 )	69 (100 )
WA	0 (0 )	23 (52 )	10 (23 )	10 (23 )	0 ( 0 )	1 ( 2 )	44 (100 )
Sub Total	3 (1 )	84 (28 )	90 (31 )	49 (16 )	33 (11 )	29 (10 )	289 (97 )
NT							2 (100 )
TAS							6 (100 )
Australia							297 (100 )

**Table 1(b) Cage capacity at current stocking density on cage farms by farm size for all cage layer farms surveyed.**

State	1- 999	1,000- 9,999	10,000- 24,999	25,000- 49,999	50,000- 99,999	100,000 plus	Total
NSW	0	115,790	600,135	360,539	1,162,218	2,370,532	4,609,126
QLD	1,052	132,659	265,832	475,300	75,000	1,223,059	2,172,902
SA	1,386	43,484	150,272	73,978	175,696	145,650	590,466
VIC	0	109,444	289,830	341,640	731,822	1,339,386	2,812,122
WA	0	174,130	137,860	300,873	0	307,200	920,663
Sub Total	2,438	575,419	1,443,929	1,552,330	2,144,736	5,385,827	11,104,679
NT							158,616
TAS							121,760
Australia							11,385,055

**Table 1(c) Cage capacity at current stocking density on cage farms by farm size for all cage layer farms surveyed as a percentage.**

State	1- 999	1,000- 9,999	10,000- 24,999	25,000- 49,999	50,000- 99,999	100,000 plus	Total
NSW	0.0	2.5	13.0	7.8	25.2	51.4	100.0
QLD	0.0	6.1	12.2	21.9	3.5	56.3	100.0
SA	0.2	7.4	25.4	12.5	29.8	24.7	100.0
VIC	0.0	3.9	10.3	12.1	26.0	47.6	100.0
WA	0.0	18.9	15.0	32.7	0.0	33.4	100.0
Sub Total	0.0	5.1	12.7	13.6	18.8	47.3	97.5
NT							100.0
TAS							100.0
Australia							100.0

#### 4.4 Cage Farms with Fully Completed Forms

Two hundred and thirty one of the 297 cage farms returned fully completed survey forms. Information on the number of and cage capacity at the current stocking density for these farms is presented in Tables 2(a) and 2(b) as a percentage of all the participating cage farms. The cage capacity represented by the fully completed forms is 9.85 million hens.

**Table 2(a) Number of cage farms with full data as percentage of all cage farms surveyed by farm size.**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	All Farms
NSW	0	80	75	83	79	91	80
QLD	100	90	100	79	0	100	89
SA	100	63	89	100	100	100	85
VIC	0	28	70	100	80	91	68
WA	0	61	60	100	0	100	70
Sub Total	100	64	78	90	79	93	78
NT							50
TAS							83
Australia							78

**Table 2(b) Cage capacity at current stocking density on farms with full data as percentage of all cage farms surveyed by farm size.**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	All Farms
NSW	0	78	76	85	73	88	82
QLD	100	94	100	84	0	100	93
SA	100	81	91	100	100	100	96
VIC	0	37	74	100	80	90	85
WA	0	77	70	100	0	100	93
Sub Total	100	74	81	92	75	92	86
NT							91
TAS							96
Australia							87

## 4.5 Farms with Non-cage Production Systems

Information on the number and percentage of farms and hens housed that participated in the survey with hens housed in non-cage production facilities on non-cage farms is presented in Tables 3(a), 3(b) and 3(c). Non-cage systems are those with either free range and/or barn production facilities. This table does not include the 0.71 million hens housed in free range or barn facilities on cage farms. The number of hens in non-cage facilities is for the number of hens housed at the time. It may not be the actual hen capacity of the facilities.

**Table 3(a) Number and percent of non-cage farms by size (percent bracketed).**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Total
NSW	5 (17%)	12 (41%)	9 (31%)	1 (3%)	2 (7%)	0 (0%)	29 (100%)
QLD	3 (13)	18 (75)	3 (13)	0 (0)	0 (0)	0 (0)	24 (100)
SA	3 (23)	9 (69)	1 (8)	0 (0)	0 (0)	0 (0)	13 (100)
VIC	2 (3)	55 (83)	7 (11)	2 (3)	0 (0)	0 (0)	66 (100)
WA	5 (36)	6 (43)	2 (14)	0 (0)	1 (7)	0 (0)	14 (100)
Sub Total	18 (12)	100 (68)	22 (15)	3 (2)	3 (2)	0 (0)	146 (99)
NT							1 (100)
TAS							1 (100)
Australia							148 (100)



**Table 3(b) Number of hens housed on non-cage farms by size.**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Total
NSW	4,500	53,500	150,000	27,000	73,500	0	308,500
QLD	1,500	68,750	37,000	0	0	0	107,250
SA	1,900	29,800	20,000	0	0	0	51,700
VIC	2,500	209,300	108,000	57,000	0	0	376,800
WA	2,225	14,100	23,500	0	55,000	0	94,825
Sub Total	12,625	375,450	338,500	84,000	128,500	0	939,075
NT							8,000
TAS							3,000
Australia							950,075

**Table 3(c) Percentage of hens housed on non-cage farms by size.**

State	1- 999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Total
NSW	1	17	49	9	24	0	100
QLD	1	64	34	0	0	0	100
SA	4	58	39	0	0	0	100
VIC	1	56	29	15	0	0	100
WA	2	15	25	0	58	0	100
subtotal	1	40	36	9	14	0	99
NT							100
TAS							100
Australia							100

## 4.6 Structure of the Egg Industry

The survey indicates that there are facilities for 13.05 million laying hens in Australia. The cage system accounts for 87.2 percent of the facilities. Total free range capacity is 1.01 million hens (7.8 percent) and barn production is 0.66 million hens (5.0 percent). There are 0.24 million free range hens and 0.47 million barn hens housed on layer cage farms. At least nine non-cage farms with 0.23 million hens are either owned by, leased by or contracted to cage farm operators.

Information on the number and percent of hens in each production system for each State is presented in Table 4(a) and 4(b).

**Table 4(a) Cage capacity for the cage system and the number of hens housed in the free range and barn systems.**

State	Cages	Free range	Barn	Total All systems	Total Non Cage
NSW	4,609,126	339,700	161,000	5,109,826	500,700
QLD	2,172,902	132,855	104,540	2,410,297	237,395
SA	590,466	44,800	36,500	671,766	81,300
VIC	2,812,122	383,880	265,500	3,461,502	649,380
WA	920,063	100,235	73,490	1,093,788	173,725
Subtotal	11,104,679	1,001,470	641,030	12,747,179	1,642,500
NT	158,616	10,000	0	168,616	10,000
TAS	121,760	2,046	14,500	138,306	16,546
Australia	11,385,055	1,013,516	655,330	13,054,101	1,669,046

**Table 4(b) Cage capacity for the cage system and the number of hens housed in the free range and barn systems as a percentage.**

State	Cages	Free range	Barn	Total	Total Non Cage
NSW	35.3	2.6	1.2	39.1	3.8
QLD	16.6	1.0	0.8	18.5	1.8
SA	4.5	0.3	0.3	5.1	0.6
VIC	21.5	2.9	2.0	26.5	5.0
WA	7.0	0.8	0.6	9.8	1.3
Subtotal	85.1	7.7	4.9	97.6	12.6
NT	1.2	0.1	0.0	1.3	0.1
TAS	0.9	0.0	0.1	1.1	0.1
Australia	87.2	7.8	5.0	100.0	12.8

Information on the number and percent of farms in each production system as combined on farms for each State is presented in Table 5(a) and 5(b). Each State's percentage share of farms in each production system is presented in Table 5(c). There are 445 farms recorded in the survey in Australia of which 297 produce eggs in cages.

**Table 5(a) Number of farms in each combination of production systems used.**

State	Cage farms				Non cage farms			Total
	Cages only	& free range only	& barn only	& free range & barn	Free range only	Barn only	Free range & barn	
NSW	80	8	2	3	27	2	0	122
QLD	41	7	8	1	21	3	0	81
SA	21	1	1	3	8	5	0	39
VIC	53	9	4	3	60	5	1	135
WA	32	4	6	2	12	0	2	58
Subtotal	227	29	21	12	128	15	3	435
NT								3
TAS								7
Australia								445

**Table 5(b) Percentage of farms in each production combination of systems on a State basis.**

State	Cage farms				Non cage farms			Total
	Cages only	& free range only	& barn only	& free range & barn	Free range only	Barn only	Free range & barn	
NSW	65.6	6.6	1.6	2.5	22.1	1.6	0.0	100
QLD	50.6	8.6	9.9	1.2	25.9	3.7	0.0	100
SA	53.8	2.6	2.6	7.7	20.5	12.8	0.0	100
VIC	39.3	6.7	3.0	2.2	44.4	3.7	0.7	100
WA	55.2	6.9	10.3	3.4	20.7	0.0	3.4	100
Subtotal	51.0	6.5	4.7	2.7	28.8	3.4	0.7	98
NT								100
TAS								100
Australia								100

**Table 5(c) Percentage of farms in each State on a combination of production system basis.**

State	Cage farms				Non cage farms			Total
	Cages only	& free range only	& barn only	& free range & barn	Free range only	Barn only	Free range & barn	
NSW	34.6	25.8	8.7	25.0	20.9	13.3	0.0	27.4
QLD	17.7	22.6	34.8	8.3	16.3	20.0	0.0	18.2
SA	9.1	3.2	4.3	25.0	6.2	33.3	0.0	8.8
VIC	22.9	29.0	17.4	25.0	46.5	33.3	25.0	30.3
WA	13.9	12.9	26.1	16.7	9.3	0.0	50.0	13.0
Subtotal	98.3	93.5	91.3	100.0	99.2	100.0	75.0	97.8
NT								0.7
TAS								1.6
Australia								100

The number of hens and percent of hens in each production system is presented in Tables 6(a) and 6(b) on a State basis. Each State's percentage share of hens in Australia as farm capacity in each production system is presented in Table 6(c). The number of hens is estimated as cage capacity at the current stocking density and as hens housed for non-cage systems.

**Table 6(a) Number of hens in each combination of production systems used.**

State	Cage farms				Non cage farms			Total
	Cages only	& free range only	& barn only	& free range & barn	Free range only	Barn only	Free range & barn	
NSW	4,354,326	183,000	154,200	109,800	281,500	27,000	0	5,109,826
QLD	1,859,302	183,305	210,840	49,600	76,750	30,500	0	2,410,297
SA	492,466	20,600	21,600	85,400	34,200	17,500	0	671,766
VIC	2,498,522	236,780		178,000	298,800	60,000	18,000	3,461,502
WA	684,863	94,900	150,000	69,200	20,825	0	74,000	1,093,788
Subtotal	9,889,479	718,585	708,040	492,000	712,075	135,000	92,000	12,747,179
NT								168,616
TAS								138,306
Australia								13,054,101

**Table 6(b) Percentage of hens in each combination of production systems on a State basis.**

State	Cage farms				Non cage farms			Total
	Cages only	& free range only	& barn only	& free range & barn	Free range only	Barn only	Free range & barn	
NSW	85.2	3.6	3.1	2.1	5.5	0.5	0.0	100
QLD	77.1	7.6	8.7	2.1	3.2	1.3	0.0	100
SA	73.3	3.0	3.2	12.7	5.1	2.6	0.0	100
VIC	72.2	6.8	5.0	5.1	8.6	1.7	0.5	100
WA	62.6	8.7	13.7	6.3	1.9	0.0	6.8	100
Subtotal	75.8	5.5	5.4	3.8	5.5	1.0	0.7	98
NT								100
TAS								100
Australia								100

**Table 6(c) Percentage of hens in each State on a combination of production system basis.**

State	Cage farms				Non cage farms			Total
	Cages only	& free range only	& barn only	& free range & barn	Free range only	Barn only	Free range & barn	
NSW	43.1	24.1	20.3	22.3	39.1	20.0	0.0	39.1
QLD	18.4	24.1	27.7	10.1	10.7	22.6	0.0	18.5
SA	4.9	2.7	2.8	17.4	4.7	13.0	0.0	5.1
VIC	24.8	31.1	22.5	36.2	41.5	44.4	18.9	26.5
WA	6.8	12.5	19.7	14.1	2.9	0.0	77.9	8.4
Subtotal	98.0	94.5	93.1	100.0	98.9	100.0	96.8	97.6
NT								1.3
TAS								1.1
Australia								100

Information on the number of farms and capacity for cage systems combined with the hens housed in the non-cage systems is presented in Tables 7(a), 7(b) and 7(c).

**Table 7(a) Number and percent of egg farms (all systems) by farm size (percentage in brackets).**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Totals
NSW	5 (4%)	27 (22%)	45 (37%)	13 (11%)	21 (17%)	11 (9%)	122 (100%)
QLD	4 (5)	38 (47)	19 (23)	14 (17)	1 (1)	5 (6)	81 (100)
SA	5 (13)	17 (44)	10 (26)	3 (8)	3 (8)	1 (3)	39 (100)
VIC	2 (1)	73 (54)	27 (20)	12 (9)	10 (7)	11 (8)	135 (100)
WA	5 (9)	29 (50)	11 (21)	10 (17)	1 (2)	1 (2)	58 (100)
Subtotal	21 (5)	184 (41)	113 (25)	52 (12)	36 (8)	29 (7)	435 (98)
NT							3 (100)
TAS							7 (100)
Australia							445 (100)

**Table 7(b) Total number of hens (all systems) as cage capacity at current stocking density for cage systems and number of hens housed for non-cage systems by farm size.**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Totals
NSW	4,500	169,502	754,035	389,539	1,292,718	2,499,532	5,109,826
QLD	2,552	214,809	336,677	490,200	75,000	1,291,059	2,410,297
SA	3,286	74,284	173,872	73,978	184,696	161,650	671,766
VIC	2,500	320,094	414,330	426,470	757,522	1,540,586	3,461,502
WA	2,225	206,730	188,160	334,473	55,000	307,200	1,093,788
Subtotal	15,063	985,419	1,867,074	1,714,660	2,364,936	5,800,027	12,747,179
NT							168,616
TAS							138,306
Australia							13,054,101

**Table 7(c) Percentage of hens (all systems) as cage capacity at current stocking density and number of hens housed in non-cage systems by farm size.**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Total
NSW	0.1	3.3	14.8	7.6	25.3	48.9	100.0
QLD	0.1	8.9	14.0	20.3	3.1	53.6	100.0
SA	0.5	11.1	25.9	11.0	27.5	24.1	100.0
VIC	0.1	9.2	12.0	12.3	21.9	44.5	100.0
WA	0.2	18.9	17.2	30.6	5.0	28.1	100.0
Subtotal	0.1	7.5	14.3	13.1	18.1	44.4	97.6
NT							100.0
TAS							100.0
Australia							100.0

The number of farms and hens housed in non-cage facilities is presented in Tables 8(a), 8(b) and 8(c). This is broken down into free range and barn facilities in Tables 9(a), 9(b) and 9(c) and 10(a), 10(b) and 10(c) respectively. Note that because some farms have both free range and barn production facilities the number of farms in Table 8(a) will not agree with the number of farms in Tables 9(a) and 10(a).

**Table 8(a) Number and percentage of farms with non-cage egg production facilities by farm size (percent bracketed).**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Total
NSW	8 (19%)	16 (38%)	13 (31%)	3 (7%)	2 (5%)	0 (0%)	42 (100%)
QLD	6 (15 )	26 (65 )	7 (18 )	1 (3 )	0 (0 )	0 (0 )	40 (100 )
SA	3 (17 )	13 (72 )	2 (11 )	0 (0 )	0 (0 )	0 (0 )	18 (100 )
VIC	5 ( 6 )	59 (72 )	13 (16 )	3 (4 )	2 (2 )	0 (0 )	82 (100 )
WA	4 (15 )	19 (73 )	2 ( 8 )	0 (0 )	1 (4 )	0 (0 )	26 (100 )
Subtotal	26 (12 )	133(62 )	37 (17 )	7 (3 )	5 (2 )	0 (0 )	208 ( 97 )
NT							2 ( 100 )
TAS							4 ( 100 )
Australia							214 (100 )

**Table 8(b) Number of hens housed in non-cage egg production facilities by farm size.**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Total
NSW	4,700	55,000	203,000	99,000	139,000	0	500,700
QLD	2,745	102,650	102,000	30,000	0	0	237,395
SA	1,900	43,400	36,000	0	0	0	81,300
VIC	2,000	222,050	193,330	82,000	150,000	0	649,380
WA	1,225	76,500	41,000	0	55,000	0	173,725
Subtotal	12,570	499,600	575,330	211,000	344,000	0	1,642,500
NT							10,000
TAS							16,546
Australia							1,669,046

**Table 8(c) Percentage of hens housed in non-cage egg production facilities by farm size.**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Total
NSW	0.9	11.0	40.5	19.8	27.8	0.0	100
QLD	1.2	43.2	43.0	12.6	0.0	0.0	100
SA	2.3	53.4	44.3	0.0	0.0	0.0	100
VIC	0.3	34.2	29.8	12.6	23.1	0.0	100
WA	0.7	44.0	23.6	0.0	31.7	0.0	100
Subtotal	0.8	29.9	34.5	12.6	20.6	0.0	98
NT							100
TAS							100
Australia							100

**Table 9(a) Number and percentage of farms with free range facilities by farm size (percent bracketed).**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Total
NSW	8 (21%)	17 (45%)	11 (29%)	1 (3%)	1 (3%)	0 (0%)	38 (100%)
QLD	4 (14 )	20 (69 )	5 (17 )	0 (0 )	0 (0 )	0 (0 )	29 (100 )
SA	4 (33 )	7 (58 )	1 (8 )	0 (0 )	0 (0 )	0 (0 )	12 (100 )
VIC	4 ( 5 )	58 (79 )	10 (14 )	1 (1 )	0 (0 )	0 (0 )	73 (100 )
WA	4 (20 )	13 (65 )	2 (10 )	1 (5 )	0 (0 )	0 (0 )	20 (100 )
Subtotal	24 (14 )	115 ( 65 )	29 (16 )	3 (2 )	1 (1 )	0 (0 )	172 ( 98 )
NT							2 (100 )
TAS							2 (100 )
Australia							176 (100 )

**Table 9(b) Number of hens housed in free range facilities by farm size.**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Total
NSW	4,700	64,000	176,000	27,000	68,000	0	339,700
QLD	2,105	71,750	59,000	0	0	0	132,855
SA	2,500	22,300	20,000	0	0	0	44,800
VIC	1,500	211,250	146,130	25,000	0	0	383,880
WA	1,225	40,100	28,910	30,000	0	0	100,235
Subtotal	12,030	409,400	430,040	82,000	68,000	0	1,001,470
NT							10,000
TAS							2,046
Australia							1,013,516

**Table 9(c) Percentage of hens housed in free range facilities by farm size.**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Total
NSW	1.4	18.8	51.8	7.9	20.0	0.0	100
QLD	1.6	54.0	44.4	0.0	0.0	0.0	100
SA	5.6	49.8	44.6	0.0	0.0	0.0	100
VIC	0.4	55.0	38.1	6.5	0.0	0.0	100
WA	1.2	40.0	28.8	29.9	0.0	0.0	100
Subtotal	1.2	40.4	42.4	8.1	6.7	0.0	99
NT							100
TAS							100
Australia							100

**Table 10(a) Number and percentage of farms with barn facilities by farm size (percent bracketed).**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Total
NSW	0 (0%)	4 (14%)	1 (3%)	1 (3%)	1 (3%)	0 (0%)	7 (24%)
QLD	2 (17 )	6 (25 )	4 (17 )	0 (0 )	0 (0 )	0 (0 )	12 (58 )
SA	0 (0 )	8 (62 )	1 (8 )	0 (0 )	0 (0 )	0 (0 )	9 (69 )
VIC	1 (8 )	5 (8 )	3 (5 )	2 (3 )	2 (3 )	0 (0 )	13 (26 )
WA	0 (0 )	8 (57 )	1 (7 )	1 (7 )	0 (0 )	0 (0 )	10 (71 )
Subtotal	3 (6 )	31 (57 )	10 (19)	4 (7 )	3 (6 )	0 (0 )	51 (94 )
NT							0 (0 )
TAS							3 (100)
Australia							54 (100)

**Table 10(b) Number of hens housed in barn facilities by farm size.**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Total
NSW	0	22,000	24,000	44,000	71,000	0	161,000
QLD	640	30,900	73,000	0	0	0	104,540
SA	0	26,500	10,000	0	0	0	36,500
VIC	500	33,500	34,500	57,000	140,000	0	265,500
WA	0	38,490	10,000	25,000	0	0	73,490
Subtotal	1,140	151,390	151,500	126,000	211,000	0	641,030
NT							0
TAS							14,500
Australia							655,530

**Table 10(c) Percentage of hens housed in barn facilities by farm size.**

State	1-999	1,000-9,999	10,000-24,999	25,000-49,999	50,000-99,999	100,000 plus	Total
NSW	0.0	13.7	14.9	27.3	44.1	0.0	100
QLD	0.6	29.6	69.8	0.0	0.0	0.0	100
SA	0.0	72.6	27.4	0.0	0.0	0.0	100
VIC	0.2	12.6	13.0	21.5	52.7	0.0	100
WA	0.0	52.4	13.6	34.0	0.0	0.0	100
Subtotal	0.2	23.1	23.1	19.2	32.2	0.0	98
NT							0
TAS							100
Australia							100

## 4.7 Enterprise Changes since August 2000

Farmers with cage facilities who had provided fully completed questionnaires were asked if they had made changes to their flock management or egg enterprise facilities as a result of the ARMCANZ decision in August 2000. Flock management changes resulted in a net increase of 0.13 million hens. See Table 11(a). This change is small and unlikely to be significant in view of other changes occurring that are not related to the ARMCANZ decision.

Sixty-five farmers with cage systems who had provided fully completed returns indicated that they delayed orders for new cages and 61 farmers delayed orders for new shedding as a result of the ARMCANZ decision. These farms currently carry about 2.78 and 2.51 million hens in cages respectively. See Table 11(b).

**Table 11(a) Flock management changes made by cage farmers as a result of the ARMCANZ decision.**

Management Procedure	Number of farms	Farm capacity (hens)
Scrapped caged housing	19	-305,256
Increased free range hens	12	+91,205
Increased barn hens	12	+116,500
Increased number of cage layers	9	+493,200
Decreased number of cage layers	27	-261,872
Net effect on hen numbers	--	+133,777

**Table 11(b) Changes made to management of laying facilities by cage farmers as a result of the ARMCANZ decision.**

Management Procedure	Number of farms	Farm capacity (hens)
Increased non-poultry enterprises	22	759,739
Delayed ordering cages	65	2,783,461
Delayed ordering new shedding	61	2,507,521
Modified orders for cages	10	760,644
Modified orders for shedding	10	791,552
Other	29	311,884

## 4.8 Farms and Cages meeting the 1995 Code

Six percent of layer farms (13 farms) that provided fully completed questionnaires in Australia with a cage capacity of 1.00 million hens (10.1 percent) are equipped only with cages that meet the 1995 Code. Seventy-nine percent or 183 farms have only cages that do not meet the Code and fifteen percent have a mixture of cages that either meet or do not meet the Code. See Tables 12(a), 12(b) and 12(c).

**Table 12(a) Number and percent of farms with cages meeting or not meeting 1995 Code by State.**

State	Number of Farms			Total
	Not meeting 1995 Code only	Meeting 1995 Code only	Meeting & not meeting 1995 Code	
NSW	62 (26.8%)	4 (1.7%)	8 ( 3.5%)	74 ( 32.0%)
QLD	40 (17.7 )	3 (1.3 )	8 ( 3.5 )	51 ( 22.1 )
SA	19 ( 8.2 )	0 (0.0 )	3 ( 1.3 )	22 ( 9.5 )
VIC	32 (13.9 )	4 (1.7 )	11 ( 4.8 )	47 ( 20.3 )
WA	23 (10.0 )	2 (0.9 )	6 ( 2.6 )	31 ( 13.4 )
Subtotal	176 (76.2 )	13 (5.6 )	36 (15.6 )	225 ( 97.4 )
NT				1 ( 0.4 )
TAS				5 ( 2.2 )
Australia	183 (79.2 )	13 (5.6 )	35 (15.2 )	231 (100.0 )



**Table 12(b) Cage capacity of farms meeting or not meeting 1995 Code by State.**

State	Cage capacity (hens)				Total
	Not meeting 1995 Code only	Meeting 1995 Code only	Combined Farms		
			Not meeting 1995 Code	Meeting 1995 Code	
NSW	1,871,087	295,200	372,299	751,940	3,790,526
QLD	651,718	80,960	652,588	626,136	2,011,402
SA	351,152	0	154,566	62,448	568,166
VIC	1,297,652	233,376	343,674	505,020	2,379,722
WA	333,522	342,200	95,701	66,640	838,063
Subtotal	4,505,131	951,736	2,118,828	2,012,184	9,587,879
NT					143,616
TAS					116,760
Australia	4,576,387	997,240	2,199,468	2,075,160	9,848,255

**Table 12(c) Percent of cage capacity of farms meeting or not meeting the 1995 Code by State.**

State	Cage capacity (hens)				Total
	Not meeting 1995 Code only	Meeting 1995 Code only	Combined farms		
			Not meeting 1995 Code	Meeting 1995 Code	
NSW	19.0	3.0	8.9	7.6	38.5
QLD	6.6	0.8	6.6	6.4	20.4
SA	3.6	0.0	1.6	0.6	5.8
VIC	13.2	2.4	3.5	5.1	24.2
WA	3.4	3.5	1.0	0.7	8.5
Subtotal	45.7	9.7	21.5	20.4	97.4
NT					1.5
TAS					1.2
Australia	46.5	10.1	22.3	21.1	100.0

## 4.9 Farmers Future Intentions

Farmers with cage facilities who returned fully completed forms were asked to indicate:

- What their future intentions were.
- What their intentions were if they intended to stay in the egg industry after 2008 and had cages that did not meet the 1995 Code.
- What changes they would make to their future intentions if financial assistance were available from Government.

Farmers responses to these questions is presented in Appendix 1(a) and 1(b). The data was grouped to summarise it and is presented for Australia and each State in Appendices 2(a) through to 2(g). The data for Australia is summarised below in Tables 13(a), 13(b) and 13(c).

Twenty farmers most of whom did not fully complete the survey form indicated that they intended to leave the industry by the end of 2002. These farms had a capacity for 0.33 million hens.

### 4.9.1 Farmers initial intentions

Fifty-eight percent of farmers (134 farms) with 38.7 percent of layer cage capacity (3.81 million hens) indicated that they were unsure about their future intentions. They had not decided whether to stay or leave the industry. Thirty-nine farmers (16.9 percent of farmers) indicated that they would leave the industry by 2008 and 25.1 percent said they would stay. The data suggests it is the smaller farmers who wish to leave and mainly the small to medium size farmers who are unsure about what to do in the future. See Table 13(a). Comments made by farmers also suggest that the small cage

farmers feel pressured to leave the industry due to the ARMCANZ decision and the effect of low egg prices. See Table 27 also.

**Table 13(a) Summary of Australian farmers future intentions.**

<b>Farmers future intentions</b>	<b>%</b>	<b>%</b>
	<b>Farms</b>	<b>Cage capacity</b>
Leave the industry by 2008	16.9	6.8
Stay in the industry	25.1	54.5
Farmers still considering their future options	58.0	38.7
Includes farmers:		
- still considering future options and unsure if and when to leave the industry	(6.9)	(4.2)
- still considering future options and may stay in the industry	(17.3)	(14.8)
- still considering future options and have made no choices about their future intentions	(33.8)	(19.7)
Total participants	100.0	100.0

#### **4.9.2 Farmers intentions if staying in the industry**

Almost all of the cage layer farmers who indicated that they would stay in the industry indicated they had definite plans for upgrading their layer facilities. The intention is to replace the majority of facilities with cages that meet the standards applying at the time. The survey does not clearly differentiate what farmers' intentions were on upgrading their facilities prior to the August 2000 ARMCANZ decision. There is some indication in the farmers' comments that some farmers did intend to upgrade but over a longer time frame. See Table 13(b).

**Table 13(b) Summary of the intentions of Australian cage egg farmers staying in the egg industry after 2008.**

<b>Farmers intentions if staying in industry</b>	<b>%</b>	<b>%</b>
	<b>Farms</b>	<b>Cage capacity</b>
Farmers with firm intentions on updating facilities	24.2	49.4
Includes farmers who intend to:		
- replace or modify the cages	(19.0)	(47.1)
- replace the cages by investing in barn facilities	(1.7)	(0.8)
- replace the cages by investing in free range facilities	(0.9)	(0.1)
- replace the cages and/or invest in barn and/or free range facilities	(2.6)	(1.5)
Farmers still considering future options available for updating facilities	17.3	13.6
Total participants	41.6	63.1

#### **4.9.3 Farmers intentions if financial assistance was offered**

When asked if they would change their future intentions if financial assistance were offered, some farmers indicated that they would retire earlier or commence or expand another business enterprise. Others, already intending to stay would put new cages, barn or free range equipment in new sheds rather than use current shedding. For some still considering their options in Table 13(a) a financial assistance offer may make it viable for them to update their facilities. The offer of financial assistance increased the number of farms still considering the options available for updating facilities (that is staying) when compared to farmers in Table 13(a) who were considering their future options about staying in the industry. See Table 13(c).

Comments made by farmers unsure about staying in the industry after 2008 (still considering their options) indicate that their decision to stay in the industry will be affected by the future prospect for

egg prices. Other considerations would be their ability to borrow money and meet repayments, and if local authority rezoning as a result of urbanisation would allow building new facilities on the same site.

**Table 13(c) The future intentions of Australian cage layer farmers if financial assistance was offered.**

Farmers intentions if financial assistance is offered	% Farms	% Cage capacity
Farmers intending to retire earlier or commence/expand another enterprise	13.0	4.4
Farmers intending to update facilities	18.6	26.96
Includes farmers who intend to:		
- replace or modify the cages	(11.7)	(23.0)
- replace the cages by investing in barn facilities	(2.2)	(1.3)
- replace the cages by investing in free range facilities	(0.9)	(0.2)
- replace the cages and/or invest in barn and/or free range facilities	(3.9)	(2.4)
Farmers still considering the options available for updating facilities	31.6	25.1
Total farmers reconsidering their intentions if financial assistance was offered	63.2	56.4
Farmers making no changes to their future intentions	16.9	33.9
Total participants	80.1	90.2

#### 4.10 Sets of Cages on Farms

There were 477 sets of cages recorded in the fully completed questionnaires. A set of cages is a group of cages of the same dimension and style installed in a shed. A farm may have one to seven sets of cages installed in one or more sheds.

Forty percent of farms (92 farms) with 26.9 percent of cage capacity (2.65 million hens) have only one set of cages. Most of the cage capacity (36.8 percent or 3.62 million hens) is on 32.5 percent of the farms (75 farms) that have two sets of cages. See Table 14.

**Table 14 Number of cage sets and cage capacity per farm.**

No of cage sets per farm	No of cage sets	No of farms		Cage capacity	
		Farms	%	Hens	%
1	231	92	39.8	2,645,786	26.9
2	139	75	32.5	3,625,284	36.8
3	64	33	14.3	1,508,362	15.3
4	31	21	9.1	1,376,209	14.0
5	10	9	3.9	672,070	6.8
6	1	0	0.0	0	0.0
7	1	1	0.4	20,544	0.2
Total	477	231	100.0	9,848,255	100.0

#### 4.11 Cage Sizes

There were 131 different cage sizes in terms of the front width and the depth of the cage. There is the possibility that some of the cage sizes are doubled up due to accuracy in measurement. Some farmers know their cage sizes from when they purchased them and wrote the size down in inches. Others measured to the nearest millimetre and yet others to the nearest centimetre.

Some farmers also removed every second partition in some cage types in 1995 when the stocking density increased to 450cm<sup>2</sup> per hen for three birds or more per cage. For example, cages were

commonly made in units of 72 inches long. A cage referred to as a ten inch front width cage could be exactly ten inches wide or 10.29 inches depending on how it was made. Some cage makers divided the 72 inches by seven and supplied seven 10.29 inch wide cages in a unit. Whereas others were made with six ten inch wide cages and the cage in the centre of the unit was twelve inches wide. It is estimated that there are approximately 60-90 cage sizes. These differences made it difficult to categorise the cages into standard cage sizes.

The cage sizes, floor area and number of hens housed at the current and new stocking densities are presented in Appendix 4.

## 4.12 Responses to Questions on Features Disqualifying Cages

Farmers' responses measured as cage sets to each of the questions on features disqualifying cages under the 1995 Code are presented in Table 15(a). The cage capacity for the responses to each feature is presented in Table 15(b).

Responses were not provided for floor slope by 14.3 percent of the cage sets. This was for older cages, which were disqualified for other features not meeting the Code. The nil response by some farmers on excreta protection, floor support wires and adequate feed and water space were for cages that were disqualified for other reasons. See Tables 15(a) and 15(b).

**Table 15(a) Responses to questions on features disqualifying cages under the 1995 Code by cage set occurrence.**

Features disqualifying cages (no allowance made for combination of features)	Responses as cage sets			
	Yes	No	Nil	% Nil Response
Cage height greater than 40cm for more than 65% of floor area	373	104	0	0.0
Floor slope less than 8%	337	72	68	14.3
Back height more than 35cm	229	248	0	0.0
Lower hens below protected from excreta*	160	7	2	1.2
Floor support wires less than 5.2cm apart	161	295	21	4.4
Adequate cage door opening	113	364	0	0.0
Adequate feed space	458	13	6	1.3
Adequate water space	429	32	16	3.4

\* The lower hens in multi-tier and some A-frame type cages require protection from excreta falling from hens above. The nil response was expressed as a percent of the total cages where excreta protection was required. (169 sets)

Note: The total number of cage sets was 477

**Table 15(b) Responses to questions on features disqualifying cages under the 1995 Code by cage capacity.**

Features disqualifying cages (no allowance made for combination of features)	Responses as cage capacity (hens)			
	Yes	No	Nil	% No Response
Cage height greater than 40cm for more than 65% of floor area	7,781,187	2,067,068	0	0.0
Floor slope less than 8%	7,241,027	1,849,506	757,722	7.7
Back height more than 35cm	5,563,119	4,285,136	0	0.0
Lower hens below protected from excreta*	4,925,823	41,602	57,858	1.15
Floor support wires less than 5.2cm apart	4,855,330	4,297,505	695,420	7.1
Adequate cage door opening	4,355,308	5,492,947	0	0.0
Adequate feed space (based on 450cm <sup>2</sup> /hen)	9,567,504	219,887	60,864	0.6
Adequate water space	9,449,039	270,089	129,127	1.3

\* The lower hens in multi-tier and some A-frame type cages require protection from excreta falling from hens above. The nil response was expressed as a percent of total cage capacity where excreta protection was required (5,025,283 hens).

#### 4.13 Features Disqualifying Cages under 1995 Code

Nominated cage features are required to meet set criteria under the 1995 Code. Sixty-two sets of cages (13.0 percent) with a capacity of 3.07 million hens (31.2 percent of cage capacity) meet all the criteria. The number of cage sets and cage capacity disqualified for not meeting each of the criteria is presented in Table 16. This does not include any combination of features.

The most significant single features disqualifying cages were inadequate door width, floor support wires and cage back height. Three hundred and sixty-four sets of cages (76.3 percent of cage sets) housing 5.49 million hens (55.8 percent of cage capacity) are disqualified because the door is not the full width of the cage front or at least 50cm wide.

The cages disqualified because of inadequate feed space were the deeper cages (53-61cm) with a capacity for 4-7 hens based on 450cm<sup>2</sup> per hen resulting in the feed space varying from 7.6 to 9.9 cm per hen. In most cases the stocking rate was reduced to provide adequate feed space for the hens.

It is assumed that the cages disqualified because of inadequate drinker space did not have two nipples or cup drinkers within reach of each cage. In some cases the hens were given running water in the Vee trough on hot days.

**Table 16 Features disqualifying cages under the 1995 Code.**

Features disqualifying cages (no allowance made for combination of features)	Cage sets		Cage capacity	
	Number	%	hens	%
Inadequate door width	364	76.3	5,492,947	55.8
Floor support wires more than 5.2cm apart	295	61.8	4,297,505	43.6
Cage back less than 35cm high	248	52.0	4,285,136	43.5
Cage height less than 40cm for less than 65% of floor	104	21.8	2,067,068	21.0
Floor slope greater than 8%	72	15.1	1,849,506	18.8
Adequate width doors not meeting other criteria	51	10.7	1,282,908	13.0
Inadequate width door meeting all other criteria	13	2.7	253,467	2.6
Insufficient feed space	13	2.7	219,887	2.2
Insufficient drinker space	32	6.7	270,089	2.7
Hens not protected from excreta from hens above	7	1.5	41,602	0.4

Three hundred and sixty-four sets of cages (76.3 percent) with a capacity of 5.49 million hens (55.8 percent of cage capacity) had inadequate door width and may not have met other criteria also. Fifty-one sets of cages (10.7 percent of cage sets) with a capacity of 1.28 million hens (13.0 percent of cage capacity) had adequate door width but did not meet other criteria. See Tables 17(a) and 17(b).

Cages with inadequate doors housing 51.0 percent of the cage capacity (5.02 million hens) were also disqualified for other features. Thirteen sets of cages with a capacity of 0.25 million hens had inadequate door width and met all other qualifying criteria. Thirteen sets of cages with a capacity of 0.22 million hens had inadequate door width and height and met all other qualifying criteria. See Table 17(a).

Within the cages with inadequate door width were 214 cage sets (44.9 percent) with a capacity of 3.35 million hens (34.1 percent of cage capacity) that had inadequate back height. These cages may have had other disqualifying features also.

**Table 17(a) Combined features disqualifying cages with inadequate doors under the 1995 Code by cage capacity and cage sets.**

Features disqualifying cages	Cage capacity		Cage sets	
	Hens	%	Number	%
Inadequate door width where cages meet all other criteria	253,467	2.6	13	2.7
Inadequate door width & height where cages meet all other criteria	221,408	2.2	13	2.7
Inadequate doors where cages do not meet criteria for other feature including -	5,018,072	51.0	338	70.9
- back height and wire spacing	889,666	9.0	85	17.8
- wire spacing	819,307	8.3	69	14.5
- back height, floor slope & wire spacing	735,455	7.5	25	5.2
- back height, cage height, floor slope & wire spacing	636,422	6.5	13	2.7
- back height	475,357	4.8	22	4.6
- cage height & wire spacing	310,995	3.2	17	3.6
- back height, cage height & wire spacing	259,622	2.6	29	6.1
- floor slope	147,168	1.5	6	1.3
- cage height	112,140	1.1	6	1.3
- back height & cage height	86,017	0.9	9	1.9
- back height & feed space	85,115	0.9	3	0.6
- back height, wire spacing & water	82,744	0.8	11	2.3
- floor slope & wire spacing	76,263	0.8	7	1.5
- wire spacing, feed & water space	69,150	0.7	1	0.2
- cage height, floor slope & wire spacing	27,652	0.3	3	0.6
- back height, cage height & floor slope	27,000	0.3	1	0.2
- wire spacing & water space	24,195	0.2	4	0.8
- back height & floor slope	21,372	0.2	4	0.8
- water space	21,000	0.2	1	0.2
- wire spacing & excreta protection	18,780	0.2	2	0.4
- wire spacing & feed space	15,090	0.1	2	0.4
- back height, floor slope, wire spacing & water space	10,368	0.1	1	0.2
- back height, cage height, floor slope & feed space	9,288	0.1	1	0.2
- back height, wire spacing & feed space	8,884	0.1	2	0.4
- cage height, wire spacing & water space	8,748	0.1	2	0.4
- back height, floor slope & water space	8,160	0.1	1	0.2
- back height, cage height, floor slope & wire, feed & water space	6,840	0.1	1	0.2
- back height, cage height, wire spacing & water space	6,336	0.1	4	0.8
- water space & excreta protection	5,440	0.1	1	0.2
- cage height & excreta protection	5,440	0.1	1	0.2
- back height, cage height, wire spacing & feed space	4,536	<0.1	1	0.2
- feed space	2,816	<0.1	1	0.2
- back height, cage height, floor slope, wire spacing & excreta protection	434	<0.1	1	0.2
- cage height & floor slope	272	0.0	1	0.2
<b>Total</b>	<b>5,492,947</b>	<b>55.8</b>	<b>364</b>	<b>76.3</b>
Inadequate door and back height including other inadequate features	3,353,616	34.1	214	44.9

Fifty-one sets of cages (10.7 percent) with a capacity of 1.28 million hens (13 percent) had adequate door width but had other disqualifying features. Thirty-four sets of cages (7.1 percent) with a capacity of 0.93 million hens (9.5 percent) had adequate door width and inadequate back height and other inadequate features. Five sets of the cages with a capacity of 0.14 million hens had adequate door width and inadequate door height and other inadequate features. See Table 17(b).

**Table 17(b) Combined features disqualifying cages with adequate door width under the 1995 Code by cage capacity and cage sets.**

Features disqualifying cages	Cage capacity		Cage set	
	Hens	%	Number	%
Adequate door width where cages do not meet criteria for other features including -	1,282,908	13.0	51	10.7
-back height & cage height	432,224	4.4	8	1.7
- back height	320,630	3.3	17	3.6
- wire spacing	172,128	1.7	5	1.0
- floor slope	8,280	0.1	1	0.2
- door height	117,376	1.2	4	0.8
- back height, cage height & floor slope	80,640	0.8	2	0.4
- back height, cage height & wire spacing	35,998	0.4	2	0.4
- back height, floor slope & wire spacing	35,460	0.4	3	0.6
- wire spacing & water space	24,000	0.2	4	0.8
- door height, floor slope & wire spacing	18,432	0.2	1	0.2
- back height & feed space	18,168	0.2	1	0.2
- back height, cage height & excreta protection	8,400	0.1	1	0.2
- cage height	8,064	0.1	1	0.2
- water space & excreta protection	3,108	<0.0	1	0.2
<b>Total</b>	<b>1,282,908</b>	<b>13.0</b>	<b>51</b>	<b>10.7</b>
Adequate door width and inadequate back height including other inadequate features	931,520	9.5	34	7.1
Adequate door width and inadequate door height including other inadequate features	135,808	1.4	5	1.0

#### 4.14 Top Opening Doors

Some flat deck cages have doors on the top of the cage rather than the front of the cage. The survey did not ask farmers to specify if the cages had top opening doors. However, some farmers did indicate this on the survey form or in telephone discussions. Five farms were recorded as having cages with top opening doors. These had a capacity of 75,160 hens.

Clarification is required as to whether a larger door is acceptable or if the door must be the full width of the cage to comply with the 1995 Code.

#### 4.15 Cage Stocking Density Change

Part of the ARMCANZ decision is to reduce the stocking density at 2008 for all cages installed before 2001. For cages stocked at three or more birds per cage the stocking density changes from 450cm<sup>2</sup> per hen to 550cm<sup>2</sup> per hen. For one or two bird cages it stays the same at 675cm<sup>2</sup> per hen.

The reduction in the number of hens able to be housed per cage varies from 0-33 percent. It is dependent on the relationship between floor area and the current and new stocking densities. See Table 18.

**Table 18 The effect of stocking density reduction on number of hens housed per cage.**



Number of hens housed per cage at stocking density		Cage floor area range	Shed capacity lost due to increase in floor space
Current	New	cm <sup>2</sup>	%
1	1	675-1,349	0
3	2	1,350-1,649	33
3	3	1,650-1,799	0
4	3	1,800-2,199	25
4	4	2,200-2,249	0
5	4	2,250-2,699	20
6	4	2,700-2,749	33
6	5	2,750-3,149	17
7	5	3,150-3,299	29
7	6	3,300-3,599	14

The reduction in stocking density at 2008 will affect the number of hens able to be housed per cage and the farm hen capacity. The effect of this change on the number of cage sets in each number of hens per cage category is presented in Table 19. The changed floor space allowance also reduces the number of hens that can be housed in the current cages by 2.21 million hens (22.5 percent). See Table 20 and Table 21.

The greatest effect on cage capacity occurs in cages housing three birds per cage. From Tables 19, 20 and 21 295 cage sets (61.8 percent of cage sets) house 4.38 million hens (44.5 percent) at three hens per cage at the floor space allowance of 450cm<sup>2</sup> per hen. Increasing the floor space allowance will reduce the number of hens able to be housed in these cages from three to two per cage in 234 of these cage sets (49.1 percent). The cage capacity falls from 3.69 million hens by 1.23 million to 2.46 million hens.

**Table 19 The effect of stocking density changes on number of cage sets according to number of hens housed per cage.**

Number Hens per cage	Stocked at current density		Stocked at new density		Cages where number of hens per cage remains the same		Cages where number of hens per cage decreases	
	Cage sets	%	Cage sets	%	Cage Sets	%	Cage sets	%
1	39	8.2	39	3.2	39	8.2	0	0.0
2	0	0.0	234	49.1	0	0.0	0	0.0
3	295	61.8	118	24.7	61	12.8	234	49.1
4	66	13.8	59	12.4	9	1.9	57	11.9
5	56	11.7	17	3.6	7	1.5	49	10.3
6	15	3.1	9	1.9	7	1.5	8	1.7
7	5	1.0	0	0.0	0	0.0	5	1.0
20	1	0.2	1	0.2	1	0.2	0	0.0
Total	477	100.0	477	100.0	124	26.0	353	74.0

**Table 20** The effect of stocking density changes on cage capacity according to number of hens housed per cage.

Number of hens per cage	Cage capacity stocked at density		Number of hens not affected by density reduction	Number of hens affected by density reduction	Capacity lost due to a decrease in number hens per cage
	Current	New			
	Hens	Hens			
1	263,334	263,334	263,334	0	0
2	0	2,382,185	0	0	0
3	4,381,349	2,169,087	713,583	3,667,766	1,285,580
4	2,185,712	1,606,808	245,040	1,940,672	485,168
5	2,097,755	799,810	401,095	1,696,660	339,332
6	677,100	309,552	242,208	434,892	73,592
7	137,165	0	0	137,165	27,967
20	105,840	105,840	105,840	0	0
Total	9,848,255	7,636,616	1,971,100	7,877,155	2,211,639

**Note:** There are four cage sets where the numbers of hens per cage is reduced by two hens. In three sets it is from seven to five hens per cage and in one set from six to four. The additional hens lost are 9,482.

**Table 21** The effect of stocking density changes on cage capacity according to number of hens housed per cage as percent of total cage capacity.

Number of hens per cage	Cage capacity stocked at density		Number of hens not affected by density reduction	Number of hens affected by density reduction	Capacity lost due to a decrease in number hens per cage
	Current	New			
	%	%			
1	2.67	2.7	2.7	0.0	0.0
2	0.0	24.2	1.4	1.3	0.6
3	44.5	22.0	7.2	37.2	12.4
4	22.2	16.3	2.5	19.7	4.9
5	21.3	8.1	4.1	17.2	3.4
6	6.9	3.1	2.5	4.4	0.7
7	1.4	0.0	0.0	1.4	0.3
20	1.1	1.1	1.1	0.0	0.0
Total	100.0	77.5	20.0	80.0	22.5

## 4.16 Age of Cages

The survey asked when the cages were commissioned. From this the age of the cages was derived. Twenty-three percent of the cages as cage capacity are over 30 years old. Forty-one percent of the cages are over 20 years old. (See Table 22)

It could be assumed that the majority of cages where the age is unknown are older than 10 years or even 15 years because of the type of shedding or cages associated with the age answer. Shedding styles and cage types have varied over time.

**Table 22 The age of cages expressed as a percentage of cage capacity.**

State	Age in Years										Total	
	0-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	41-45	46-50		Unknown
NSW	9.7	3.2	5.9	3.1	9.7	5.5	10.1	15.7	0.2	0.4	36.8	100.0
Qld	30.3	1.4	4.2	9.0	4.8	7.8	29.8	4.2	1.6	0.0	6.8	100.0
SA	0.0	1.5	4.8	21.6	10.3	8.8	2.6	0.0	22.2	0.0	28.3	100.0
VIC	13.8	17.5	8.1	17.1	1.7	21.1	7.7	2.1	3.1	0.0	7.8	100.0
WA	37.4	6.6	5.1	5.9	7.1	12.9	1.3	3.6	0.0	0.0	20.2	100.0
Sub Total	16.9	6.5	5.9	9.1	6.5	10.7	12.4	7.9	2.5	0.1	21.3	100.0
NT												100.0
TAS												100.0
Australia	16.4	7.0	5.8	9.0	6.4	11.8	12.5	7.7	2.4	0.1	20.8	100.0

#### 4.17 Cage Modification – Farmers Intentions and Comments

Layer farmers with cages that did not meet the 1995 Code were asked if they had considered how these cages could be modified, if they planned to apply the modification and if they would like to participate in a research project to investigate the feasibility of cage modification. Eleven farms with 0.22 million cage capacity (hens) said they planned to modify the affected cages. Thirty-two farms with 1.38 million hens indicated they would like to participate in the research project. See Table 23.

Three farms indicated that they considered changing the cage front as an option. Several farmers made comments indicating that modifying the cages was not feasible because it would weaken the cage structure, was not cost effective, there was not enough life left in rest of the cage structure, nor was it practical nor efficient to do so.

**Table 23 Number of farms and cage capacity for farms interested in cage modification.**

Item	Cage capacity		Farms	
	(hens)	(%)	number	(%)
<i>Considered how to modify cages</i>				
yes	2,536,912	25.8	81	35.1
No	5,872,549	59.6	130	56.3
No comment	1,438,794	14.6	20	8.7
Total	9,848,255	100.0	231	100.0
<i>Plan to apply modification</i>				
Yes	221,701	2.3	11	4.8
No	2,555,934	26.0	34	14.7
Unsure	850,922	8.6	65	28.1
No comment	6,219,698	63.2	121	52.4
Total	9,848,255	100.0	231	100.0
<i>Participate in research project and answered "yes" to considered how to modify cages</i>				
Yes	483,188	4.9	13	5.6
Unsure	531,278	5.4	22	9.5
<i>Participate in research project and answered "no" to considered how to modify cages</i>				
Yes	892,510	9.1	19	8.2
Unsure	671,528	6.8	28	12.1
<i>Total for participate in research project</i>				
Yes	1,375,708	14.0	32	13.9
No	4,266,257	43.3	89	38.5
Unsure	1,202,806	12.2	50	21.6
No comment	3,003,584	30.5	60	26.0
Total	9,848,255	100.0	231	100.0

Nine of the twenty farms selected to participate in a more detailed study on cage modification, had done no research and were relying on the researcher to run through with them the options and problems in modifying cages. Eleven farmers had seriously considered how the cages could be modified either prior to or after the survey. Three of these farms may modify their cages by converting the doors to full width of the cage front.

From this study a list of questions was developed for use by other farmers considering cage modification –

- How much life is left in the cages?
- How much life is left in the shed housing the cages?
- Is the shed still structurally sound and the cladding in good condition?
- Are the cages structurally sound?
- Is the cage floor in good condition?
- Is the galvanising on the cage wires in good condition?
- Do the drinker lines or feed trough need replacing?
- What effect will the reduction in stocking density have on the farms hen housed capacity?
- What effect will reduced layer hen capacity have on farm income?
- What options are there for making up the lost income?
- Will the farm still be viable?

Other comments were –

- Labour costs per dozen eggs or labour units required to operate the farm per 10,000 hens will still be higher than new layer facilities.
- Feed consumption and feed wastage will still be higher than new controlled environment facilities due to improved shed climate and better feeding equipment.

## **4.18 How to Modify Cages**

Multi tiered cages are very difficult and expensive to modify. The earlier styles of cages, either the flat deck or "A" frame cages are easier to modify. It is related to how the pieces that are joined together with maspro clips to form the cage were designed. These cages were usually made in units about 1.8m in length. Some of the later units were up to 2.4m long. The units were joined during assembly on the farm with maspro clips to form rows of cages. The pieces forming the cage were the floor, the partitions and with the front, top and back usually formed as one piece. In some cages the front or back were made as separate pieces. The floor included the egg rollout tray. In cages with sloping backs it was common for the cage floor to form part of the lower back of the cage. Cage partitions were made the shape and dimensions of the end section of the cage. The cages were placed on specially designed stands or some earlier flat deck cages were suspended from the roof structure by wires. The feed trough, drinker line and "v" drinker trough if required were then attached.

The investigation determined that it is feasible to replace cage floors, doors, feed troughs and drinker lines in the earlier cages or to add additional support wires to the cage floor or to remove partitions. It is not feasible to increase the height or change floor slope of the cage. To do this means rebuilding at least the front, top, back and partitions of the cage.

### **4.18.1 To replace cage floor**

Replacing the cage floor is a difficult job and not all cages are suitable. Remove the feed trough, cut all maspro clips holding the floor to the partitions, back and front if any, lift the upper part of the cage and slide the floor out, slide the new floor in and attach it to rest of the cage with maspro clips. Reattach the feed trough. In some cages there are wires extending downwards from the front and back corners, which may be wound around the floor wires. These make the floor more difficult to replace. The drinker line may have to be removed and reinstalled also. There are cages where the floor is

folded up to become the lower section of the back. It is very difficult to replace the floors of these cages.

#### **4.18.2 To replace the cage doors**

The existing cage front is cut out leaving the support piece for the feed trough and the wires attached to the partitions. Remove any rough edges with angle grinder. Two wires are then run the length of the cage fronts. One wire is attached to the cage partitions just above the feed trough with special clips and the second wire is attached to the partitions level with the top of the cage with clips. The doors are then clipped onto the two wires. Depending on the cage structure the doors will either slide sideways or open inwards and swing up to the cage top giving an opening the full width of the cage. For some cages replacing the doors may not be this simple or feasible because of the cage structure.

#### **4.18.3 To add extra floor support wires**

A wire is run under the cage floor the length of the cage row and held in position between the floor support wires that are more than 52mm apart with clips attached to the cage partitions. This fix is not recommended because it increases the rigidity of the floor, which will increase the potential for cracked eggs and because of the risk of birds getting their toes caught between the additional support wire and cage floor wires.

### **4.19 Modifiable Cages**

Cages that did not meet the 1995 Code were placed in one of three categories according to the ease with which they could be modified. This was developed from the previous information on modifying cages.

(a) Potential for modification

Cages that require replacement of the cage front with a front with full width doors and in some cases provision of additional drinker space and the fitting or replacement of excreta deflectors or in other cases requires provision of additional drinker space and fitting or replacement of excreta deflectors to meet the 1995 Code.

(b) Some potential for modification

Cages that require the replacement of the cage floor or the cage floor and cage front and in some cases provision of additional drinker space and the fitting or replacement of excreta deflectors to meet the 1995 Code.

(c) No potential for modification

Cages that have no potential for modification because it is too difficult to do and/or almost the entire cage has to be replaced.

Cages with a capacity of 0.62 million hens that do not meet the 1995 Code have potential to be modified to meet the Code. These cages represent 9.2 percent of the cages that do not meet the 1995 Code. Cages with a capacity of 1.14 million hens (16.9 percent of capacity not meeting the 1995 Code) have some potential to be modified. Cages with a capacity of 5.01 million hens (73.9 percent of capacity not meeting the 1995 Code) have no potential for modification. See Table 24.

**Table 24 The potential for cages not meeting the 1995 Code to be modified expressed as cage capacity and as percent of the cage capacity not meeting the 1995 Code.**

<b>Inadequate cage features</b>	<b>Cage capacity</b>		<b>Cage sets</b>	
	<b>Hens</b>	<b>%</b>	<b>Number</b>	<b>%</b>
<i>No potential for modification</i>				
Cage height (may include other features)	473,311	7.0	31	7.5
Cage height and back height (may include other features)	1,593,757	23.5	73	17.6
Back height (may include other features)	2,691,379	39.7	175	42.2
Floor slope (may include other features)	250,143	3.7	15	3.6
<b>Subtotal</b>	<b>5,008,590</b>	<b>73.9</b>	<b>294</b>	<b>70.8</b>
<i>Some potential for modification</i>				
Door width & wire spacing (combined with feed or excreta or water)	946,522	14.0	78	18.8
Wire spacing or wire spacing and water	196,128	2.9	9	2.2
<b>Subtotal</b>	<b>1,142,650</b>	<b>16.9</b>	<b>87</b>	<b>21.0</b>
<b>Inadequate cage features</b>	<b>Cage capacity</b>		<b>Cage sets</b>	
	<b>Hens</b>	<b>%</b>	<b>Number</b>	<b>%</b>
<i>Potential for modification</i>				
Door width & water space or door width & water space & excreta	26,440	0.4	2	0.5
Door width & feed space	2,816	0.0	1	0.2
Door height where cages meet all other criteria	117,376	1.7	4	1.0
Door width & height where cages meet all other criteria	221,408	3.3	13	3.1
Door width where cages meet all other criteria	253,467	3.7	13	3.1
Water and excreta	3,108	0.0	1	0.2
<b>Subtotal</b>	<b>624,615</b>	<b>9.2</b>	<b>34</b>	<b>8.2</b>
<b>Total</b>	<b>6,775,855</b>	<b>100.0</b>	<b>415</b>	<b>100.0</b>

## 4.20 Cost of Cage Modification

The cost of feasible modifications to enable cages to meet the 1995 Code was calculated from information provided by a local cage supplier. It is presented in Table 25. The estimated cost includes the costs of parts, materials and labour for the installation of the modification. Freight on parts may be extra. The estimates are based on three bird cages that will hold two birds at 550cm<sup>2</sup> per hen.

**Table 25 Estimated Costs of Feasible Modifications to Cages.**

Modification	Cost \$ per hen housed at 550cm <sup>2</sup> per hen
Replace cage front	2.82
Replace cage floor	1.60
Add extra wire to floor	0.40

## 4.21 Removal of Cage Partitions

Every second cage partition can be removed from either the flat deck or "A" frame cages to increase the cage floor area and to possibly increase the number of hens that can be housed in the larger cage. To remove the partitions cut the maspro clips that attach the partition to the floor, back, top and front of cage. Remove the partition from the cage. This is not recommended for many cages because it weakens the cage structure particularly the floor support. It often results in a sagging floor with the potential to hinder eggs rolling out to the egg tray and increase cracked eggs. These observations were made on cages where a partition was removed following the stocking density being set at 450cm<sup>2</sup> per hen in 1995.

The problem of sagging floors may be overcome by leaving part of the partition at the front of the cage intact. The partition is cut vertically at a point in from the cage front about one third of the cage depth. The horizontal wires are cut adjacent to a vertical wire on the section of the partition that will remain in the cage. Cut the maspro clips on the partition section that is to be removed and then remove it from the cage. Grind back the remaining horizontal wires to the vertical wire and leave no sharp edges. If the partition cannot be cut in the cage then remove it from the cage cut it, grind off the remaining horizontal wires and reattach the front piece of the partition to the cage. This technique was promoted as a potential solution when floor space was increased to 450cm<sup>2</sup> per hen in 1994/95 but appears not to have been taken up by industry.

Making the cage larger by removing a partition does not necessarily mean that more hens can be carried at the increased floor space allowance of 550cm<sup>2</sup> per hen in the larger cage. For example, a cage 30.5 x 45.7cm (12 x 18 inches) has a floor area of 1,394cm<sup>2</sup>. Removing the partition between two adjoining cages doubles the area to 2,788cm<sup>2</sup>. The number of hens that can be housed at 550cm<sup>2</sup> per hen is four in the two cages without the partition removed and five with the partition removed. For a 30.5 x 54.5cm (12 x 21.5 inch) cage the floor area is 1,662cm<sup>2</sup>. Removing the partition between two cages the area becomes 3,324cm<sup>2</sup>. The number of hens that can be housed is six irrespective of whether the partition is or is not removed. (Appendix 5)

Removing a partition can change the class within which a cage is placed in terms of floor area per hen. That is, it can change from a two to a three bird cage and give a gain in number of hens housed per cage. This occurs in the example above with the 30.5 x 45.7cm cage. The change in stocking density makes it a two bird cage. Removing the partition turns it into a five bird cage (Appendix 4)

The cage floor area change point where there is a gain or no gain in the number of hens housed made by removing every second cage partition is presented in Table 26. Each change point is listed according to the number of hens housed in the unchanged cage at 450cm<sup>2</sup> per hen for three or more per cage and 675cm<sup>2</sup> per hen for one or two bird cages. Table 26 was developed from the table in Appendix 5. It shows the original cage sizes, the new cage sizes with the partitions removed and the number of hens that can be housed per cage at the current and new stocking densities.

**Table 26** Floor area change points where there is a gain in the number of hens housed per cage by removing every second cage partition.

Original cage			Partition removed between 2 cages		
Number of hens housed per cage at stocking density		Minimum cage floor area	Minimum cage floor area	Number hens housed per cage at new density	Extra hens gained if partition removed
Current	New	cm <sup>2</sup>	cm <sup>2</sup>		
1	1	1,100	2,200	3	yes
2	2	1,350	2,700	4	yes
3	2	1,375	2,750	5	yes
3	3	1,650	3,300	6	no
4	3	1,925	3,850	7	yes
4	4	2,200	4,400	8	no

#### 4.22 Layer cage occupancy at August 2000

Farmers were asked how many hens were housed in their cages at August 2000. This was 9.76 million or 96.9 percent of the cage capacity at the current stocking density for the layer cage farms that provided fully completed questionnaires. The layer cage capacity included new cages commissioned after August 2000.

#### 4.23 Comments by layer cage farmers

At the end of the questionnaire cage farmers who completed the full survey form were asked if they had any additional comments to make on the subject of the survey. These comments were categorised into common themes. Eighty farms (34.6 percent of farms) with a cage capacity of 3.25 million hens (32.3 percent of cage capacity) made comments. Sixty of the farms that made comments had a layer capacity of less than 50,000 hens. Their total layer capacity was 1.23 million hens or 38 percent of the capacity of the farms that made comments. In some cases farmers made two or more comments. These are presented in Table 27 and are expressed as a percent of either the total farmers who commented or their cage capacity.

Low egg prices combined with the effect of the ARMCANZ decision was expressed as providing no secure future by 55 percent of cage farmers who made comments. Twenty-one percent of farmers said they had insufficient assets to borrow money against for reinvesting in the industry. The value of their farm and therefore their asset base had been reduced as a result of the ARMCANZ decisions.



**Table 27 Concerns expressed by cage layer farmers about the issues associated with the implementation of the ARCENZ decision (as % of farmers that commented).**

Issue	Number of farms %	Cage capacity %
Low egg prices and ARMCANZ decision provide no secure future for reinvestment in the egg industry	55.0	59.4
Farm value for sale or loan security value fallen since ARMCANZ decision and is insufficient for borrowing against for reinvestment	21.3	13.3
Need government assistance for updating egg laying facilities to comply with ARMCANZ decision	17.5	10.0
The continual threats to and erosion of market share make it difficult to maintain cash flow let alone consider reinvesting in the industry	16.3	20.2
Government did not consider properly or does not understand the implications of the ARMCANZ decision on the industry	15.0	14.2
The ARMCANZ decision is unfair, wrong and stupid	13.8	7.9
Land rezoning makes it impossible to update or build new facilities on current or other sites in the general locality of the farm	8.8	4.6
Survey made me aware of the implications of the ARMCANZ decision	6.3	6.1
Will keep farming until they force me off	5.0	1.2
Invested in cages after 1995 and was told that they complied with the 1995 Code	5.0	2.5
Purchased farm after 1995 and scared that I will not get my money back	3.8	4.3
Overproduction will occur if the time for complying is extended beyond 2008	2.5	5.2

**Footnote:** Other comments made were: staff will lose jobs when we close down, I do not want to be a welfare case, cage doors not fully opening is crazy in single tiered cages, should be compensated like dairy farmers, the ultimatum to increase my financial commitment in the egg industry and then "go broke" with the current costs and egg prices does not seem realistic.

Comments on the survey forms suggest that low profit margins due to poor egg prices are a significant reason for farmers being unsure about their future options and unless there was an indication that prices were likely to improve they would leave the industry. The low prices are not high enough to support reinvesting in the industry for these farms. Other concerns were:

- Market disruption and potential loss of markets by aggressive marketing by some marketers
- Because of urbanisation some farms will have to move to new sites
- Age of farmer
- Cost of new cages, shedding and equipment for non-cage facilities
- Difficulty in borrowing money

## 4.24 Future Shedding Plans

Cage layer farmers were asked if they had future plans for replacing or renovating the sheds the hens were housed in. Farmers with 67.3 percent of the laying cage capacity indicated that they had no plans to renovate or replace the shedding they were currently using. See Table 28.

**Table 28 Future plans for current shedding by cage capacity.**

Shed plans	Cage Capacity %
No plans to change	67.3
Replace with controlled environment	6.7
Replace with naturally ventilated	0.8
Renovate to controlled environment	3.1
Renovate to natural ventilation	2.7
Convert to other use	1.0
Scrap the shed	2.7
No indication	15.7
	<b>100.0</b>

## 4.25 Cage Style or Configuration

The survey recorded that 48.7 percent of hens are housed in cages installed in the flat deck style, 25.8 percent on "A" frames and 25.2 percent are housed in multi-tiered cages. See Table 29.

**Table 29 Configuration or style of cages as percentage of hen capacity.**

State	Flat deck	A frame	Multi Tier	No comment	Total
NSW	56.4	25.8	17.1	0.7	100.0
Qld	51.9	15.6	32.4	0.1	100.0
SA	48.6	44.6	6.8	0.0	100.0
Vic	37.8	33.2	29.0	0.0	100.0
WA	37.7	21.1	41.2	0.0	100.0
Subtotal	48.7	26.2	24.8	0.3	100.0
NT					100.0
Tas					100.0
Australia	48.7	25.8	25.2	0.3	100.0

## 4.26 Cage Condition

Farmers were asked what they considered was the condition of the cages on their farms. They indicated that 48.7 percent of the hens or 4.80 million hens are housed in cages considered to be in good condition, 47.0 percent in cages in fair condition and 2.6 percent in cages in poor condition. See Table 30.

**Table 30 Condition of the cages as percentage of hens housed.**

State	Good	Fair	Poor	No comment	Total
NSW	40.5	55.0	1.0	3.5	100.0
Qld	50.5	45.0	4.1	0.3	100.0
SA	34.5	62.0	3.5	0.0	100.0
Vic	62.4	34.3	2.6	0.7	100.0
WA	65.0	31.8	2.9	0.3	100.0
Subtotal	49.8	46.1	2.4	1.7	100.0
NT					100.0
Tas					100.0
Australia	48.7	47.0	2.6	1.6	100.0

## 4.27 Shed Style and Ventilation Type

Twenty-nine percent of hens (2.89 million hens) are housed in sheds of the saw tooth style, 32.8 percent in the gable hirise combination style (3.23 million hens) and 29.1 percent (2.86 million hens) in the gable style, not hirise. Seven percent of the hens are housed in monitor hirise style sheds. See Table 31.

**Table 31 Shed roof design of cage layer housing as percentage of cage capacity (full returns).**

State	Saw Tooth	Gable hirise	Gable other	Monitor	Skillion	Other	No comment	Total
NSW	33.4	44.6	12.6	6.5	2.9	0.0	0.0	100.0
Qld	48.0	9.1	32.8	9.4	0.3	0.0	0.3	100.0
SA	25.1	33.8	36.7	3.1	1.3	0.0	0.0	100.0
Vic	14.1	33.1	46.2	6.2	0.3	0.0	0.0	100.0
WA	20.4	18.9	46.6	10.9	0.0	0.0	3.2	100.0
Subtotal	30.1	31.4	29.6	7.2	1.4	0.0	0.3	100.0
NT								100.0
Tas								100.0
Australia	29.4	32.8	29.1	7.1	1.4	0.0	0.3	100.0

Sixty-three percent of hens are housed in sheds with natural ventilation, 22.8 percent in tunnel ventilation and the remainder are housed in sheds with cross flow, positive pressure or other types of ventilation. See Table 32.

No data was collected on the shed type or ventilation method used in either barn or free range sheds.

**Table 32 Shed ventilation method as percentage of cage capacity (full returns).**

State	Natural	Mechanical			Other	No comment	Total
		Cross flow	Tunnel	Positive pressure			
NSW	68.0	6.3	17.3	0.4	1.1	6.9	100.0
Qld	67.4	0.1	28.7	3.3	0.2	0.3	100.0
SA	71.2	17.6	3.6	7.6	0.0	0.0	100.0
Vic	50.5	19.7	26.2	3.5	0.0	0.0	100.0
WA	60.0	0.0	36.7	0.0	0.0	3.3	100.0
Subtotal	63.0	8.4	22.8	2.2	0.5	3.1	100.0
NT							100.0
Tas							100.0
Australia	62.7	8.4	22.8	2.6	0.5	3.0	100.0

## 4.28 Shed Temperature

Farmers were asked what temperature the ventilation and cooling system maintains in the cage layer shed during hot and cold weather. The answers are presented in Tables 33 and 34.

**Table 33 Temperature maintained in the layer shed during hot weather**

Temperature °C	% Cage capacity
28	25.7
30	17.2
32	29.2
34	19.4
36	2.4
Not indicated	6.1
<b>Total</b>	<b>100.0</b>

**Table 34 Temperature maintained in the layer shed at night during cold weather**

Temperature °C	% Cage capacity
20	21.2
18	9.0
16	5.2
14	12.2
12	10.5
10 or less	34.7
Not indicated	7.1
<b>Total</b>	<b>100.0</b>

Sixty-eight percent of the hens are housed in layer cage sheds where the temperature is above 28°C on hot days in summer. This question did not ascertain if the naturally ventilated sheds included stirring fans as part of the cooling equipment. If stirring fans are installed then the effective temperature that the hens sense may be lower due to wind chill effect. Farmers were not asked if they applied management practices on hot days such as turning the lights on at night when the temperature has fallen below 28°C. This give the hens time to eat when temperatures are more comfortable.

Farmers were also asked what temperature could be maintained in the shed during cold weather at night. Thirty-five percent of the hens were housed in layer cage sheds where the temperature was 10°C or less at night during cold weather, 57.4 percent of hens were in sheds where the temperature fell to less than 16°C and 71.7 percent of hens were in sheds where the temperature was less than 20°C. No data was collected on the temperatures achieved in barn or free range sheds.

# 5 Discussion

## 5.1 Industry Structure

The data collected provides a detailed profile of the structure of the production sector of the Australian Egg Industry over the period of the survey. Forty-five percent of the layer capacity (5.80 million hens) is on 6.5 percent of farms that are greater than 100,000 hens in size. These and other operators may own or lease multiple farms where their total holdings may amount to more than 100,000 hens.

Forty-one percent of non-cage production capacity is on cage farms. Others are sourcing their requirements from independent free range or barn operators.

Analysis of the data on farmers' future intentions suggests that the cage farmers with less than 20,000 hens are most likely to leave the industry.

Production controls in the form of quotas on hens 26 weeks and older still operate in Western Australia. This has not restricted changes in farm size. Because of the decreasing returns and economic gains through controlled environment housing over twenty farmers combined their resources and invested in a 300,000 hen capacity farm.

There are indications that a similar pooling of resources by egg farmers may happen in other States. This is also being driven by urban spread. Farms on the fringes of large cities are unable to rebuild on their present farm sites due to local authority zoning changes. By pooling resources a group of farmers can purchase a large block of land that will meet likely future zoning requirements and be well removed from urbanisation.

Where their customers have indicated a desire for non-cage eggs, some cage farmers have put in barn or free range systems to meet this need. Forty-two percent of non-cage production capacity is on cage farms. Others are sourcing their requirements from independent free range or barn operators.

## 5.2 Impact of ARMCANZ Decision on Egg Laying Facility Capacity at 2008 includes all cages

At January 2008 when the cage floor space requirement will increase to 550cm<sup>2</sup> per hen for three or more birds per cage or 675cm<sup>2</sup> for less than three birds per cage, the cage capacity of all farms represented in the survey (11.39 million hens) will fall by 23.6 percent to 8.70 million hens. See Table 35.

At January 2008 when all cages must meet the 1995 Code, existing cages that meet the Code on all the surveyed layer cage farms will be able to house 2.83 million hens at 550cm<sup>2</sup> per hen. This represents a 75.1 percent loss in laying facilities for hens currently housed in cages at the current stocking densities.

Farmers with cages housing 5.50 million hens at the current stocking densities indicated that they would stay in the industry by investing in either new cages or non-cage systems. Adding this figure to the 2.83 million cage capacity meeting the 1995 Code gives a capacity of 8.34 million hens likely to be in facilities meeting the 1995 Code at 2008. This leaves a shortfall of 3.05 million hens or 26.8 percent of the current layer flock housed in cages. It is assumed that the farmers staying will replace their current capacity estimated at the current stocking densities. There are indications by some farmers that they intend to increase their current hen capacity as they gradually replace existing cage facilities with either cage or non-cage facilities.

South Australia and Tasmania will have a much larger shortfall of 45.1 and 50.0 percent respectively. See Appendix 2.

There are several factors that will change the capacity of layer facilities required at 2008 to meet market demand. These factors are gains in layer performance through genetic selection, improved nutrition and new management techniques, population growth and potential increases in egg consumption through promotion of eggs and egg products.

The impact on a farm business plan for financing the replacement of facilities is significant. Farmers will have to modify plans for replacement of facilities, determine the effect on farm cash flow and perhaps restructure current loans. Their ability to finance the facility replacement and to service a loan is an issue for many farmers.

**Table 35 Impact of ARMCANZ decision on Australian laying cage capacity (Includes farms that did not supply full cage data).**

<b>Item</b>	<b>As cage capacity</b>	<b>Units</b>
All current cages stocked at current density	11,385,055	hens
All current cages stocked at new density	8,703,141	hens
<hr/>		
Difference or capacity lost	2,681,914	hens
Difference or capacity lost	23.6	%
<hr/>		
Existing cage capacity meeting 1995 Code and stocked at new density	2,833,845	hens
Cage capacity lost as percent of current capacity at current density	75.1	%
Current cage capacity on farms staying and not meeting 1995 Code stocked at current density - that is likely to be replaced with new facilities	5,504,643	hens
<hr/>		
Total cage capacity likely to meet 1995 Code at 2008	8,338,488	hens
<hr/>		
Potential shortfall in layer facility capacity at 2008	3,046,567	hens
Potential shortfall in layer facility capacity at 2008	26.8	%
<hr/>		
Total new laying facilities needed by 2008 at 550cm <sup>2</sup>	8,551,210	hens
New facilities needed as percent of current cage capacity at current density	75.1	%

The scale of investment needed for new facilities is high. The cost for new cages installed in an existing shed is estimated as \$16-18 per hen housed. To replace the entire cage capacity with new cages not meeting the 1995 Code it would cost approximately \$145 million. New cages and a new controlled environment shed is estimated as \$30-34 per hen housed including installation and erection. The replacement cost for new cages and shedding is approximately \$274 million. New barn facilities installed in an existing shed are estimated at \$16 per hen housed. It may be more depending on what improvements are required to bring the shed up to current standards. New barn facilities installed in a new shed are \$38-40 per hen housed. Free range facilities are estimated to cost \$15-40 per hen housed depending on what equipment is used and the standard of shedding and types of materials used in its construction. These costs do not include the cost of land, provision of services (internal roads, water supply and electricity), local authority and environmental approvals, site preparation, staff residences and standby electrical generation equipment. These costs will vary depending on State, local authority area, topography and other local factors.

### 5.3 Farmers Future Intentions

The future intentions of cage egg farmers will have a significant impact on the industry's ability to meet the market demand for eggs at 2008. Farmers who have been in the industry more than 15 years find that the culture of the industry has changed and some are having difficulty coping with this. The changes that have occurred are:

- Quotas, which managed the number of hens over 26 weeks of age, have been removed in all States except Western Australia.
- Demand supply management linked to the quota system was removed with quotas (except in Western Australia). This system matched egg production to market demand by controlling the number of laying hens.
- Egg Marketing Boards have been dismantled. These Boards gave farmers more say in the price they received for eggs and an assured market for their eggs.
- In some States the retailers' margin on eggs was controlled through legislation and has been removed.
- Significant changes were made to the welfare code of practice in 1995 and 2000 that have significant financial, structural and social impact on the industry.
- A sophisticated refrigerated transport system that makes it possible to economically ship eggs anywhere in Australia has developed.

These factors have changed the business and marketing environment in which egg farms now operate. The market now determines the price of eggs and market disruption now appears to be a permanent feature of the market. Farmers and marketers have to be very aware of what is happening in the market to ensure that they maintain their market share.

Seventeen percent of farms carrying 6.8 percent of the hens (0.67 million hens) have indicated that they will leave the industry by 2008.

One hundred and thirty-four cage layer farmers (58 percent of farms with 38.7 percent of the cage capacity (3.81 million hens) indicated that they were still considering their options. That is, they were unsure what to do. If the government were to provide financial assistance for restructuring this would increase to 63.2 percent of farms or 56.4 percent of the cage capacity (5.55 million hens).

Farmer comments suggest that the future price of eggs will have a significant effect on their decision making process, particularly those who are still considering their future options.

Many of these undecided farmers, particularly those near retirement, were depending on the sale value of their farm for their retirement package (superannuation). Many layer farms in Australia are not saleable as going concerns because of the ARMCANZ 2000 decision. The cages on these farms do not meet the 1995 Code. Some farms in urban areas near major cities where the land can be sold for development may have funds sufficient to provide for their retirement or replacement of facilities. Others will not. This will depend on the area of land owned and its market value. There are also farms with small lots of land of low monetary value that are not in developing urban areas and are not suitable for other agricultural development due to the land type. These people will end up with very little capital and will need support from the social security system when they leave the industry.

## 5.4 Age of Cages

Twenty-three percent of the cages are over 30 years old. Forty-one percent of the cages are over 20 years old. See Table 22.

The useful life of a cage is affected by the quality of workmanship, standard of galvanising used, the farm maintenance program, the relative humidity and the air quality standard maintained in the shed by the ventilation system and whether hens are housed continuously in the cages. Poor quality water used in fogging systems will reduce cage and equipment life also.

Corrosive gases present in poorly ventilated sheds combined with medium to high humidity will shorten the life of cages. The parts of the cage the hens are continually in contact with will rust much more quickly when the hens are removed once the galvanising has worn off. Feed troughs, water nipples and drinker lines are replaced once or more during the life of the cage.

Cages may also be replaced to take advantage of the benefits from new housing and management techniques. Older cages may be less economically efficient due to high labour costs in egg collection and feeding and increased second quality eggs compared to newer cages.

## 5.5 Cage Style

Cage style installed by the industry has changed over time. These changes reflect the results of research such as the effect of floor slope and wire thickness on cracked eggs, wire spacing on support of hen's feet, mechanical feeders and feeder and drinker space per hen. Economics has also played a role particularly through savings in labour costs.

The early cages in Australia were supplied either in a flat deck or as a Californian offset configuration. They were suspended either from the roof structure using wire or placed on stands. The industry then moved away from wire suspension because of difficulty in cleaning the unsightly mass of cobwebs and dust.

In about 1973 the reverse cage where the cage front was wider than the cage depth was introduced. These were mounted on "A" frames 2, 3 or 4 tiers high. These increased shed density and gave improved air movement around the cages. They were usually installed in hirise sheds.

Multi-tiered cages were also installed in some controlled environment sheds from the 1960's onwards. The controlled environment sheds were successful in the cooler southern states (Victoria and Tasmania). Some multi-tiered plastic cages were installed in the early 1970's. The multi tiered cage became the standard cage in Australia in the mid 1990's following the introduction of controlled environment housing that was effective in all of Australia. In the late 1980's cages were introduced that incorporated modifications to meet European welfare needs.

Some farmers are now installing cages that can be "enriched". This reflects current overseas welfare thinking and the cages meet the 1995 Code requirements. Partitions can be easily and quickly removed from each section of cages to make a larger cage and furniture such as nest boxes, perches and a dust bath can then be installed. Other farmers are installing cages that do not have the potential to add furniture and meet the 1995 Code. These farmers are not convinced that there is an "enriched" cage available that is suitable for Australia or that the criteria for the necessary furniture needed to enrich a cage has been adequately defined and researched.

The 1990's saw the introduction of much improved controlled environment houses that allowed hens to be housed at higher densities per unit of house volume in multi-tiered cages.



## **5.6 Cage Disqualification**

There have been at least three sets of cages housing 21,324 hens installed after 1995 which do not meet the 1995 Code despite the farmer being given assurances by the cage supplier that the cages did meet the new Code. They do not meet the 1995 Code either because the back height is inadequate or the cage height was inadequate. To avoid this happening again, farmers need to check for themselves that any new cages they intend purchasing do meet the 1995 Code.

## **5.7 Cage Top Doors**

Five farms were recorded as having flat deck cages with the door in the top of the cage rather than in the cage front. These had a capacity of 75,160 hens. There may be more, as the survey did not ask for this information. These cages often have doors that are larger than the front door on cages of a similar age. Clarification is required as to whether a larger door is acceptable or if the door must be the full width of the cage. Some of these cages meet all the other requirements of the 1995 Code.

## **5.8 Cage Modification**

Of the 6.78 million cage hen capacity not meeting the 1995 Code, cages with a capacity of 0.62 million hens (9.2 percent) have the potential to be modified to meet the 1995 Code. Another 1.14 million cage capacity (16.9 percent) has some potential for modification.

The cost of modification is not expensive in comparison with new cage cost. However, farmers need to seriously consider the useful life left in the cages, the effect on production costs due to the inefficiencies inherent in old cage systems and the effect of the reduced stocking density on the farms hen capacity. These factors all affect the farms viability in the longer term.

## **5.9 Stocking Density and Cage Partition Removal**

The greatest effect of the stocking density reduction is on the cage capacity of cages housing three birds per cage. Seventy-nine percent of the cage sets housing three birds currently will reduce to two birds per cage at the new stocking densities. The cage capacity of these cages falls from 3.69 million hens to 2.46 million. Removing every second partition from these cages will in most cases, increase the number of hens able to be housed per cage from four to five for two cages where the partition is not removed and is removed respectively. However, most of these cages do not meet the 1995 Code and the number suitable for modification is low.

## **5.10 Shed Style and Ventilation Type**

Twenty-eight percent of hens are housed in sheds of the saw tooth style. This was the main design used by the industry until the advent of the hirise shed in the early 1970's. The design was readily adopted in the post-war Australian industry because it was well ventilated, cool in summer and economical to build with the resources and technology available then.

Summer cooling was provided using foggers or misters. In some sheds after the late 1980's, stirring fans were installed to improve ventilation and cooling. The shed walls were usually enclosed with hessian, shade cloth or plastic during winter to reduce the effect of cold and wind on the hens. It is very difficult and expensive to convert a sawtooth shed to tunnel or cross flow ventilation or even to effectively improve the cold or hot weather performance using natural ventilation.

In the early 1970's the hirise shed became popular because of its improved ventilation and ease of removing manure. These sheds were mostly ventilated naturally. Some were ventilated mechanically with fans (positive or negative pressure). Thirty-three percent of the hens on the surveyed farms are housed in hirise style sheds. Curtains were fitted on the sidewalls to provide better control over ventilation. Fogging nozzles were fitted to provide cooling in summer. From the late 1980's stirring fans were also fitted in many naturally ventilated sheds to improve summer cooling and ventilation.

Since the early 1990's controlled environment sheds fitted with multi-tiered cages have been installed. These houses have more effective ventilation and cooling systems with the ability to provide the hens with an environment closer to their requirements and are effective in all poultry production areas of Australia. Either a cross flow or a tunnel ventilation system is used with evaporative cooling pads. These have the ability to maintain shed temperatures within the range of 20-28°C. A minimum density of hens is required to ensure enough body heat is generated in winter to maintain shed temperature and for the minimum ventilation system to work effectively.

## **5.11 Cage Layer Shed Temperature**

The thermo neutral zone for layers is 20 to 25°C. The standard recommendation for laying house temperature is 21°C.

Sixty-eight percent of the hens in the surveyed farms are housed in layer cage sheds where the temperature is above 28°C on hot days in summer. This questionnaire did not ascertain if the naturally ventilated sheds included stirring fans as part of the cooling equipment. If stirring fans are installed then the effective temperature that the hens sense may be lower due to wind chill effect. Temperatures above 28°C will reduce egg size and shell quality. The severity and duration of the effect depends on temperature, the duration per day and how many days or weeks it lasts. If the high temperature is prolonged there is also the potential for a reduction in rate of lay.

Thirty-five percent of the hens were housed in sheds where the temperature was 10°C or less at night during cold weather. Hens housed at these temperatures will eat more feed to maintain their body temperature. This represents a cost to the industry of about 7 cents or more per dozen eggs depending on feed price. If this 35 percent of hens were housed in insulated sheds with an effective minimum ventilation system there is a potential saving to the industry in feed of 4.95 million dollars annually. There is also a potential saving in feed cost for the 36.9 percent of hens experiencing temperatures between 10-20°C.

## **5.12 Summary**

The survey of Australian egg farmers was conducted to determine the impact of the August 2000 ARMCANZ decision on the egg industry. The survey results received represent 98 percent of the estimated layer farms in Australia.

- New cage, barn or free range facilities that will meet the 1995 Code at 2008 are needed to replace 75 percent (8.55 million hens) of the hens housed in cages that will not comply at January 2008.
- The cost to replace the non-complying cages with new cages and shedding is estimated at \$274 million exclusive of the cost of land, services, approvals, site preparation etc.
- Farmers expressed concern that their ability to borrow funds to upgrade facilities has been reduced following the ARMCANZ decisions due to devaluation of their asset base.

- There will be 3.05 million or 27 percent shortfall in laying capacity at 2008 due to farmers intending to leave the industry.
- Fifty eight percent of farmers with 39 percent of the cage capacity are unsure about whether to retire or to invest in new facilities because of low prices, market disruption and uncertainty about the future prospects in the industry.
- Fourteen farmers with 0.48 million layer capacity will stay in the industry if financial assistance were available. Twenty-four farmers with 2.03 million cage capacity who are already prepared to stay indicated that they would put new equipment in new shedding instead of using existing sheds.
- The most significant feature disqualifying cages from meeting the 1995 Code was door width (56 percent of cage capacity). Another 13 percent of cages had adequate door width but other disqualifying features.
- There is a potential for reducing feed costs in the egg industry by \$4.95 million if the 35 percent of hens experiencing temperatures of less than 10<sup>o</sup>C at night were housed in insulated sheds with an effective minimum ventilation system.
- Cages with 9 percent of the cage capacity have the potential to be modified to meet the 1995 Code. Another 17 percent of cage capacity has some potential for modification.
- Cage modification is not expensive. However farmers must consider the effects that production inefficiencies inherent in old cages and the reduced stocking density will have on the farms long term viability.
- Farmers need to verify that new cages that they intend purchasing do meet the 1995 Code.
- Forty-one percent of the cages are over 20 years of age.
- Some cages were recorded as having flat deck cages with a door in the top of the cage rather than in the cage front. Clarification is required as to whether a larger door is acceptable or if the door must be the full width of the cage to comply with the 1995 Code.

## 6. Implications

There is the potential for a shortfall in new egg production facilities that will meet the 1995 Code in January 2008. To ensure that there is sufficient egg production facilities that meet the 1995 Code at 2008 the Australian egg industry needs to develop and implement a strategy that will encourage farmers to invest in sufficient upgraded facilities that will enable it to meet expected consumer demand for eggs at 2008. The strategy must provide outcomes that will enable current farmers to see a future in the industry and that prices will be adequate to reward them for re-investing in the industry.

If the industry does not meet this requirement it will place itself in the unenviable situation of not being able to meet the consumers needs for eggs. Three options open to Government to ensure that egg supply is adequate are: allow the importation of eggs, delay the deadline for implementation of the August 2000 ARMCANZ decision or provide financial assistance to the egg industry for restructuring.

Importation brings a risk of further destabilising the Australian egg industry. Imported eggs would have to meet Australian importation requirements, that is be free from any disease not present in the Australian poultry industry and from any pathogens harmful to human health.

Extending the deadline for the implementation of the ARMCANZ decision will frustrate animal welfare groups and increase their pressure on Australian Federal and State Governments to improve the welfare of hens housed in cages. This may also affect the public image of the egg industry.

Nineteen percent of farmers with a current capacity of 2.65 million hens indicated that they would invest in new facilities if the government provided financial assistance for restructuring of the industry. If the egg industry lobbies governments for financial assistance, it will give the industry another option for ensuring that there are sufficient upgraded facilities at 2008 that meet the 1995 Code.

## 7. Recommendations for Further Work

The following recommendations for further work that will assist the Australian egg industry to meet the requirements of the ARMCANZ 2000 decision in 2008 are:

- That the results of the survey be communicated to industry to give farmers an understanding of the implications of ARMCANZ 2000 decision on the industry, to provide information that will assist farmers to make decisions about their future, whether their cages meet the 1995 Code and if cage modification is a viable option.
- That a telephone survey of current egg farmers be made to ascertain the current situation in terms of new facilities that have or are planned to be built and if there is a change in farmers future intentions. This will provide the industry with current information to assist in determining if it will meet the 2008 deadline for facilities to meet the 1995 Code.
- That an estimate of cost using the survey data be made of various compensation options that industry may wish to propose to government.

## 8. Appendices

Appendix 1(a) Number of farms for farmers who answered, "yes" to questions on their future intentions.  
(Note: Appendices 2(a) through to 2(g) were developed from this data)

Question	Number of farms per State						
	NSW	Qld	SA	Vic	WA	NT & Tas	Aust
<i>Question 6 Do you intend to:</i>							
(a) Retire from or leave the industry in the next 3 years	6	6	1	1	1	0	15
(b) Retire from or leave the industry by January 2008	14	9	3	7	4	1	38
(c) Retire from or leave the industry when equipment needs replacing	8	5	1	0	0	1	15
(d) No intention to leave, will upgrade housing and equipment as required	29	11	7	25	15	2	89
(e) Retire and pass the business to my children by January 2008	3	1	3	6	6	1	20
(f) Still considering the options	38	28	15	29	19	5	134
<i>Question 7 If you are staying in the industry and have cages that do not meet the 1995 Code, do you intend to:</i>							
(a) Modify the affected cages to meet the 1995 Code	7	3	5	3	6	0	24
(b) Replace the affected cages by investing in new cages and use existing shedding	4	2	3	16	7	1	33
(c) Replace the affected cages by investing in new cages and new shedding	20	4	4	14	7	0	49
(d) Replace the affected cages by investing in barn egg production and use existing shedding	2	9	3	3	8	0	25
(e) Replace the affected cages by investing in barn egg production and use new shedding	1	0	4	1	1	0	7
(f) Replace the affected cages by investing in free range egg production and use existing shedding	1	6	2	3	1	1	14
(g) Replace the affected cages by investing in free range egg production and use new shedding	1	2	3	0	0	0	6
(h) Still considering the options	33	25	16	28	20	4	126

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**Appendix 1(a) Number of farms for farmers who answered, "yes" to questions on their future intentions. (Continued)**

Question	Number of farms per State						
	NSW	Qld	SA	Vic	WA	NT & Tas	Aust
<i>Question 8 If financial assistance was available from Government to assist in upgrading your layer facilities (cages or alternative systems) or to leave the industry, would you change your future intentions by:</i>							
(a) Retiring earlier from the egg industry	12	20	3	6	5	0	46
(b) Commence or expanding another enterprise or business	11	6	5	5	4	0	31
(c) Modify the cages affected to meet the 1995 Code	11	3	7	5	7	0	33
(d) Replace the affected cages by investing in new cages and use existing shedding	14	3	10	20	9	4	60
(e) Replace the affected cages by investing in new cages and new shedding	23	8	7	13	7	3	61
(f) Replace the affected cages by investing in barn egg production and use existing shedding	5	4	8	5	8	3	33
(g) Replace the affected cages by investing in barn egg production and use new shedding	3	2	6	1	3	1	16
(h) Replace the affected cages by investing in free range egg production and use existing shedding	4	3	2	4	3	0	16
(i) Replace the affected cages by investing in free range egg production and use new shedding	2	3	3	0	0	0	8
(j) Or make no changes to my future intentions	20	1	2	10	2	1	36
(k) Still considering the options	33	23	15	25	22	5	123

**Appendix 1(b) Cage capacity held by farmers who answered, "yes" to questions on their future intentions.**  
**(Note: Appendices 2(a) through to 2(g) were developed from this data)**

Question	Cage capacity per State						
	NSW	Qld	SA	Vic	WA	NT & Tas	Aust
<i>Question 6 Do you intend to:</i>							
(a) Retire from or leave the industry in the next 3 years	143,192	76,433	2,160	13,500	10,977	0	246,262
(b) Retire from or leave the industry by January 2008	326,434	133,254	78,528	139,000	61,180	29,856	768,252
(c) Retire from or leave the industry when equipment needs replacing	266,020	31,848	25,200	0	0	29,856	352,924
(d) No intention to leave, will upgrade housing and equipment as required	2,616,534	1,332,931	245,911	1,691,534	635,959	153,984	6,676,853
(e) Retire and pass the business to my children by January 2008	87,677	11,460	38,247	264,554	114,756	10,368	527,062
(f) Still considering the options	1,229,097	507,612	474,133	1,057,166	291,841	250,008	3,809,857
<i>Question 7 If you are staying in the industry and have cages that do not meet the 1995 Code, do you intend to:</i>							
(a) Modify the affected cages to meet the 1995 Code	138,363	58,896	187,266	87,784	131,308	0	602,717
(b) Replace the affected cages by investing in new cages and use existing shedding	45,276	34,652	222,634	871,080	147,139	143,616	1,464,397
(c) Replace the affected cages by investing in new cages and new shedding	2,182,088	1,168,339	98,440	1,156,574	163,701	0	4,769,142
(d) Replace the affected cages by investing in barn egg production and use existing shedding	73,205	114,028	166,770	83,192	164,457	0	601,652
(e) Replace the affected cages by investing in barn egg production and use new shedding	19,600	0	229,930	69,944	24,408	0	343,882
(f) Replace the affected cages by investing in free range egg production and use existing shedding	19,600	79,976	159,474	73,512	24,504	10,368	367,434
(g) Replace the affected cages by investing in free range egg production and use new shedding	19,600	25,140	77,848	0	0	0	122,588
(h) Still considering the options	1,058,764	448,655	481,429	1,113,794	316,249	204,504	3,623,395

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**Appendix 1(b) Cage capacity held by farmers who answered, "yes" to questions on their future intentions. (Continued)**

Question	Cage capacity per State						
	NSW	Qld	SA	Vic	WA	NT & Tas	Aust
<i>Question 8 If financial assistance was available from Government to assist in upgrading your layer facilities (cages or alternative systems) or to leave the industry, would you change your future intentions by:</i>							
(a) Retiring earlier from the egg industry	199,945	314,714	42,765	123,304	115,334	0	796,062
(b) Commence or expanding another enterprise or business	326,945	77,744	202,050	379,498	100,187	0	1,085,524
(c) Modify the cages affected to meet the 1995 Code	424,620	52,764	290,875	121,770	204,775	0	1,094,804
(d) Replace the affected cages by investing in new cages and use existing shedding	492,761	69,308	409,294	1,027,730	185,101	239,568	2,422,862
(e) Replace the affected cages by investing in new cages and new shedding	1,034,926	1,306,261	205,771	740,624	168,491	95,952	3,552,025
(f) Replace the affected cages by investing in barn egg production and use existing shedding	156,942	80,932	326,679	105,980	143,247	95,952	909,732
(g) Replace the affected cages by investing in barn egg production and use new shedding	97,196	63,105	158,236	69,944	44,385	29,856	462,722
(h) Replace the affected cages by investing in free range egg production and use existing shedding	79,775	38,216	159,474	94,512	44,481	0	416,458
(i) Replace the affected cages by investing in free range egg production and use new shedding	33,200	33,525	77,848	0	0	0	144,573
(j) Or make no changes to my future intentions	2,169,064	1,052	39,024	688,640	58,210	10,368	2,966,358
(k) Still considering the options	1,036,470	405,169	465,757	1,074,934	643,233	250,008	3,875,571

**Appendix 2(a) Summary of Australian farmers current intentions and future intentions if financial assistance was available from government.**

	% Farms	% Cage capacity
<b>(a) Initial intentions</b>		
Leave the industry by 2008	16.9	6.8
Stay in the industry	25.1	54.5
Farmers still considering future options	58.0	38.7
Includes:		
- still considering future options – unsure when and if leaving the industry	(6.9)	(4.2)
- still considering future options – may stay in the industry	(17.3)	(14.8)
- still considering future options – made no choices about future	(33.8)	(19.7)
Total participants	100.0	100.0
<b>(b) Farmers intentions if staying in industry</b>		
Farmers with firm intentions on updating facilities	24.2	49.4
Includes:		
- replace or modify the cages	(19.0)	(47.1)
- replace cages by investing in barn facilities	(1.7)	(0.8)
- replace the cages by investing in free range facilities	(0.9)	(0.1)
- replace the cages and/or invest in barn and/or free range facilities	(2.6)	(1.5)
Still considering future options available for updating facilities	17.3	13.6
Total participants	41.6	63.1
<b>(c) Farmers intentions if financial assistance is made available</b>		
Retire earlier or commence/expand another enterprise	13.0	4.4
Intend to update facilities	18.6	26.9
Includes:		
- replace or modify the cages	(11.7)	(23.0)
- replace cages by investing in barn facilities	(2.2)	(1.3)
- replace the cages by investing in free range facilities	(0.9)	(0.2)
- replace the cages and/or invest in barn and/or free range facilities	(3.9)	(2.4)
Still considering the options available for updating facilities	31.6	25.1
Total farmers reconsidering their intentions if financial assistance was offered	63.2	56.4
Farmers making no changes to future intentions	16.9	33.9
Total participants	80.1	90.2

**Appendix 2(b) Summary of New South Wales farmers current intentions and future intentions if financial assistance was available from government.**

	% Farms	% Cage capacity
<b>(a) Initial intentions</b>		
Leave the industry by 2008	21.6	9.4
Stay in the industry	27.0	58.2
Farmers still considering future options	51.4	32.4
Includes:		
- still considering future options – unsure when and if leaving the industry	(5.4)	(4.0)
- still considering future options – may stay in the industry	(14.9)	(11.7)
- still considering future options – made no choices about future	(31.1)	(16.7)
Total participants	100.0	100.0
<b>(b) Farmers intentions if staying in industry</b>		
Farmers with firm intentions on updating facilities	28.4	58.0
Includes:		
- replace or modify the cages	(27.0)	(57.5)
- replace cages by investing in barn facilities	(0.0)	(0.0)
- replace the cages by investing in free range facilities	(0.0)	(0.0)
- replace the cages and/or invest in barn and/or free range facilities	(1.4)	(0.5)
Still considering future options available for updating facilities	6.8	3.0
Total participants	35.1	61.0
<b>(c) Farmers intentions if financial assistance is made available</b>		
Retire earlier or commence/expand another enterprise	13.5	3.8
Intend to update facilities	14.9	13.1
Includes:		
- replace or modify the cages	(12.2)	(10.8)
- replace cages by investing in barn facilities	(0.0)	(0.0)
- replace the cages by investing in free range facilities	(0.0)	(0.0)
- replace the cages and/or invest in barn and/or free range facilities	(2.7)	(2.3)
Still considering the options available for updating facilities	24.3	17.3
Total farmers reconsidering their intentions if financial assistance was offered	52.7	34.1
Farmers making no changes to future intentions	28.4	57.4
Total participants	81.1	91.5

**Appendix 2(c) Summary of Northern Territory and Tasmanian farmers' current intentions and future intentions if financial assistance was available from government.**

	% Farms	% Cage capacity
<b>(a) Initial intentions</b>		
Leave the industry by 2008	0.0	0.0
Stay in the industry	16.7	4.0
Farmers still considering future options	83.3	96.0
Includes:		
- still considering future options – unsure when and if leaving the industry	(16.7)	(11.5)
- still considering future options – may stay in the industry	(16.7)	(55.2)
- still considering future options – made no choices about future	(50.0)	(29.4)
Total participants	100.0	100.0
<b>(b) Farmers intentions if staying in industry</b>		
Farmers with firm intentions on updating facilities	16.7	4.0
Includes:		
- replace or modify the cages	(0.0)	(0.0)
- replace cages by investing in barn facilities	(0.0)	(0.0)
- replace the cages by investing in free range facilities	(16.7)	(4.0)
- replace the cages and/or invest in barn and/or free range facilities	(0.0)	(0.0)
Still considering future options available for updating facilities	16.7	55.2
Total participants	33.3	59.1
<b>(c) Farmers intentions if financial assistance is made available</b>		
Retire earlier or commence/expand another enterprise	0.0	0.0
Intend to update facilities	0.0	0.0
Includes:		
- replace or modify the cages	(0.0)	(0.0)
- replace cages by investing in barn facilities	(0.0)	(0.0)
- replace the cages by investing in free range facilities	(0.0)	(0.0)
- replace the cages and/or invest in barn and/or free range facilities	(0.0)	(0.0)
Still considering the options available for updating facilities	66.7	92.0
Total farmers reconsidering their intentions if financial assistance was offered	66.7	92.0
Farmers making no changes to future intentions	16.7	4.0
Total participants	83.3	96.0

**Appendix 2(d) Summary of Queensland farmers current intentions and future intentions if financial assistance was available from government.**

	% Farms	% Cage capacity
<b>(a) Initial intentions</b>		
Leave the industry by 2008	27.5	10.0
Stay in the industry	17.6	64.8
Farmers still considering future options	54.9	25.2
Includes:		
- still considering future options – unsure when and if leaving the industry	(3.9)	(0.7)
- still considering future options – may stay in the industry	(3.9)	(1.5)
- still considering future options – made no choices about future	(47.1)	(23.0)
Total participants	100.0	100.0
<b>(b) Farmers intentions if staying in industry</b>		
Farmers with firm intentions on updating facilities	21.6	62.5
Includes:		
- replace or modify the cages	(11.8)	(59.9)
- replace cages by investing in barn facilities	(3.9)	(0.8)
- replace the cages by investing in free range facilities	(0.0)	(0.0)
- replace the cages and/or invest in barn and/or free range facilities	(5.9)	(1.8)
Still considering future options available for updating facilities	9.8	4.1
Total participants	31.4	66.6
<b>(c) Farmers intentions if financial assistance is made available</b>		
Retire earlier or commence/expand another enterprise	25.5	9.7
Intend to update facilities	21.6	67.9
Includes:		
- replace or modify the cages	(13.7)	(64.0)
- replace cages by investing in barn facilities	(3.9)	(3.2)
- replace the cages by investing in free range facilities	(0.0)	(0.0)
- replace the cages and/or invest in barn and/or free range facilities	(3.9)	(0.6)
Still considering the options available for updating facilities	21.6	9.7
Total farmers reconsidering their intentions if financial assistance was offered	68.6	87.2
Farmers making no changes to future intentions	2.0	0.1
Total participants	70.6	87.3

**Appendix 2(e) Summary of South Australian farmers current intentions and future intentions if financial assistance was available from government.**

	% Farms	% Cage capacity
<b>(a) Initial intentions</b>		
Leave the industry by 2008	13.6	3.3
Stay in the industry	18.2	13.2
Farmers still considering future options	68.2	83.4
Includes:		
- still considering future options – unsure when and if leaving the industry	(9.1)	(15.3)
- still considering future options – may stay in the industry	(22.7)	(36.7)
- still considering future options – made no choices about future	(36.4)	(31.5)
Total participants	100.0	100.0
<b>(b) Farmers intentions if staying in industry</b>		
Farmers with firm intentions on updating facilities	13.6	11.9
Includes:		
- replace or modify the cages	(4.5)	(0.7)
- replace cages by investing in barn facilities	(0.0)	(0.0)
- replace the cages by investing in free range facilities	(4.5)	(0.2)
- replace the cages and/or invest in barn and/or free range facilities	(4.5)	(11.1)
Still considering future options available for updating facilities	31.8	38.5
Total participants	45.5	50.4
<b>(c) Farmers intentions if financial assistance is made available</b>		
Retire earlier or commence/expand another enterprise	4.5	0.7
Intend to update facilities	22.7	17.3
Includes:		
- replace or modify the cages	(4.5)	(3.2)
- replace cages by investing in barn facilities	(4.5)	(0.4)
- replace the cages by investing in free range facilities	(4.5)	(0.2)
- replace the cages and/or invest in barn and/or free range facilities	(9.1)	(13.5)
Still considering the options available for updating facilities	45.5	63.0
Total farmers reconsidering their intentions if financial assistance was offered	72.7	81.0
Farmers making no changes to future intentions	9.1	6.9
Total participants	81.8	87.8

**Appendix 2(f) Summary of Victorian farmers current intentions and future intentions if financial assistance was available from government.**

	% Farms	% Cage capacity
<b>(a) Initial intentions</b>		
Leave the industry by 2008	6.4	1.8
Stay in the industry	31.9	53.8
Farmers still considering future options	61.7	44.4
Includes:		
- still considering future options – unsure when and if leaving the industry	(10.6)	(4.6)
- still considering future options – may stay in the industry	(25.5)	(19.2)
- still considering future options – made no choices about future	(25.5)	(20.6)
Total participants	100.0	100.0
<b>(b) Farmers intentions if staying in industry</b>		
Farmers with firm intentions on updating facilities	29.8	50.9
Includes:		
- replace or modify the cages	(27.7)	(49.2)
- replace cages by investing in barn facilities	(2.1)	(1.7)
- replace the cages by investing in free range facilities	(0.0)	(0.0)
- replace the cages and/or invest in barn and/or free range facilities	(0.0)	(0.0)
Still considering future options available for updating facilities	27.7	25.1
Total participants	57.4	76.0
<b>(c) Farmers intentions if financial assistance is made available</b>		
Retire earlier or commence/expand another enterprise	6.4	1.5
Intend to update facilities	21.3	24.1
Includes:		
- replace or modify the cages	(12.8)	(20.1)
- replace cages by investing in barn facilities	(2.1)	(1.7)
- replace the cages by investing in free range facilities	(2.1)	(0.7)
- replace the cages and/or invest in barn and/or free range facilities	(4.3)	(1.6)
Still considering the options available for updating facilities	38.3	33.8
Total farmers reconsidering their intentions if financial assistance was offered	66.0	59.4
Farmers making no changes to future intentions	23.4	31.2
Total participants	89.4	90.6

**Appendix 2(g) Summary of Western Australian farmers current intentions and future intentions if financial assistance was available from government.**

	% Farms	% Cage capacity
<b>(a) Initial intentions</b>		
Leave the industry by 2008	9.7	6.4
Stay in the industry	29.0	58.8
Farmers still considering future options	61.3	34.8
Includes:		
- still considering future options – unsure when and if leaving the industry	(6.5)	(2.2)
- still considering future options – may stay in the industry	(29.0)	(20.8)
- still considering future options – made no choices about future	(25.8)	(11.8)
Total participants	100.0	100.0
<b>(b) Farmers intentions if staying in industry</b>		
Farmers with firm intentions on updating facilities	19.4	15.0
Includes:		
- replace or modify the cages	(12.9)	(9.6)
- replace cages by investing in barn facilities	(3.2)	(2.5)
- replace the cages by investing in free range facilities	(0.0)	(0.0)
- replace the cages and/or invest in barn and/or free range facilities	(3.2)	(2.9)
Still considering future options available for updating facilities	29.0	21.9
Total participants	48.4	36.9
<b>(c) Farmers intentions if financial assistance is made available</b>		
Retire earlier or commence/expand another enterprise	9.7	6.0
Intend to update facilities	19.4	13.9
Includes:		
- replace or modify the cages	(12.9)	(8.5)
- replace cages by investing in barn facilities	(3.2)	(2.5)
- replace the cages by investing in free range facilities	(0.0)	(0.0)
- replace the cages and/or invest in barn and/or free range facilities	(3.2)	(2.9)
Still considering the options available for updating facilities	38.7	26.6
Total farmers reconsidering their intentions if financial assistance was offered	67.7	46.5
Farmers making no changes to future intentions	9.7	43.6
Total participants	77.4	90.1



## Appendix 3

## The impact of the ARMCANZ decision on cage capacity (Includes farms that did not supply full cage data).

State	Cage capacity at current stocking density at 2000	Cage capacity at new stocking density	% cage capacity lost	Cage capacity at new stocking density for cages meeting 1995 code	% cage capacity lost	Cage capacity at current density on farms staying and not meeting 1995 code	Total cage capacity likely to meet 1995 code at 2008	Shortfall in cage capacity at 2008 (hens)	Shortfall in cage capacity at 2008 (%)
NSW	4,609,126	3,486,406	24.4	902,655	80.4	2,548,588	3,451,243	1,157,883	25.1
Qld	2,172,902	1,656,330	23.8	599,112	72.4	826,631	1,425,743	747,159	34.4
SA	590,466	421,623	28.6	48,336	91.8	275,594	323,930	266,536	45.1
VIC	2,812,122	2,174,584	22.7	804,494	71.4	1,386,190	2,190,684	621,438	22.1
WA	920,063	754,478	18.0	386,512	58.0	356,632	743,144	176,919	19.2
Sub Total	11,104,679	8,493,421	23.5	2,741,109	75.3	5,393,635	8,134,744	2,969,935	26.7
NT	158,616	110,982	30.0	47,232	70.2	95,640	142,872	15,744	9.9
TAS	121,760	98,738	18.9	45,504	62.6	15,368	60,872	60,888	50.0
Australia	11,385,055	8,703,141	23.6	2,833,845	75.1	5,504,643	8,338,488	3,046,567	26.8

**Appendix 4 Cage sizes, floor area and the number of hens housed at current and new cage stocking densities.**

Cage front width	Cage depth	Cage front width	Cage depth	Floor area	Number hens housed per cage at stocking density	
					Current	New
Cm		inches		cm <sup>2</sup>		
26.1	32.0	10.3	12.6	835	1	1
26.1	34.0	10.3	13.4	888	1	1
20.3	45.7	8.0	18.0	929	1	1
22.9	45.7	9.0	18.0	1,045	1	1
22.9	53.3	9.0	21.0	1,219	1	1
25.4	45.7	10.0	18.0	1,161	1	1
25.4	47.0	10.0	18.5	1,194	1	1
26.1	44.0	10.3	17.3	1,150	1	1
26.1	45.7	10.3	18.0	1,195	1	1
26.1	48.3	10.3	19.0	1,261	1	1
30.5	30.5	12.0	12.0	930	1	1
30.5	38.1	12.0	15.0	1,162	1	1
30.5	42.0	12.0	16.5	1,281	1	1
30.5	43.2	12.0	17.0	1,317	1	1
30.5	44.0	12.0	17.3	1,342	1	1
36.6	36.6	14.4	14.4	1,338	1	1
40.6	30.5	16.0	12.0	1,240	1	1
44.0	30.0	17.3	11.8	1,320	1	1
45.0	25.0	17.7	9.8	1,125	1	1
46.0	28.0	18.1	11.0	1,288	1	1
30.5	45.7	12.0	18.0	1,394	3	2
30.5	46.5	12.0	18.3	1,418	3	2
30.5	47.0	12.0	18.5	1,434	3	2
30.5	48.0	12.0	18.9	1,464	3	2
30.5	48.3	12.0	19.0	1,472	3	2
30.5	50.8	12.0	20.0	1,549	3	2
30.5	51.5	12.0	20.3	1,571	3	2
30.5	52.1	12.0	20.5	1,589	3	2
30.5	53.3	12.0	21.0	1,627	3	2
30.5	54.5	12.0	21.5	1,662	3	3
30.5	55.9	12.0	22.0	1,704	3	3
32.0	50.0	12.6	19.7	1,600	3	2
32.0	54.0	12.6	21.3	1,728	3	3
35.6	43.0	14.0	16.9	1,529	3	2
35.6	43.0	14.0	16.9	1,529	3	2
36.6	45.7	14.4	18.0	1,672	3	3
36.6	46.0	14.4	18.1	1,683	3	3
38.1	45.7	15.0	18.0	1,741	3	3
38.1	46.5	15.0	18.3	1,772	3	3
39.0	45.0	15.4	17.7	1,755	3	3
40.6	40.6	16.0	16.0	1,652	3	3
40.6	43.2	16.0	17.0	1,755	3	3
42.0	41.0	16.5	16.1	1,722	3	3
45.0	30.0	17.7	11.8	1,350	3	2
45.0	33.0	17.7	13.0	1,485	3	2
45.0	35.0	17.7	13.8	1,575	3	2
45.7	30.5	18.0	12.0	1,393	3	2
46.0	30.5	18.1	12.0	1,403	3	2
48.0	37.0	18.9	14.6	1,776	3	3

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**Appendix 4 Cage sizes, floor area and the number of hens housed at current and new cage stocking densities. (Continued)**

<b>Cage front width</b>	<b>Cage depth</b>	<b>Cage front width</b>	<b>Cage depth</b>	<b>Floor area</b>	<b>Number hens housed per cage at stocking density</b>	
<b>cm</b>		<b>inches</b>		<b>cm<sup>2</sup></b>	<b>Current</b>	<b>New</b>
50.0	30.0	19.7	11.8	1,500	3	2
50.0	31.0	19.7	12.2	1,550	3	2
50.0	33.5	19.7	13.2	1,675	3	3
50.8	30.5	20.0	12.0	1,549	3	2
50.8	32.0	20.0	12.6	1,626	3	2
52.0	32.0	20.5	12.6	1,664	3	3
53.3	30.5	21.0	12.0	1,626	3	2
30.5	60.0	12.0	23.6	1,830	4	3
30.5	61.0	12.0	24.0	1,859	4	3
30.5	62.0	12.0	24.4	1,891	4	3
35.0	55.0	13.8	21.7	1,925	4	3
36.6	51.0	14.4	20.1	1,866	4	3
36.6	52.0	14.4	20.5	1,902	4	3
36.6	52.0	14.4	20.5	1,902	4	3
36.6	53.3	14.4	21.0	1,950	4	3
36.6	57.5	14.4	22.6	2,103	4	3
36.6	61.0	14.4	24.0	2,231	4	4
38.1	50.5	15.0	19.9	1,924	4	3
39.0	56.5	15.4	22.2	2,204	4	4
40.6	45.7	16.0	18.0	1,858	4	3
40.6	46.5	16.0	18.3	1,890	4	3
40.6	50.8	16.0	20.0	2,065	4	3
43.0	49.0	16.9	19.3	2,107	4	3
44.0	46.0	17.3	18.1	2,024	4	3
44.0	50.0	17.3	19.7	2,200	4	4
45.0	42.0	17.7	16.5	1,890	4	3
45.0	44.0	17.7	17.3	1,980	4	3
45.0	45.0	17.7	17.7	2,025	4	3
45.0	49.0	17.7	19.3	2,205	4	4
45.7	45.7	18.0	18.0	2,088	4	3
46.0	40.6	18.1	16.0	1,868	4	3
46.0	45.0	18.1	17.7	2,070	4	3
46.5	46.0	18.3	18.1	2,139	4	3
47.5	39.5	18.7	15.6	1,876	4	3
48.0	45.0	18.9	17.7	2,160	4	3
49.0	43.0	19.3	16.9	2,107	4	3
49.0	45.0	19.3	17.7	2,205	4	4
50.0	40.0	19.7	15.7	2,000	4	3
50.0	43.0	19.7	16.9	2,150	4	3
50.8	35.6	20.0	14.0	1,808	4	3
40.8	42.0	20.0	16.5	2,134	4	3
61.0	30.5	24.0	12.0	1,856	4	3
42.0	59.0	16.5	23.2	2,478	5	4
44.5	60.0	17.5	23.6	2,670	5	4
46.0	50.8	18.1	20.0	2,337	5	4
47.0	50.0	18.5	19.7	2,350	5	4
48.0	48.5	18.9	19.1	2,328	5	4
49.0	48.0	19.3	18.9	2,352	5	4
49.0	50.0	19.3	19.7	2,450	5	4
49.5	53.5	19.5	21.1	2,648	5	4

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**Appendix 4 Cage sizes, floor area and the number of hens housed at current and new cage stocking densities. (Continued)**

Cage front width	Cage depth	Cage front width	Cage depth	Floor area	Number hens housed per cage at stocking density	
					Current	New
cm		inches		cm <sup>2</sup>		
50.0	45.0	19.7	17.7	2,250	5	4
50.0	47.0	19.7	18.5	2,350	5	4
50.0	48.0	19.7	18.9	2,400	5	4
50.0	50.8	19.7	20.0	2,540	5	4
50.2	45.0	19.8	17.7	2,259	5	4
50.2	50.2	19.8	19.8	2,520	5	4
50.2	52.8	19.8	20.8	2,651	5	4
50.8	46.0	20.0	18.1	2,337	5	4
50.8	48.0	20.0	18.9	2,438	5	4
50.8	49.5	20.0	19.5	2,515	5	4
50.8	50.8	20.0	20.0	2,581	5	4
52.3	45.7	20.6	18.0	2,390	5	4
53.0	50.0	20.9	19.7	2,650	5	4
53.3	45.7	21.0	18.0	2,436	5	4
45.7	61.0	18.0	24.0	2,788	6	5
46.0	60.0	18.1	23.6	2,760	6	5
46.0	63.0	18.1	24.8	2,898	6	5
50.0	54.0	19.7	21.3	2,700	6	4
50.2	55.0	19.8	21.7	2,761	6	5
50.8	56.0	20.0	22.0	2,845	6	5
60.3	45.0	23.7	17.7	2,714	6	4
60.3	50.0	23.7	19.7	3,015	6	5
60.5	51.5	23.8	20.3	3,116	6	5
61.0	45.7	24.0	18.0	2,787	6	5
60.3	55.0	23.7	21.7	3,317	7	6
62.0	55.0	24.4	21.7	3,410	7	6
70.0	47.0	27.6	18.5	3,290	7	5
78.2	45.7	30.8	18.0	3,574	7	6
101.0	32.0	39.8	12.6	3,232	7	5
60.0	60.0	23.6	23.6	3,600	8	6
61.0	61.0	24.0	24.0	3,716	8	6
200.0	61.5	78.7	24.2	12,300	27	22

**Appendix 5 Cage sizes, floor area and number of hens housed per cage at current and new stocking densities for original cages and cages with partitions removed.**

Original cage						Partition removed between 2 cages						
Cage front width	Cage depth	Cage front width	Cage depth	Floor area	Number hens housed per cage at stocking density		Cage front width	Cage depth	Floor area	Number hens housed per cage at stocking density		Gain in no hens per cage
					Current	New				Current	New	
cm	cm	inches	inches	cm <sup>2</sup>			cm	cm	cm <sup>2</sup>			
26.1	32.0	10.3	12.6	835	1	1	52.2	32.0	1,670	3	3	1
26.1	34.0	10.3	13.4	888	1	1	52.3	34.0	1,777	3	3	1
20.3	45.7	8.0	18.0	929	1	1	40.6	45.7	1,858	4	3	1
30.5	30.5	12.0	12.0	930	1	1	61.0	30.5	1,861	4	3	1
22.9	45.7	9.0	18.0	1,045	1	1	45.7	45.7	2,090	4	3	1
45.0	25.0	17.7	9.8	1,125	1	1	90.0	25.0	2,250	5	4	2
26.1	44.0	10.3	17.3	1,150	1	1	52.3	44.0	2,299	5	4	2
25.4	45.7	10.0	18.0	1,161	1	1	50.8	45.7	2,323	5	4	2
30.5	38.1	12.0	15.0	1,162	1	1	61.0	38.1	2,324	5	4	2
25.4	47.0	10.0	18.5	1,194	1	1	50.8	47.0	2,388	5	4	2
26.1	45.7	10.3	18.0	1,195	1	1	52.3	45.7	2,389	5	4	2
22.9	53.3	9.0	21.0	1,219	1	1	45.7	53.3	2,439	5	4	2
40.6	30.5	16.0	12.0	1,240	1	1	81.3	30.5	2,479	5	4	2
26.1	48.3	10.3	19.0	1,261	1	1	52.3	48.3	2,522	5	4	2
30.5	42.0	12.0	16.5	1,281	1	1	61.0	42.0	2,562	5	4	2
46.0	28.0	18.1	11.0	1,288	1	1	92.0	28.0	2,576	5	4	2
30.5	43.2	12.0	17.0	1,317	1	1	61.0	43.2	2,634	5	4	2
44.0	30.0	17.3	11.8	1,320	1	1	88.0	30.0	2,640	5	4	2
36.6	36.6	14.4	14.4	3,338	1	1	73.2	36.6	2,676	5	4	2
30.5	44.0	12.0	17.3	1,342	1	1	61.0	44.0	2,684	5	4	2
45.0	30.0	17.7	11.8	1,350	3	2	90.0	30.0	2,700	6	4	0
45.7	30.5	18.0	12.0	1,393	3	2	91.4	30.5	2,786	6	5	1
30.5	45.7	12.0	18.0	1,395	3	2	61.0	45.7	2,789	6	5	1
46.0	30.5	18.1	12.0	1,403	3	2	92.0	30.5	2,806	6	5	1
30.5	46.5	12.0	18.3	1,418	3	2	61.0	46.5	2,837	6	5	1
30.5	47.0	12.0	18.5	1,434	3	2	61.0	47.0	2,867	6	5	1
30.5	48.0	12.0	18.9	1,464	3	2	61.0	48.0	2,928	6	5	1
30.5	48.3	12.0	19.0	1,472	3	2	61.0	48.3	2,944	6	5	1

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**Appendix 5 Cage sizes, floor area and number of hens housed per cage at current and new stocking densities for original cages and cages with partitions removed. (Continued)**

Original cage						Partition removed between 2 cages						
Cage front width	Cage depth	Cage front width	Cage depth	Floor area	Number hens housed per cage at stocking density		Cage front width	Cage depth	Floor area	Number hens housed per cage at stocking density		Gain in no hens per cage
					Current	New				Current	New	
cm	cm	inches	inches	cm <sup>2</sup>			cm	cm	cm <sup>2</sup>			
45.0	33.0	17.7	13.0	1,485	3	2	90.0	33.0	2,970	6	5	1
50.0	30.0	19.7	11.8	1,500	3	2	100.0	30.0	3,000	6	5	1
35.6	43.0	14.0	16.9	1,529	3	2	71.1	43.0	3,058	6	5	1
35.6	43.0	14.0	16.9	1,529	3	2	71.1	43.0	3,058	6	5	1
30.5	50.8	12.0	20.0	1,549	3	2	61.0	50.8	3,099	6	5	1
50.8	30.5	20.0	12.0	1,549	3	2	101.6	30.5	3,099	6	5	1
50.0	31.0	19.7	12.2	1,550	3	2	100.0	31.0	3,100	6	5	1
30.5	51.5	12.0	20.3	1,571	3	2	61.0	51.5	3,142	6	5	1
45.0	35.0	17.7	13.8	1,575	3	2	90.0	35.0	3,150	7	5	1
30.5	52.1	12.0	20.5	1,589	3	2	61.0	52.1	3,178	7	5	1
32.0	50.0	12.6	19.7	1,600	3	2	64.0	50.0	3,200	7	5	1
50.8	32.0	20.0	12.6	1,626	3	2	101.6	32.0	3,251	7	5	1
53.3	30.5	21.0	12.0	1,626	3	2	106.6	30.5	3,251	7	5	1
30.5	53.3	12.0	21.0	1,627	3	2	61.0	53.3	3,254	7	5	1
40.6	40.6	16.0	16.0	1,652	3	3	81.3	40.6	3,303	7	6	0
30.5	54.5	12.0	21.5	1,662	3	3	61.0	54.5	3,325	7	6	0
52.0	32.0	20.5	12.6	1,664	3	3	104.0	32.0	3,328	7	6	0
36.6	45.7	14.4	18.0	1,672	3	3	73.2	45.7	3,343	7	6	0
50.0	33.5	19.7	13.2	1,675	3	3	100.0	33.5	3,350	7	6	0
36.6	46.0	14.4	18.1	1,683	3	3	73.2	46.0	3,365	7	6	0
30.5	55.9	12.0	22.0	1,704	3	3	61.0	55.9	3,409	7	6	0
42.0	41.0	16.5	16.1	1,722	3	3	84.0	41.0	3,444	7	6	0
32.0	54.0	12.6	21.3	1,728	3	3	64.0	54.0	3,456	7	6	0
38.1	45.7	15.0	18.0	1,741	3	3	76.2	45.7	3,482	7	6	0
40.6	43.2	16.0	17.0	1,755	3	3	81.3	43.2	3,510	7	6	0
39.0	45.0	15.4	17.7	1,755	3	3	78.0	45.0	3,510	7	6	0
38.1	46.5	15.0	18.3	1,772	3	3	76.2	46.5	3,543	7	6	0

Continues next page

**Appendix 5** Cage sizes, floor area and number of hens housed per cage at current and new stocking densities for original cages and cages with partitions removed. (Continued)

Original cage						Partition removed between 2 cages						
Cage front width	Cage depth	Cage front width	Cage depth	Floor area	Number hens housed per cage at stocking density		Cage front width	Cage depth	Floor area	Number hens housed per cage at stocking density		Gain in no hens per cage
					Current	New				Current	New	
cm	cm	inches	inches	cm <sup>2</sup>			cm	cm	cm <sup>2</sup>			
48.0	37.0	18.9	14.6	1,776	3	3	96.0	37.0	3,552	7	6	0
50.8	35.6	20.0	14.0	1,809	4	3	101.6	35.6	3,617	8	6	0
30.5	60.0	12.0	23.6	1,830	4	3	61.0	60.0	3,660	8	6	0
61.0	30.5	24.0	12.0	1,856	4	3	121.9	30.5	3,713	8	6	0
40.6	45.7	16.0	18.0	1,858	4	3	81.3	45.7	3,716	8	6	0
30.5	61.0	12.0	24.0	1,859	4	3	61.0	61.0	3,719	8	6	0
36.6	51.0	14.4	20.1	1,866	4	3	73.2	51.0	3,731	8	6	0
46.0	40.6	18.1	16.0	1,868	4	3	92.0	40.6	3,735	8	6	0
47.5	39.5	18.7	15.6	1,876	4	3	95.0	39.5	3,753	8	6	0
40.6	46.5	16.0	18.3	1,890	4	3	81.3	46.5	3,780	8	6	0
45.0	42.0	17.7	16.5	1,890	4	3	90.0	42.0	3,780	8	6	0
30.5	62.0	12.0	24.4	1,891	4	3	61.0	62.0	3,782	8	6	0
36.6	52.0	14.4	20.5	1,902	4	3	73.2	52.0	3,804	8	6	0
36.6	52.0	14.4	20.5	1,902	4	3	73.2	52.0	3,804	8	6	0
38.1	50.5	15.0	19.9	1,924	4	3	76.2	50.5	3,848	8	6	0
35.0	55.0	13.8	21.7	1,925	4	3	70.0	55.0	3,850	8	7	1
36.6	53.3	14.4	21.0	1,950	4	3	73.2	53.3	3,899	8	7	1
45.0	44.0	17.7	17.3	1,980	4	3	90.0	44.0	3,960	8	7	1
50.0	40.0	19.7	15.7	2,000	4	3	100.0	40.0	4,000	8	7	1
44.0	46.0	17.3	18.1	2,024	4	3	88.0	46.0	4,048	8	7	1
45.0	45.0	17.7	17.7	2,025	4	3	90.0	45.0	4,050	9	7	1
40.6	50.8	16.0	20.0	2,065	4	3	81.3	50.8	4,129	9	7	1
40.6	50.8	16.0	20.0	2,065	4	3	81.3	50.8	4,129	9	7	1
46.0	45.0	18.1	17.7	2,070	4	3	92.0	45.0	4,140	9	7	1
45.7	45.7	18.0	18.0	2,089	4	3	91.4	45.7	4,177	9	7	1
36.6	57.5	14.4	22.6	2,103	4	3	73.2	57.5	4,207	9	7	1
43.0	49.0	16.9	19.3	2,107	4	3	86.0	49.0	4,214	9	7	1
49.0	43.0	19.3	16.9	2,107	4	3	98.0	43.0	4,214	9	7	1
50.8	42.0	20.0	16.5	2,134	4	3	101.6	42.0	4,267	9	7	1

Continues next page

**Appendix 5 Cage sizes, floor area and number of hens housed per cage at current and new stocking densities for original cages and cages with partitions removed. (Continued)**

Original cage						Partition removed between 2 cages						
Cage front width	Cage depth	Cage front width	Cage depth	Floor area	Number hens housed per cage at stocking density		Cage front width	Cage depth	Floor area	Number hens housed per cage at stocking density		Gain in no hens per cage
					Current	New				Current	New	
cm	cm	inches	inches	cm <sup>2</sup>			cm	cm	cm <sup>2</sup>			
46.5	46.0	18.3	18.1	2,139	4	3	93.0	46.0	4,278	9	7	1
50.0	43.0	19.7	16.9	2,150	4	3	100.0	43.0	4,300	9	7	1
48.0	45.0	18.9	17.7	2,160	4	3	96.0	45.0	4,320	9	7	1
44.0	50.0	17.3	19.7	2,200	4	4	88.0	50.0	4,400	9	8	0
39.0	56.5	15.4	22.2	2,204	4	4	78.0	56.5	4,407	9	8	0
45.0	49.0	17.7	19.3	2,205	4	4	90.0	49.0	4,410	9	8	0
49.0	45.0	19.3	17.7	2,205	4	4	98.0	45.0	4,410	9	8	0
36.6	61.0	14.4	24.0	2,231	4	4	73.2	61.0	4,463	9	8	0
50.0	45.0	19.7	17.7	2,250	5	4	100.0	45.0	4,500	10	8	0
50.2	45.0	19.8	17.7	2,259	5	4	100.4	45.0	4,518	10	8	0
48.0	48.5	18.9	19.1	2,328	5	4	96.0	48.5	4,656	10	8	0
46.0	50.8	18.1	20.0	2,337	5	4	92.0	50.8	4,674	10	8	0
50.8	46.0	20.0	18.1	2,337	5	4	101.6	46.0	4,674	10	8	0
47.0	50.0	18.5	19.7	2,350	5	4	94.0	50.0	4,700	10	8	0
50.0	47.0	19.7	18.5	2,350	5	4	100.0	47.0	4,700	10	8	0
49.0	48.0	19.3	18.9	2,352	5	4	98.0	48.0	4,704	10	8	0
52.3	45.7	20.6	18.0	2,390	5	4	104.6	45.7	4,780	10	8	0
50.0	48.0	19.7	18.9	2,400	5	4	100.0	48.0	4,800	10	8	0
53.3	45.7	21.0	18.0	2,436	5	4	106.6	45.7	4,872	10	8	0
50.8	48.0	20.0	18.9	2,438	5	4	101.6	48.0	4,877	10	8	0
49.0	50.0	19.3	19.7	2,450	5	4	98.0	50.0	4,900	10	8	0
42.0	59.0	16.5	23.2	2,478	5	4	84.0	59.0	4,956	11	9	1
50.8	49.5	20.0	19.5	2,515	5	4	101.6	49.5	5,029	11	9	1
50.2	50.2	19.8	19.8	2,520	5	4	100.4	50.2	5,040	11	9	1
50.0	50.8	19.7	20.0	2,540	5	4	100.0	50.8	5,080	11	9	1
50.8	50.8	20.0	20.0	2,581	5	4	101.6	50.8	5,161	11	9	1
49.5	53.5	19.5	21.1	2,648	5	4	99.0	53.5	5,297	11	9	1
53.0	50.0	20.9	19.7	2,650	5	4	106.0	50.0	5,300	11	9	1
50.2	52.8	19.8	20.8	2,651	5	4	100.4	52.8	5,301	11	9	1

Continues next page



**Appendix 5 Cage sizes, floor area and number of hens housed per cage at current and new stocking densities for original cages and cages with partitions removed. (Continued)**

Original cage						Partition removed between 2 cages						
Cage front width	Cage depth	Cage front width	Cage depth	Floor area	Number hens housed per cage at stocking density		Cage front width	Cage depth	Floor area	Number hens housed per cage at stocking density		Gain in no hens per cage
					Current	New				Current	New	
cm	cm	inches	inches	cm <sup>2</sup>			cm	cm	cm <sup>2</sup>			
44.5	60.0	17.5	23.6	2,670	5	4	89.0	60.0	5,340	11	9	1
50.0	54.0	19.7	21.3	2,700	6	4	100.0	54.0	5,400	12	9	1
60.3	45.0	23.7	17.7	2,714	6	4	120.6	45.0	5,427	12	9	1
46.0	60.0	18.1	23.6	2,760	6	5	92.0	60.0	5,520	12	10	0
50.2	55.0	19.8	21.7	2,761	6	5	100.4	55.0	5,522	12	10	0
61.0	45.7	24.0	18.0	2,787	6	5	121.9	45.7	5,574	12	10	0
45.7	61.0	18.0	24.0	2,788	6	5	91.4	61.0	5,575	12	10	0
50.8	56.0	20.0	22.0	2,845	6	5	101.6	56.0	5,690	12	10	0
46.0	63.0	18.1	24.8	2,898	6	5	92.0	63.0	5,796	12	10	0
60.3	50.0	23.7	19.7	3,015	6	5	120.6	50.0	6,030	13	10	0
60.5	51.5	23.8	20.3	3,116	6	5	121.0	51.5	6,232	13	11	1
101.0	32.0	39.8	12.6	3,232	7	5	202.0	32.0	6,464	14	11	1
70.0	47.0	27.6	18.5	3,290	7	5	140.0	47.0	6,580	14	11	1
60.3	55.0	23.7	21.7	3,317	7	6	120.6	55.0	6,633	14	12	0
62.0	55.0	24.4	21.7	3,410	7	6	124.0	55.0	6,820	15	12	0
78.2	45.7	30.8	18.0	3,574	7	6	156.4	45.7	7,148	15	12	0
60.0	60.0	23.6	23.6	3,600	8	6	120.0	60.0	7,200	16	13	1
61.0	61.0	24.0	24.0	3,716	8	6	121.9	61.0	7,432	16	13	1
200.0	61.5	78.7	24.2	12,300	27	22	400.0	61.5	24,600	54	44	0



**Details about the layer cages on your farm.**

4. Please answer the questions below for each type of cage on your farm. (Note: \* See Explanatory diagrams for cage dimensions, flooring, shedding and summary of 1995 Code for Laying Cages). *(Either write in or circle the appropriate answer)*

	Question	*	Cage A	Cage B	Cage C	Cage D	Cage E
a	Cage front width? (cm / inches)	A					
b	Cage depth? (cm / inches)	B					
c	Height at cage front? (cm / inches)	C					
d	Height at the back of cage? (cm / inches)	D					
e	What is the distance from the cage front to the point at which the cage height is less than 40 cm (15.75")? (cm / inches)	J					
f	Express (e) as a percent of (b) (ie. $e / b \times 100$ )						
g	Is the top at the back of the cage recessed or cut away for a drinker line or manure deflector?		Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
h	How far back from the cage front does the recess start? (cm / inches)	E					
i	What is the cage height above the floor where the recess commences? (cm / inches)	F					
j	If the cage has a baffle, how far does it extend into the cage? (cm / inches)	G					
k	What is the width of the cage door opening when the door is fully open? (cm / inches)	I					
l	What is the distance between the cage floor support wires that are spaced the widest apart? (cm / inches)	K					
m	Number of cages?						
n	How many hens were housed in these cages at August 2000?						
o	What style are the cages installed in?		Flatdeck A frame Multi-tier	Flatdeck A frame Multi-tier	Flatdeck A frame Multi-tier	Flatdeck A frame Multi-tier	Flatdeck A frame Multi-tier

	Question	*	Cage A	Cage B	Cage C	Cage D	Cage E
p	What is the condition of the cages?		Good Fair Poor	Good Fair Poor	Good Fair Poor	Good Fair Poor	Good Fair Poor
q	When would you expect to replace the cages if compliance with the 1995 Code was not required? (Year)						
r	What type of shedding are the hens housed in?		Sawtooth Gable Monitor Skillion Other	Sawtooth Gable Monitor Skillion Other	Sawtooth Gable Monitor Skillion Other	Sawtooth Gable Monitor Skillion Other	Sawtooth Gable Monitor Skillion Other
s	Is it a hirise shed?		Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
t	What type of ventilation system is used?		Natural Crossflow Tunnel Positive Other	Natural Crossflow Tunnel Positive Other	Natural Crossflow Tunnel Positive Other	Natural Crossflow Tunnel Positive Other	Natural Crossflow Tunnel Positive Other
u	What temperature can the ventilation and cooling system maintain in the shed during hot weather?		28, 30, 32, 34, 36	28, 30, 32, 34, 36	28, 30, 32, 34, 36	28, 30, 32, 34, 36	28, 30, 32, 34, 36
v	What temperature can the ventilation system maintain in the shed on cold nights in winter?		10, 12, 14, 16, 18, 20	10, 12, 14, 16, 18, 20	10, 12, 14, 16, 18, 20	10, 12, 14, 16, 18, 20	10, 12, 14, 16, 18, 20
w	What do you plan to do with the shed housing the cages (including the ventilation and cooling system) prior to 2008?		No change Replace CE Replace NV Renovate CE Renovate NV Other use Scrap shed	No change Replace CE Replace NV Renovate CE Renovate NV Other use Scrap shed	No change Replace CE Replace NV Renovate CE Renovate NV Other use Scrap shed	No change Replace CE Replace NV Renovate CE Renovate NV Other use Scrap shed	No change Replace CE Replace NV Renovate CE

Note: Replace CE = replace old shed with new controlled environment shed  
 Replace NV = replace old shed with new naturally ventilated shed (may include foggers and stirring fans)  
 Renovate CE = Renovate existing shed for controlled environment  
 Renovate NV = renovate existing shed for natural ventilation (may include foggers and stirring fans)  
 Other use = convert the existing shed for other than poultry use

**Check list for whether cages meet the 1995 Code.**

5. Answer the questions below to determine if the cages meet the 1995 Code.

	Question	*	Cage A	Cage B	Cage C	Cage D	Cage E
a	Is the height at the back of the cage equal to or more than 35 cm? (13.75") See Question 4d	D	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
b	From question 4f is the percentage equal to or greater than 65% (cage floor area)		Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
c	Is the floor slope 8 degrees or less (14 mm fall in 100 mm)?		Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
d	Is the cage door opening the full width of the cage front or at least 50cm (19.7")?	I	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
e	Is the cage door opening the full height of the cage front above the feed trough?	H	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
f	Is the maximum distance between the cage floor support wires equal to or less than 5.1 cm? <sup>1</sup> (2")?	K	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
g	Are the hens in tiered cages protected from the excreta from the hens above?		Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
h	What is the cage floor area? – multiply 4a x 4b cm <sup>2</sup>						
i	What was the date when the cages were commissioned?						
j	How many hens can be housed per cage at 450 cm <sup>2</sup> per hen? <sup>3</sup>						
k	If the cages were commissioned after 1 January 2001 how many hens can be housed per cage at 550 cm <sup>2</sup> per hen? <sup>3</sup>						
l	Is there 10 cm (3.9") or more of feed trough per hen?		Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
m	Is there 10 cm (3.9") or more of water trough per hen or two or more nipples within reach of each cage?		Yes / No	Yes / No	Yes / No	Yes / No	Yes / No
n	Tick which cages meet the 1995 Code. An answer "No" to any question above indicates a cage that does not meet the Code.						

<sup>1</sup> Cage floor support wires – The industry policy is that the cage floor support wires should be no more than 5.2 cm apart.

<sup>2</sup> Baffles – If the baffle extends more than 10 cm into the cage, reduce the cage depth by the amount greater than 10 cm.

<sup>3</sup> A minimum of 450 cm<sup>2</sup> (550 cm<sup>2</sup> post 1 January 2001 cages) must be provided/hen for three or more hens/cage where hens weigh less than 2.4 kg.

### What are your future intentions?

Keep in mind that all layer cages will have to meet the 1995 Code by 1 January 2008 when answering the following questions. It may help you by determining on a separate sheet of paper, the effects on your income by calculating the number of hens housed in each cage type affected or not affected by the 1995 Code. Note also that on the 1 January 2008 the floor space / hen changes. That is a minimum of 550 cm<sup>2</sup> must be provided / hen for three or more hens / cage where hens weigh less than 2.4 kg. (Please circle one or more answers)

6. Do you intend to:

- |  |          |
|--|----------|
| (a) Retire from or leave the industry in the next 3 years.                 | Yes / No |
| (b) Retire from or leave the industry by January 2008.                     | Yes / No |
| (c) Retire from or leave the industry when equipment needs replacing.      | Yes / No |
| (d) No intention to leave, will upgrade housing and equipment as required. | Yes / No |
| (e) Retire and pass the business to my children by January 2008.           | Yes / No |
| (f) Still considering the options.   | Yes / No |

7. If you are staying in the industry and have cages that do not meet the 1995 Code, do you intend to:

- |   |          |
|---|----------|
| (a) Modify the affected cages to meet the 1995 Code.  | Yes / No |
| (b) Replace the affected cages by investing in new cages and use existing shedding.                 | Yes / No |
| (c) Replace the affected cages by investing in new cages and new shedding.                          | Yes / No |
| (d) Replace the affected cages by investing in barn egg production and use existing shedding.       | Yes / No |
| (e) Replace the affected cages by investing in barn egg production and new shedding.                | Yes / No |
| (f) Replace the affected cages by investing in free range egg production and use existing shedding. | Yes / No |
| (g) Replace the affected cages by investing in free range egg production and new shedding.          | Yes / No |
| (h) Still considering the options.  | Yes / No |

8. If financial assistance was available from Government to assist in upgrading your layer facilities (cages/alternative systems) or to leave the industry, would you change your future intentions by:

- |   |          |
|---|----------|
| (a) Retiring earlier from the egg industry.   | Yes / No |
| (b) Commencing or expanding another enterprise / business.                                    | Yes / No |
| (c) Modify the cages affected to meet the 1995 Code.  | Yes / No |
| (d) Replace the affected cages by investing in new cages and use existing shedding.           | Yes / No |
| (e) Replace the affected cages by investing in new cages and new shedding.                    | Yes / No |
| (f) Replace the affected cages by investing in barn egg production and use existing shedding. | Yes / No |

- (g) Replace the affected cages by investing in barn egg production and new shedding. Yes / No
- (h) Replace the affected cages by investing in free range egg production and use existing shedding. Yes / No
- (i) Replace the affected cages by investing in free range egg production and new shedding. Yes / No
- (j) Or make no changes to my future intentions. Yes / No
- (k) Still considering the options. Yes / No

**Cage Modification**

9. If you have cages that do not meet the 1995 Code, have you considered how these cages could be modified to meet that Code? Yes / No

If "Yes" go to Question 10, if "No" go to Question 11.

10. (a) Do you plan to apply this modification to the affected cages on your farm? Yes / No / Undecided

(b) If "no" why not?

.....

.....

.....

(c) Describe briefly the modification/s that you have considered that may be feasible (*attach drawings etc if necessary*).

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.....

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11. Would you like to participate in a research project investigating the feasibility of modifying cages to meet the 1995 Code? Yes / No / Not sure but would like to discuss it

12. If you have any additional comments in relation to the subject of this survey please make them below.

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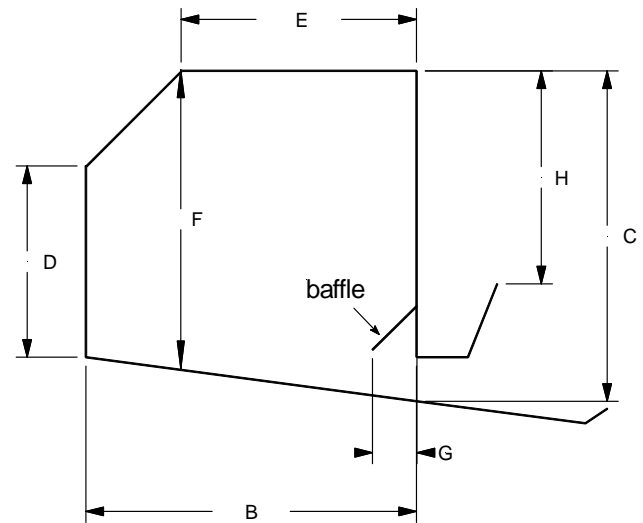
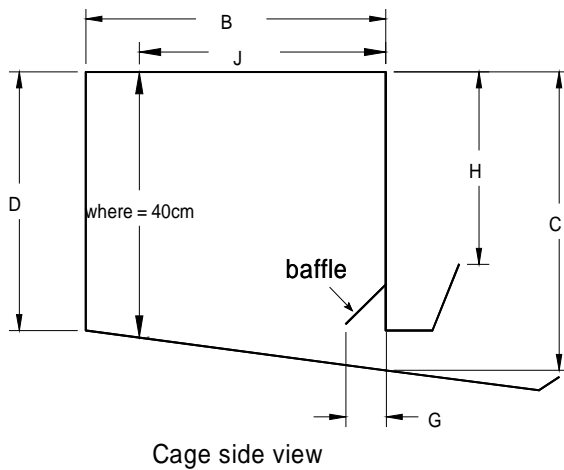
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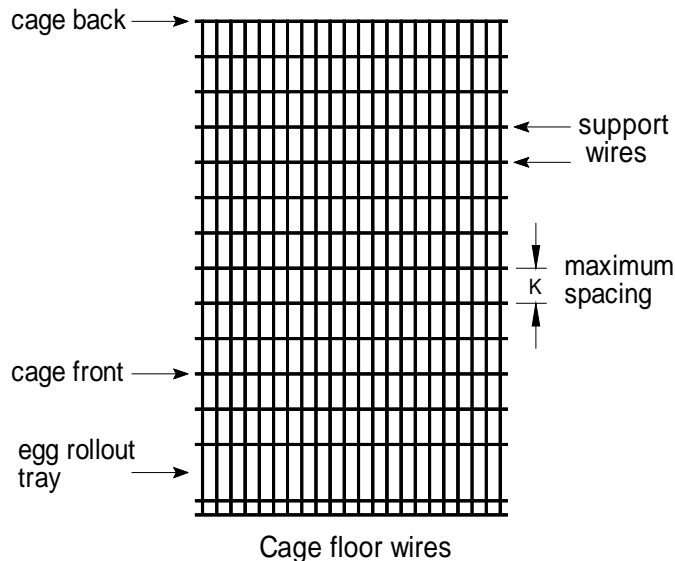
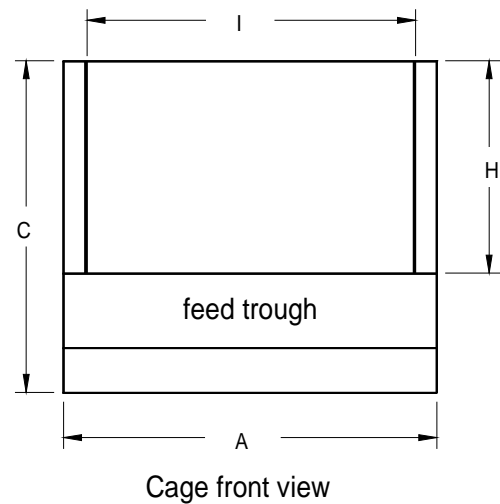
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**Thank you for answering the questionnaire**

## 9.2 Explanatory Diagrams for Cage Dimensions and Floor Support Wires



- A Cage front width.
- B Cage depth.
- C Height of cage front.
- D Height of cage back.
- E Distance from the cage front to the start of the recess.
- F Cage height where the recess commences.
- G Distance the baffle extends into the cage.
- H Cage door opening height. Is it the full height above the feed trough?
- I Cage door opening width. Is it the full width of the opening?
- J Distance from cage front to point at which height above the floor is equal to 40cm (15.75").

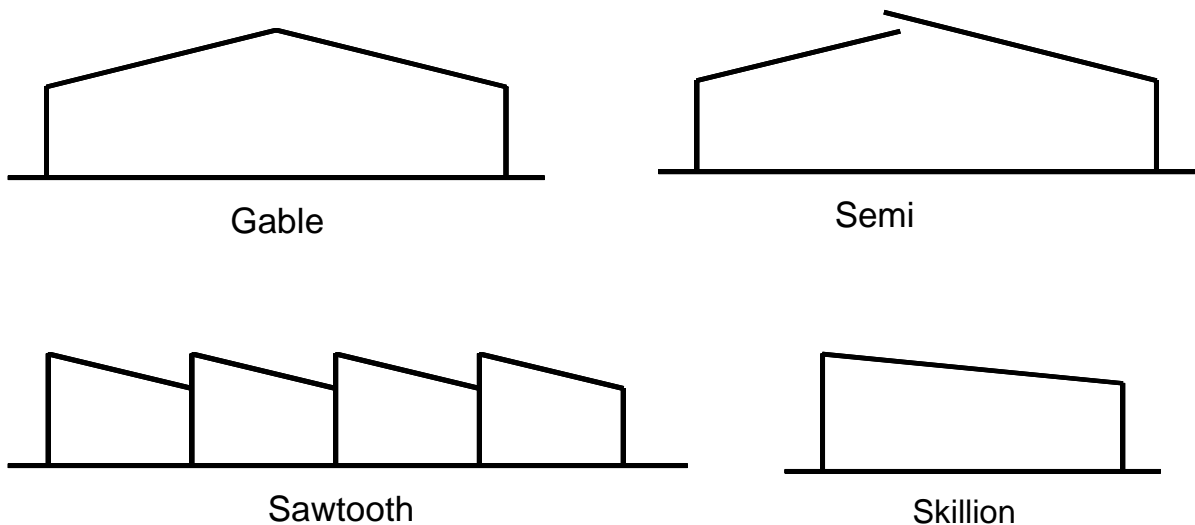




## 9.3 Explanatory Notes For Shedding

### Shedding Styles

The style of shedding commonly used for layers is depicted in the drawings below:



Hirise sheds are higher to allow a droppings pit about 1.8m high below the cages. The shed is usually of the gable or semi monitor type.

### Ventilation Types

#### Natural Ventilation

In naturally ventilated sheds the side walls and end walls may be open or enclosed with shutters or blinds. There may be openings with or without shutters in the roof to assist ventilation. A controller that responds to shed temperature may control the shed airflow rate and temperature. It will achieve this by adjusting the shutter or curtain openings. Cooling is provided by foggers or misting systems. Air movement in the shed may be assisted by the use of stirring fans.

#### Controlled Environment

Controlled environment shedding has a mechanical ventilation and evaporative cooling system that enables the temperature to be maintained at least between 18-28°C all year round. The better designed and newer sheds are able to maintain temperature in a tighter range. The main types are cross flow, tunnel and positive ventilation.

**Cross flow ventilation** – fans are placed in one sidewall and pull air through inlets on the opposite wall and across the shed. Cross Flow ventilation is applied in long narrow sheds or sheds almost square in shape.

**Tunnel ventilation** – fans placed in one end of a long narrow shed suck air in through inlets in the opposite end and down the length of the shed. Inlets may be provided in the sidewalls for minimum ventilation.

**Positive pressure ventilation** – fans are used to push air into the shed air space. It usually includes a distribution system to ensure that the incoming air is distributed over the hens.

## 9.4 Summary of 1995 Code for Laying Cages

### Floor Space Allowance

For laying or breeding fowls weighing up to 4.5 kg live weight

Type of cage	Minimum cage floor area per bird
3 or more fowls (< 2.4kg) per cage	450 cm <sup>2</sup>
3 or more fowls (> 2.4 kg) per cage	600 cm <sup>2</sup> *
2 fowls per cage	675 cm <sup>2</sup>
Single fowl cages	1,000 cm <sup>2</sup>

\* These figures are recommended for inclusion into statute law of States and Territories as the minimum space allowance for layer hens in cages.

Note: For all cages commissioned after the 1 January 2001 a minimum of 550 cm<sup>2</sup> must be provided / hen for three or more hens / cage where hens weigh less than 2.4 kg.

On 1 January 2008 a minimum of 550 cm<sup>2</sup> must be provided / hen for three or more hens / cage where hens weigh less than 2.4 kg in all cages including those that meet the 1995 Code.

### Floor Area

Floor area is measured in the horizontal plane and includes the area under the egg / waste baffle except that part of the baffle extending more than 10 cm (3.9") into the cage. Note: The 1995 Code says the area under the baffle is included in the cage floor area however, an industry guideline places a limit of 10 cm (3.9") on baffle protrusion into the cage area.

### Floor slope

The floor should be constructed to provide support for each forward pointing toe and the slope of the floor should not exceed 8 degrees (14 mm fall in 100 mm, or 1.7" in 12"). Note: The industry policy is that the cage floor support wires should be no more than 5.1 cm (2") apart. This is considered to be the maximum spacing that will provide support to the forward pointing toe.

### Multi Tiered Cages

Multi tiered cages should be arranged so that birds in the lower tiers are protected from excreta from above and so that all birds are fully visible for regular inspection and individual birds can be easily removed from cages as required.

### Cage height

Cages should be at least higher than the maximum height of the birds standing normally. The height of all cages installed after 1 January 1995 should be at least 40 cm (15.75") over 65 percent of the cage floor area and not less than 35 cm (13.75") at any point.

### Cage front

Cage openings should allow placement and removal of birds without causing them injury or unnecessary suffering. All cages for laying fowls installed after 1 January 1995 should have doors the full height and width of the cage front. Note: Since 1995, larger cages have been introduced and their doors must open either to the full width or to a width of 50 cm (19.7").

### Feed space

Not less than 10 cm (3.9") of feed trough per bird.

**Drinkers**

Not less than 10 cm (3.9") water trough per bird OR no less than two nipple or cup drinkers provided within reach of each cage.

**Commissioning of cages**

Commissioning of cages is defined by industry as the point when the contract to purchase or lease the cages is signed.

## 10. References

*Model Code of Practice for the Welfare of Animals – Domestic Poultry 3<sup>rd</sup> Edition* (1995). CSIRO Publications, Australia.

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