Economic Impact of a proposed revision to the Code of Welfare for Layer Hens.

FINAL REPORT

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& COMPANY LTD

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Executive Summary

Introduction

Nimmo-Bell has undertaken an economic analysis on behalf of the Egg Producers Federation (EPF) examining the impacts on the egg producing industry of the introduction of proposed changes to the Code of Welfare for Layer Hens.

The outcomes in the draft Code will require cage production farmers to move from what are known as current cages or battery cages to furnished colonies. The National Animal Welfare Advisory Committee (NAWAC) has made clear in their draft Code of Welfare that such a requirement will be mandated. The issue still to be decided by NAWAC is the time frame allowed to farmers to meet that change. Economic analysis is required to inform debate on this issue.

The largest costs to farmers are the capital cost of cage replacement prior to existing cages meeting their expected life span and the increased costs of furnished colonies. These costs may be exacerbated further by the need to meet RMA implications of changing sheds under existing resource consents and the need for larger areas on which to place sheds. Operating costs may marginally increase as a result of the new systems.

Producer details and production

A survey of all producers using caged systems was undertaken. Data from survey responses was added to data already held by the EPF. A small number of producers who did not respond to the survey had previously provided bird numbers and indicated that they are planning to exit the industry in the short term, and were included in the analysis.

Data collected is shown in Table 1 below. We have presented this in three groups of farm size to allow us to create a financial model for three farms representative of each group of farms.

Table 1:

	Group A	Group B	Group C	Total
Total No. of Farms (where data gathered)	8	13	20	41
Total Number of Birds	1,727,600	796,200	358,600	2,882,400
Average Number of Birds	215,900	61,200	17,900	
Median Number of Birds	160,100	61,200	19,400	
Average Egg Production	300	300	290	
Number making own feed	6	9	9	24
% Total Bird Number in Group	60%	28%	12%	

The impact of having to move to furnished colonies

To comply with the revised Code current cages have to be replaced. Existing cage systems cannot be modified to provide for the requirements of the standard.

Current sheds will reduce in capacity as the changes to the Code are introduced, due to three factors:

1. The space per bird must increase from 550 sq cm to 750 sq cm, resulting in a reduction in total birds per effective row of 27%;
2. The number of rows that fit in a shed will reduce as furnished colony systems are wider than existing cages;
3. The number of tiers that fit in a shed will reduce as furnished colony systems are higher than existing cages.

Furnished colonies from different manufacturers are slightly different sizes, however are generally wider and higher than existing cage systems. The ability to fit the same number of rows and tiers in the same shed will depend on the configuration of the existing shed.

It is likely that most sheds will need to reduce each row by 1 tier to fit within the existing shed height. Existing aisle widths vary. We have reviewed the existing aisle widths as provided by producers as part of the survey. Many sheds have been purpose built for existing cage systems and aisle widths set at 1 meter or less. Enriched colonies are approximately 150mm wider than existing cages. Therefore sheds with aisle widths less than 1,050mm will lose a row per shed. For group A farms those sheds that will need to remove a row represent 73% of the total birds while for group B these sheds represent 83% of the total birds. Group C farms surveyed indicated in the main that they would replace cages in existing sheds or alter existing sheds. We have therefore assumed for Group C that bird numbers will not change per shed, however the shed will require alteration.

Producer response

All producers surveyed were asked to provide their most likely response to the introduction of the proposed changes to the code.

Table 2: Likely responses of producers

	Group A	Group B	Group C	Total
Total No. of Farms (where data gathered)	8	13	20	41
Total Number of Birds	1,727,600	796,200	358,600	2,882,400
Likely Response (No. Farms)				
A) Alter cages in existing sheds	0	1	0	1
B) Replace cages in existing sheds	4	6	5	15
C) Alter shed and replace cages	1	1	4	6
D) Build new shed to replace existing shed	2	2	1	5

E) Build new sheds to house displaced birds	4	4	0	8
F) Change to Free Range or Barn Production	0	1	3	4
G) Exit the Industry	2	2	9	13
Impact on Bird Numbers				
Reduction in birds if continuing cage system	100,000	76,650	26,500	203,150
Reduction in birds if moving to Barn or FR	0	33,000	17,400	50,400
Reduction in birds due to exiting industry	261,000	95,500	150,000	506,500
Total Reduction in Birds	361,000	205,150	193,900	760,050
% Total Reduction in Birds	21%	26%	54%	26%

Notes:
1. Producers may have provided a range of responses. e.g. They may have elected to replace cages in an existing shed and to build a new shed to house displaced birds.
2. Two producers of similar size in Group C indicated uncertainty over whether they would move to Free Range or exit the industry. For the purposes of the analysis it is assumed that one will exit and one move to Free Range production.
3. One producer in Group B provided all data and is included above however would not provide a likely response to the proposed changes to the code

Model Production Units

In order to demonstrate the economic impact on producers we developed three model production units, each representing a large, medium and small scale farm. The returns from these units were then calculated for "with" and "without" the proposed changes to the code. Additional scenarios looking at different timing of the requirements for cage replacement with furnished colonies were also examined.

Minimum Standard 7 requires all birds to have a minimum space of 550 sq cm by 2014. Many producers will need to remove birds from their existing cage systems to comply. We have accounted for this in the modelling undertaken.

Table 3: Summary of model farm and most likely responses used in the analysis.

	Group A	Group B	Group C
Total bird number	175,000	70,000	20,000
Number of sheds	7	3	2
Birds per shed	25,000	23,300	10,000
Average cage age	8	9	10
Birds removed to comply Min Std 7	17,500	4,900	0
Remove birds existing sheds to comply new code	87,000	36,000	0
No. of birds to be re-housed	104,500	40,900	0

Land availability

Survey respondents were asked if they had sufficient land available to build new sheds. About half of those in Groups A and B who were not planning to exit the industry or change to Free Range or Barn systems responded that they would not have sufficient land available to build additional sheds.

These producers will be faced with three options: purchase additional land; replace existing sheds when this may not be the most cost effective way of meeting the requirements; or accept a permanent reduction in bird numbers. Due to the difficulties in quantifying this cost , we have assumed for the purposes of this analysis that producers do have sufficient land available to build new sheds. It should be noted that there will be a significant additional cost to a large number of producers where this is not in fact the case. The quantum of this cost will vary for each producer however may be sufficient to prevent them from being able to make the additional investment required.

Ability to pass on costs

The EPF is commissioning a separate report that will consider the impact of changes in egg supply and demand and the ability of producers to pass on cost increases.

Data collected from producers suggests that total production of caged eggs could decrease by up to 20%. This would have a significant impact on egg markets. What is not clear is how existing operators will respond to the reduction in hen numbers. It is possible that those in a position to do so will increase production to benefit from this reduction in supply and the resultant likely price increase.

The largest consumers of eggs in New Zealand are likely to be the most price sensitive (lower income and larger families and industrial users), reducing the ability to increase prices.

Retail prices are generally set by supermarket sales, with this being the largest outlet for eggs. The relatively weak selling position of producers supplying the supermarkets, the high price elasticity of eggs in the retail market, and the potential for substitution with imported processed egg in the industrial segment combine to also suggest that passing on cost increases will be difficult in the longer term.

For the purposes of the analysis contained in this report we have assumed that there is no change in the retail price of eggs as a result of the change in production systems.

Financial Analysis

Financial forecasts have been prepared based on the producer data gathered and discussions with individual producers and industry representatives. Status quo forecasts have been prepared for each group and for three scenarios which demonstrate differing timeframes for cage replacement. For the status quo position it has been assumed that existing cage systems will be replaced with traditional cages allowing for 550 sq cm per bird. This replacement will be undertaken in existing sheds.

Production parameters and costs along with market prices have been assumed to remain constant over the forecast period. Average debt levels have been determined based on discussion with financiers and industry participants. Forecasts have been prepared over

a 35 year period to demonstrate the impact of cage replacement which will occur over this time.

Analysis of results

There is a significant cost to all producers associated with cage replacement with furnished colonies. The following summary shows the cost (decrease in NPV per bird from the status quo) per bird when the scenario is compared with the status quo position.

Group A	Cage replacement by			
	Year 10	Year 15	Year 18	Year 20
Decrease in NPV /Bird	$31	$21	$15	$12
Max debt at cage replacement ($/bird)	$49	$39	$34	$30
Equity at Cage Replacement	20%	37%	44%	49%
Interest cover on cage replacement	1.9	2.4	2.9	3.2

It is likely that Farm A would have the ability to make the change to furnished colonies in year 10 provided that all cash surpluses are retained in the business and dividends paid to shareholders are significantly reduced prior to the need to replace cages. This will not be an acceptable proposition for investors. Extending the timeframe to year 18 would be more acceptable however is still likely to result in significantly reduced returns to investors.

Group B	Cage replacement by			
	Year 10	Year 15	Year 18	Year 20
Decrease in NPV/Bird	$37	$15	$8	$5
Max debt at cage replacement ($/bird)	$41	$31	$24	$19
Equity at Cage Replacement	44%	57%	66%	73%
Interest cover on cage replacement	1.8	2.3	3.0	3.7

Farm B would also have difficulty meeting a timeframe of 10 years from both a debt servicing and lending security perspective. The ability to meet the requirements in year 15 would depend on the retention of cash in the business. A prudent investor would see the inability to remove cash from the business over this period as unacceptable and would not commit to reinvestment.

Group C	Cage replacement by			
	Year 10	Year 15	Year 18	Year 20
NPV/Bird Cost	$68	$30	$16	$9
Max debt at cage replacement ($/bird)	$35	$30	$27	$24
Equity at Cage Replacement	44%	51%	57%	61%
Interest cover on cage replacement	1.2	1.4	1.5	1.7

This representative farm appears unlikely to be able to meet the costs of replacing cages with furnished colonies in a 10 or15 year timeframe. With a 18 or 20 year timeframe the farm continues to make a cash loss after allowance for capital replacement. Longer timeframes may see the ability to meet the requirements of the code however debt servicing ability remains marginal and there will be an ongoing need for capital replacement that will need to be met.

The cost per bird derived from the forecasts is not linear according to the size of the unit (i.e. the cost per bird is lower for Farm B than Farm A with the highest cost to Farm C). This relates to the retention of cash within the business as it has been modeled. Farm A has been treated as a company structure and dividends paid to shareholders. Farms B and C have been treated as partnerships and cash surpluses beyond partner's drawings are retained in the business. This impacts the need to borrow and therefore the cost of cage replacement.

While average cage ages have been used for each model, there will be a far greater impact on those producers that have newer cages. Cage ages of 8, 9, and 10 years have been used for Farms A, B and C respectively. If the average age is assumed at 4 years for each Farm and debt levels at $5 per bird higher, the cost per bird increases by $5 per bird for Farm A and $7 for Farm B while Farm C would not generate sufficient cash to cover costs, assuming a twenty year timeframe was allowed to meet the proposed changes to the code.

Summary

This report demonstrates the impact on three model farms of four different timeframes associated with the introduction of the proposed changes to the code.

There is a significant cost to the three model farms of the conversion to furnished colonies. This cost is reduced significantly with an increased timeframe allowed for conversion of existing cages.

The model farm analysis indicates that the large and medium size farms will be able to meet the requirements provided they have a timeframe of at least 15 years and that cash surpluses generated over this period are committed to reinvestment. The small farm will have difficulty meeting the requirements over 15 years however may be able to achieve conversion in an 18 or 20 year period, although this will remain difficult.

In all cases introduction of the proposed changes to the code results in significant loss of free cashflow to farm owners. The cost increases significantly for those producers with newer cages.

The ability for individual producers to meet the requirements will depend on a number of factors. These include the availability of land, age of current cages, existing levels of

borrowing, cost and revenue structures and the need to withdraw cash from the business to satisfy the requirement of shareholders or owners. In order to complete this analysis for the three model farms a number of assumptions have been used around these factors. In making these assumptions care has been taken not to overstate the impact of the proposed change to the code. Therefore in reality the cost to an individual farmer may be considerably greater than that shown in this analysis

The ability for producers to pass on costs is not clear. In theory this should be possible to some degree with a likely reduction in supply however it will be influenced by the response of producers to this (noting that producers will have a reasonable timeframe in which to increase supply). The relatively weak selling position of producers in the retail market, the high price elasticity of eggs the retail market, and the potential for substitution with imported processed egg in the industrial segment combine to also suggest that passing on cost increases will be difficult in the longer term.

Table of Contents

1 Introduction

1.1 Background

The Egg Producers Federation (EPF) contracted Nimmo-Bell to undertake an economic analysis of the industry. Specifically the analysis has been undertaken to measure the impact on the cage sector of the egg industry of legislative change requiring cage farmers moving from what are known as "current cages" or "battery cages" to "furnished colonies".

The National Animal Welfare Advisory Committee (NAWAC) has made clear in their draft Code of Welfare that such a requirement will be mandated. The issue still to be decided by NAWAC is the time frame allowed to farmers to meet that change. Economic analysis is required to inform debate on this issue.

The key cost to farmers is the capital cost of cage replacement prior to existing cages meeting their expected life span and needing replacement, along with the difference in cost between the existing and new cage systems. These costs may be exacerbated further by the need to meet Resource Management Act (RMA) implications of changing sheds under existing resource consents and the need for larger areas on which to place new sheds. Operating costs may change as a result of the new systems.

EPF have also asked that an analysis of the impact on the cost of eggs to consumers as a result of the change of systems be undertaken.

1.2 Objective

Overall Objective: To determine the cost to producers of changing cage systems and the impact of the timing of changes on that cost, and the likely impact on the cost of eggs to the consumer.

Specific Objectives:

1. To determine the capital cost of conversion to the new systems (including possible costs of meeting RMA and land requirements)
2. To consider the operating costs under the new system versus existing costs
3. To provide a Net Present Value (NPV) cost of the proposed changes under various timeframe scenarios for representative farms

1.3 Outcomes

It is intended that this report will allow informed debate and discussion on the costs associated with the implementation of the proposed changes.

The report does not seek to provide an overall cost to the industry, but demonstrates the impact on representative farm types within the industry. The report highlights the economic implications for producers and where applicable identifies and discusses feasibility and practicality issues associated with the proposed changes.

2 Methodology

In undertaking the analysis we have completed the following tasks for each objective.

Objective One - To determine the capital cost of conversion to the new systems (including meeting RMA and land requirements)

- Gathered data from suppliers as to costs and life expectancy of existing cage systems and furnished colonies.
- Consulted with Harrison Grierson regarding the possible implications of the RMA and existing land areas available to producers.
- Surveyed all producers to collect data on existing systems and likely responses to the changes required.
- Determined representative farm size and systems for use in cost analysis.
- Developed financial models for representative farms.

Objective Two - To consider the operating costs under the new system versus existing costs

- Collected data from those operators using furnished colonies and for existing production systems. Data included production data and costs of production.
- Conducted a brief literature review as to production data and costs from other countries using furnished colony systems.
- Used the data collected to populate the financial models developed.

Objective Three- To provide an NPV cost of the proposed changes under various timeframe scenarios

- For each representative farm type, developed operating cashflows for the new (the "with" scenario) and existing systems (the "without" scenario) for a 20 year period (allowing for cage replacement).
- Calculated NPVs for the with and without scenarios.
- Compared the with and without scenarios to determine the overall cost in NPV terms.
- Looked at various timing, capital and operating cost scenarios to demonstrate the impact on producers of various parameters associated with implementation.

2.1 Economic analysis

Previous work[1] undertaken in 2005 by Nimmo-Bell identified three distinct groupings of layer hen farms based on size. While the average size of units has increased since 2005, considering the economic impact on an average unit for the industry would not provide a meaningful result. We have therefore again undertaken the analysis based on three representative farms, each representative of groups of farms as follows:

Group A	Over 100,000 birds
Group B	30,001 to 100,000 birds
Group C	Up to 30,000 birds

Various scenarios around the introduction of furnished colonies are considered for each group.

[1] Economic Analysis: Economic Effect, Feasibility and Practicality of Minimum Standard 7d Animal Welfare (Layer Hens) Code of Welfare, a report prepared for MAF Policy, February 2005

3 Producer details and production

A survey of all producers using caged systems (88% of egg production) was undertaken during December. Producers were posted a questionnaire and where this was not completed and returned they were telephoned and the survey completed by phone.

Data collected from the survey responses was added to data already held by the EPF. A small number of producers who did not respond to the survey had previously provided bird numbers and indicated that they are planning to exit the industry in the short term. We have included these producers in the results of the survey.

A total of six producers did not respond to the survey and had not previously provided data to the EPF. From existing EPF knowledge of these producers it is estimated that these six producers represent less than 100,000 birds (approximately 3% of total bird numbers)

Data collected is shown in Table 1 below. We have presented this based on the three groups of farm size identified as part of the survey and described in section 2 above.

Table 1: Total farms by size

	Group A	Group B	Group C	Total
Total No. of Farms (where data gathered)	8	13	20	41
Total Number of Birds	1,727,600	796,200	358,600	2,882,400
Average Number of Birds	215,900	61,200	17,900	
Median Number of Birds	160,100	61,200	19,400	
Average Egg Production/ bird / annum	300	300	290	
Number making own feed	6	9	9	24
% Total Bird Number in Group	60%	28%	12%	

Note: Average egg production is based on the response from those completing the survey.

4 Most likely response to the proposed changes

4.1 The impact of having to move to furnished colonies

In order to comply with the code changes current cages will need to be replaced. Conventional cage systems cannot be modified to provide for the requirements of the standard.

In general terms the new furnished colonies will be 120 - 150 mm higher than standard cages and 200- 300 mm wider per row. This is likely to have an impact on the number of birds able to be housed in a shed as the number of rows and tiers that fit in the shed may be reduced.

This means that where a shed has 3 rows of existing cages with no additional space (or ability to reduce aisle width) then it is likely that only two rows of furnished colonies will be possible (4 row sheds will likely fit 3 rows), and where rows have 4 tiers and no additional space only 3 tiers will be possible. This will vary for each shed depending on available space, including existing aisle widths.

To meet the requirements of the code there will also be a requirement to provide more space per bird (750 sq cm). This will see a reduction in the number of birds per row.

4.2 Results of producer survey

All producers surveyed were provided with the above summary of the likely impact and asked to provide their most likely response to the introduction of the proposed changes to the code. Possible responses included:

A Alter cages in existing sheds.

B Replace cages in existing sheds.

C Alter existing sheds and replace cages.

D Build new shed(s) to replace existing sheds.

E Build new shed(s) to house displaced birds.

F Change to a free range or barn system.

G Exit (leave) the Egg Industry.

Table 2 summarises the responses received from the producers in each group.

Table 2: Likely responses of producers

	Group A	Group B	Group C	Total
Total No. of Farms (where data gathered)	8	13	20	41
Total Number of Birds	1,727,600	796,200	358,600	2,882,400
Likely Response (No. Farms)				
A) Alter cages in existing sheds	0	1	0	1
B) Replace cages in existing sheds	4	6	5	15
C) Alter shed and replace cages	1	1	4	6
D) Build new shed to replace existing shed	2	2	1	5
E) Build new sheds to house displaced birds	4	4	0	8
F) Change to Free Range or Barn Production	0	1	3	4
G) Exit the Industry	2	2	9	13
Impact on Bird Numbers				
Reduction in birds if continuing cage system	100,000	76,650	26,500	203,150
Reduction in birds if moving to Barn or FR	0	33,000	17,400	50,400
Reduction in birds due to exiting industry	261,000	95,500	150,000	506,500
Total Reduction in Birds	361,000	205,150	193,900	760,050
% Total Reduction in Birds	21%	26%	54%	26%

Notes:

4. Producers may have provided a range of responses. e.g. They may have elected to replace cages in an existing shed and to build a new shed to house displaced birds.

5. Two producers of similar size in Group C indicated uncertainty over whether they would move to Free Range or exit the industry. For the purposes of the analysis it is assumed that one will exit and one move to Free Range production.

6. One producer in Group B provided all data and is included above however would not provide a likely response to the proposed changes to the code

5 Model Production Units

In order to demonstrate economic impact on producers we developed three model production units. The returns from these units were calculated for "with" and "without" proposed change scenarios. Additional scenarios looking at different timing of the requirements for cage replacement with furnished colonies were also examined.

5.1 Defining the model production units

In defining the model production units we utilised the survey data gathered. We removed those respondents who have indicated they will exit the industry or move to Free Range from the results. For each Group we determined the median farm size of remaining properties. We used this median as the size of the model farm. Mean and median aisle widths and number of rows in a shed and tiers per row were calculated based on the survey results.

5.2 Complying with Minimum Standard 7

Minimum Standard 7 requires all birds to have a minimum Space (550cm^2) by 2014. This will require many producers to remove birds from existing cage systems to comply.

Data gathered suggests that approximately 50% of the birds on the model farm for Group A and 35% of the birds on the model farm for Group B are housed at 500 sq cm per bird. A bird will need to be removed from each cage housing these birds (five birds per cage reduced to four) by 2014 to meet Minimum Standard 7. We have accounted for this in the modelling undertaken.

It is assumed that on the Group A farm the birds removed in 2014 will be re-housed in a new furnished colony shed in 2014. On the Group B farm it has been assumed that a reduction in bird numbers is accepted from 2014 until the introduction of a furnished colony shed (on introduction of the proposed changes to the code) at which time the birds will be replaced.

5.3 The likely response for the model units

We then considered the likely response for farms in each Group and used the average response for the Group as being the response for the model farm.

For each model farm we considered the existing position, including likely cage replacement with no changes to the code. We also took into account the need for farms to remove birds from existing cages in 2014 to comply with Minimum Standard 7 (see above). The key parameters used for the model farm for each Group are set out in the next sections.

5.4 Replacement of cages in existing sheds

Where cages are to be replaced in existing sheds without alteration of the shed, the number of birds the shed houses will be reduced. Furnished colony systems are generally wider and higher than existing cages. Where a shed has been purpose built for existing cage systems this means that the number of furnished colony rows and tiers able to fit in the shed will be reduced.

The reduction in bird numbers will arise from three factors:

- The space per bird must increase from 550 sq cm to 750 sq cm, resulting in a reduction in total birds per effective row of 27%
- The number of rows that fit in a shed will reduce as furnished colony systems are wider
- The number of tiers that fit in a shed will reduce as furnished colony systems are higher.

Furnished colonies from different manufacturers are slightly different sizes, however are generally wider and higher than existing cage systems. The ability to fit the same number of rows and tiers in the same shed will depend on the configuration of the existing shed.

It is likely that most sheds will need to reduce each row by 1 tier to fit within the existing shed height. Existing aisle widths vary. We have reviewed the existing aisle widths as provided by producers as part of the survey. Many sheds have been purpose built for existing cage systems and aisle widths set at 1 meter or less. Enriched colonies are approximately 150mm wider than existing cages. Therefore sheds with aisle widths less than 1,050mm will loose a row per shed. For group A farms those sheds that will need to remove a row represent 73% of the total birds while for group B these sheds represent 83% of the total birds. Group C farms surveyed indicated in the main that they would replace cages in existing sheds or alter existing sheds. We have therefore assumed for Group C that bird numbers will not change per shed, however the shed will require alteration.

We have therefore assumed that for Farms A and B that a tier will have to be removed for all sheds and that in addition to this a row will be removed from sheds representing 75% of the bird numbers.

It should be noted that the actual number of rows and tiers able to be achieved on an individual farm is entirely dependant on the existing shed. For example, if a shed has three rows and three tiers and insufficient aisle width and height to allow the same umber of rows and tiers of furnished colonies then the number of birds that needs to be removed would be 68%. For a four row four tier shed the number of birds that would need to be removed would be 59%.

The assumptions used in the models are summarised below.

5.5 Summary of model farms and most likely response

5.5.1 Group A

- Will need to remove 17,500 birds in 2014 to comply with Minimum Standard 7 and will build a new shed to house these
- Will replace cages in existing sheds, and
- Will build new sheds to house 87,000 displaced birds on the introduction of the proposed changes to the code
- Has an average cage age of 8 years

5.5.2 Group B

- Will need to remove 4,900 birds in 2014 to comply with Minimum Standard 7 and will accept this reduction in bird numbers until a new furnished colony shed is built at which time the birds will be replaced.
- Will replace cages in existing sheds, and
- Will build a new shed to house 36,000 displaced birds on the introduction of the proposed changes to the code
- Has an average cage age of 9 years

5.5.3 Group C

- Will not need to remove additional birds to comply with minimum standard 7
- Will alter existing sheds and replace cages to comply with the proposed changes to the code
- Has an average cage age of 10 years

Table 3 provides a summary of the model farm and the most likely response used in the economic modelling.

Table 3: Summary of model farm and most likely responses used in the analysis.

	Group A	%	Group B	%	Group C	%
Total bird number	175,000		70,000		20,000	
Number of sheds	7		3		2	
Average cage age	8		9		10	
Birds removed to comply Min Std 7	17,500	10%	4,900	7%	0	N/A
Remove birds from sheds to meet revised code	87,000	50%	36,000	52%	0	N/A
No. of birds to be re-housed	104,500	60%	40,900	59%	0	N/A

Note: The percentage figures shown represent the % of original bird numbers. A number of birds will need to be removed to comply with Minimum Standard 7 and it is assumed that these are replaced in enriched colonies. Where a farm is fully compliant with the requirements of Minimum Standard 7 the percentage of birds that will require re-housing under the new code will be higher.

5.6 Note regarding land availability to build new sheds

Survey respondents were asked if they had sufficient land available to build new sheds. A number (approximately half of those in Groups A and B who were not planning to exit the industry or change to Free Range or Barn systems) responded that they would not have sufficient land available to build additional sheds.

These producers will be faced with three options: purchase additional land; replace existing sheds when this may not be the most cost effective way of meeting the requirements; or accept a permanent reduction in bird numbers.

The purchase of additional land as an option would also be influenced by additional land being available. Where neighbouring land is not available there may be a need to operate from two sites. This would likely result in an increase in operating costs and reduction in efficiency of asset utilisation and management.

For the purposes of this analysis we have assumed that producers do have sufficient land available to build new sheds. It should be noted that there is likely to be a significant additional cost to a number of producers where this is not in fact the case. Due to the difficulties in quantifying this we have not included it in the modelling undertaken.

6 Costs of complying with the proposed changes to the code

6.1 Cost per bird on building a new shed

Costs associated with building a new shed will vary significantly depending on shed size and cage configuration, location and existing infrastructure. We have spoken with a shed builder as well as industry participants who have recently built new sheds. Taking these discussions into account we have assumed an average cost of $20.00 per bird.

6.2 Cost per bird of altering existing sheds

The alterations required to an existing shed will vary hugely and may include raising the roof, lining the shed and/or expanding ventilation systems. Alterations possible and/or needed also depend on shed age. While it is difficult to determine what will be required for the average shed, we have assumed that if it were more than half the cost of a new shed that producers would probably opt for a new shed. On this basis we have assumed that if sheds are altered an average cost will be in the order of $5.00 per bird.

6.3 Cage costs

Cage costs per bird are likely to depend on the total number of birds per shed. We have received indicative prices from two cage manufacturers for traditional and furnished colony system with automatic feeding and egg collection. The prices are shown in Table 4, and we have used these estimates and actual costs paid by producers to assess cage costs used in the analysis.

Table 4: Indicative prices for existing cages and new colonies

Supplier	Furnished	Existing
1	$30	$21
2	$28	$19
Price used	$29	$20

6.4 Resource consent costs

Harrison Grierson Consultants Limited were commissioned to consider the likely implications of resource consent requirements for producers. This report has been provided separately to the EPF. The following summary is provided in the report:

> Each layer farm will need to either extend or alter existing sheds, or construct new sheds in order to install the new cages. These necessary upgrades will potentially require regional and/or district (land use) resource consents depending on the characteristics of each individual farm, as a range of rules may be infringed.
>
> It is unlikely that either regional or district resource consent applications will be fully notified, however there is a risk that applications may be limited notified to surrounding neighbours, especially if the source of air discharge (odour) is moving closer to an adjacent boundary, or if regional/district setback

requirements or height rules are infringed. Limited notification would have an additional financial impact on a layer farm.

The cost of preparing and processing resource consent applications varies widely depending on the complexity of the application, however, in a best case scenario, a non-notified regional consent would cost around $16,000 to obtain, while a non-notified district consent would cost around $4,000-$6,000 to obtain.

Source: Harrison Grierson, Review of Resource Consent Implications of Amending the Layer Hen Welfare Code, December 2009

The report noted a wide range of costs depending on the individual consent application. Costs included Council deposit fees, average total processing costs and consultant costs in assisting with the application.

Individual costs are likely to vary significantly; for the purposes of this analysis we have assumed the costs as outlined in the Harrison Grierson report ($5,000 for a district consent and $16,000 for a regional consent). We have further assumed that all producers will have to meet these costs when building new sheds. Where existing sheds are being altered we have assumed that a district consent would be required however with no change in bird numbers or new building that a regional consent would not be required.

6.5 Other costs

Cage replacement in existing sheds is likely to result in a reduction in production for a period while cages are replaced. It is assumed that cages are replaced when birds are due for removal however the time taken to replace cages will be greater than the time the shed is normally empty. This cost will vary however in the case of smaller producers they may have to purchase eggs in to meet supply commitments. We have not accounted for this in the modelling undertaken.

6.6 Summary of capital costs

Table 5 provides a summary of the costs associated with complying with the proposed changes to the code.

Table 5: Costs of complying with the proposed code changes

Cost per bird of building a new shed	
Shed cost	$20
Cage cost	$29
Cost per bird of altering existing shed	
Shed alteration cost	$5
Cage cost	$29
Other costs	
Resource consent costs	$21,000

6.7 Operating costs

Overseas experience suggests that the variable operating costs associated with enriched colonies are similar to those for traditional cage systems with the exception of labour. This is supported by the initial findings of the Sustainable Farming Fund project currently operating in New Zealand.

There are however increased fixed operating costs associated with the increased capital requirements and lower density of hens. The combined impact of variable and fixed cost increases in overseas experience has been quoted at between 8 and 10%[2].

For the purposes of this analysis we have assumed that farm labour costs will increase marginally and all other costs will remain constant. The increase in fixed costs has been accounted for in increased depreciation and debt servicing costs and the economic forecasts. All other operating costs have been assumed as constant.

[2] www.worldpoultry.net, various articles

7 Status quo forecasts

Financial forecasts have been prepared based on the producer data gathered and discussions with individual producers and industry representatives. The status quo forecasts have been prepared for each farm size. These forecasts include allowance for meeting the requirements of the existing Minimum Standard 7.

Production parameters and costs along with market prices have been assumed to remain constant over the forecast period. Forecasts have been prepared over a 35 year period to demonstrate the impact of cage replacement which will occur over this time. A residual value at the end of year 35 has been calculated and included in the net present values calculated.

The forecasts have been prepared based on an expected result on each farm. They do not take account of the potential for events such as a disease outbreak which could significantly impact production in any one year. The potential for such an event is real and must be built into required returns by producers. It is however inherently difficult to model and has not been accounted for in this analysis.

Cash surpluses generated over the period have been applied to debt reduction after having allowed for dividends or drawings and capital expenditure. Where full debt repayment has been achieved cash surpluses are held as short-term deposits returning 3% per annum to the operation.

Capital expenditure on items other than colonies and sheds has been included in forecasts at amounts equal to the depreciation on these other assets.

Capital expenditure on sheds and cage equipment has been included in forecasts based on the average ages of existing sheds and equipment and assuming an average lifespan of 25 years for cage equipment. For the status quo position it has been assumed that existing cage systems will be replaced with traditional cages allowing for 550 sq cm per bird. This replacement will be undertaken in existing sheds over a three year period (for Farms A and B and a two year period for Farm C) commencing in the year cages reach 25 years of age.

Average debt levels have been determined based on discussion with financiers and industry participants. These estimates take account of the size of the units and borrowing capacity. Borrowing capacity is limited by the ability to repay the debt and the security value of assets. The security value of assets is often the most limiting factor for egg producers as financiers assign low values to hens and specialised cage equipment.

We have shown the equity percentage for each farm at the time of cage replacement. This will provide a guide however may not accurately reflect the

ability to provide sufficient loan security to a financier. In general terms banks will lend to 50% of land and buildings, and 25% of plant and equipment. New plant and equipment purchases may however provide greater security levels, providing loan amortisation is set in line with reducing values

Taxation has been included at personal tax rates (assuming that these smaller units are likely to be family owned as a two-person partnership) for group B. and group C models. A company structure has been assumed for the group A model (as there is a greater likelihood of a wider ownership) and the company tax rate applied.

Table 6: Details of model units

Key parameters used	Farm A	Farm B	Farm C
Production and income			
Total Bird capacity	175,000	70,000	20,000
Replacements policy	All in/out	Mixed age	Mixed age
Egg production (hen day %)	85%	81%	78%
Egg sale price per dozen	$2.10	$2.10	$2.15
Age when into laying (weeks)	18	18	18
Weeks of laying	56	56	56
Feed per bird/day (g)			
Mortality rate	3.5%	4.0%	4.0%
Other income (manure sales etc)	$35,000	$14,000	$4,000
Key operating costs			
Rearing own replacements	Yes	Yes	Yes
Own packing and distribution	Yes	Yes	Yes
Own feed production	Yes	Yes	No
Feed ($/hen)	$20.5	$21.88	$23.51
Owner-operator	No	Yes	Yes
Permanent Labour cost $/hen	$7.00	$6.00	$6.00
Packaging costs $/hen	$3.87	$2.96	$2.85
Day old purchase price (incl. levy)	$2.96	$3.03	$3.10
Rearing costs	$4.00	$4.10	$4.80
Distribution costs $/hen	$3.5	$2.50	$2.50
Other operating expenditure			
Wages of management/dividend (TFC = Total Farm Capital)	8% on equity	$40,000 + 1% TFC	$30,000 + 1% TFC
Asset details			
Laying hens value	$3.50	$3.50	$3.50
Replacement hens value	$4.50	$4.50	$4.50
Land value	$600,000	$400,000	$200,000
Shed value ($/ bird capacity)	$13.60	$12.80	$8.80
Rearing shed value ($/ bird capacity)	$13.60	$12.80	$8.80
Manure shed	$24,000	$15,000	$ -
Other buildings	$50,000	$35,000	$15,000
Resource consent	$25,000	$25,000	$20,000

Key parameters used	Farm A	Farm B	Farm C
Site work	$40,000	$25,000	$10,000
Cages/auto gear ($/bird capacity)	$4.96	$4.16	$3.50
Rearing cages ($ / young bird capacity)	$5.45	$4.16	$3.50
Feed mill ($ / bird capacity)	$6.50	$6.50	$ -
Grading floor	$200,000	$150,000	$20,000
Grader	$350,000	$250,000	$30,000
Other equipment	$50,000	$30,000	$10,000
Vehicles	$450,000	$180,000	$50,000
Houses	$220,000	$220,000	$175,000
Feed stocks	$1,457,336	$620,593	$36,923
Depreciation rate buildings (d.v.)	9.5%	9.5%	9.5%
Depreciation rate plant and machinery (d.v.)	15.0%	15.0%	15.0%
Depreciation rate vehicles (d.v.)	10.0%	10.0%	10.0%
Current average age of cages and sheds (years)	8	9	10
Life expectancy of cages and sheds	25	25	25
Funding details			
Opening bank borrowing ($/bird)	$25	$20	$10
Average interest rate on borrowings	9%	9%	9%
Credit interest on short term deposits held	3%	3%	3%

7.1 Farm surplus and NPV for each group

The NPV is calculated using the cash surpluses forecast for each group and includes a residual value, being the average of the last three years cash surpluses capitalised at the discount rate. This NPV is then used to compare the "with" (new code requirements) and "without"(existing code requirements) scenarios. It should be noted that in calculating the NPV all surplus cashflows have been retained in the business and not paid as dividends or owners drawings in excess of a reasonable level to compensate management.

7.2 Discount rate used

Arriving at an appropriate discount rate is made difficult by the range of operations and likely range in required returns.

Previous analysis undertaken by Nimmo-Bell used a discount rate of 6% based on the Treasury forecast for the 10 year government bond rate and adjusting this for a risk premium and taxation. Using this approach gain we have calculated the discount rate as follows:

Treasury forecast for the 10 year government bond	5.4
Less forecasted inflation rate	2.0
Equals	3.4
Plus risk premium of 100%	3.4
Equals	6.8
Less tax at 30%	2.0
Post tax discount rate	4.8

We have assumed a discount rate of 5%. Given the impact of discount rate on the analysis we have provided sensitivity analysis at rates of 4 and 6 %.

It should be noted that using a discount rate of 5% means that the NPV calculated does not necessarily equate to the market value of the operation.

7.3 Status quo forecast results

The following table provides a summary of the results for each model farm.

	Farm A	Farm B	Farm C
NPV ($000's)	12,988	2,556	160
NPV/Bird ($)	$74	$37	$8
Max debt when cages replaced ($/bird)	$14	$4	$16
Equity[1]	55%	68%	69%
Interest cover on cage replacement[2]	6.1	14.0	2.5

[1] .Represents the equity level at commencement of the modelling period.

[2] Debt servicing ability is shown as the free cash flow prior to capital expenditure and interest divided by the interest cost.

The modelling results demonstrate that provided farms retain cash surpluses that they are likely to have sufficient funds to replace cages as required. Note that the level of debt required at the time of cage replacement is dependent on the retention of cash surpluses. It has been assumed that Farm A has paid a dividend to shareholders over the forecast period at a level that allows an 8% return on equity. Farm B and C have retained cash surpluses other than wages of management. This is in reality unlikely to occur; however each situation will be different and we have not attempted to make any assumptions around this.

7.4 Sensitivity analysis

Table 8: Sensitivity analysis applied to the status quo forecasts (NPV 000's)

Farm A		**Egg Price**		
NPV ($000)		$2.00	$2.10	$2.20
Feed consumption	+5%	-$7,091	$8,993	$17,955
	0	$1,432	$12,998	$20,981
	-5%	$6,939	$16,432	$23,945

Farm B		Egg Price		
NPV ($000)		$2.00	$2.10	$2.20
Feed consumption	+5%	-$13,740	$390	$4,110
	0	-$7,017	$2,566	$5,323
	-5%	-$693	$3,832	$6,520

Farm C		Egg Price		
NPV ($000)		$2.10	$2.20	$2.30
Feed consumption	+5%	-$5,465	-$1,375	$742
	0	-$3,376	$168	$1,155
	-5%	-$1,396	$737	$1,527

Table 9: Sensitivity analysis demonstrating the impact of the discount rate on the NPV for the status quo forecasts (NPV 000's).

Group	4%	5%	6%
A	$16,791	$12,998	$10,560
B	$3,416	$2,566	$2,038
C	$241	$168	$128

7.5 Return on investment

To demonstrate the approximate level of return on investment we have calculated an Internal Rate of Return (IRR) for each farm for the Status Quo scenario.

To calculate this we have assumed that the farm value at the beginning of the cashflow period is the book value of assets. Given that this book value is not used in the calculation of the NPV (which shows the future value of cashflows) the IRR cannot be compared to the discount rate. (Ordinarily the IRR would equal the discount rate where the NPV is zero). It is however provided to give a gauge as to the forecast profitability of each farm.

The following table shows the calculated IRR assuming the amount invested equals the book value of assets used in the analysis.

Table 10: Internal Rate of Return calculated for each farm

Farm	IRR
A	6.7%
B	2.6%
C	N/A

Note: Farm C shows a negative IRR based on the opening book value of assets suggesting that if the farm was purchased for book value the returns over time would be insufficient to cover the purchase price.

The level of returns calculated are well below what most prudent investors are likely to require from an investment in the egg industry and will provide little incentive for producers to further invest in their operation.

Investors in land based production systems (such as sheep and beef or dairy farming) have historically accepted returns well below those experienced in most commercial businesses. This is largely based on the capital appreciation associated with land which forms a significant part of the total investment. In the case of egg farms however the land component of the investment is small in comparison to the total investment, meaning that a higher level of return should be required.

Given the low levels of returns generated in the Status Quo scenario, changes in profitability associated with the proposed requirements of the code are difficult to measure meaningfully using the IRR. Therefore we have used an NPV as the key indicator of impact.

8 Revised forecasts showing the impact of the proposed changes to the code

For each model farm four scenarios have been considered based on the alternative timeframes for full replacement of traditional cages with furnished colonies. The timeframes considered are 10, 15, 18 and 20 years with a start date of 2010. Therefore, if the existing cage age on a farm was 8 years old, the scenarios demonstrate the impact of replacing these cages at 18, 23, 26 and 28 years of age.

For each timeframe account has been taken of the logistical impact of making the transition along with the financial constraints producers may face. For Farms A and B it has been assumed that the transition will be made over a three year period, with Farm C achieving the transition over two years.

For each scenario the maximum debt requirements when cages are replaced are considered along with the ability to provide security for this borrowing and the debt servicing ability.

Debt servicing ability is shown as the free cash flow prior to capital expenditure and interest divided by the interest cost. Lending criteria may vary. A leading financier with a number of caged layer operations as clients has indicated a minimum interest cover requirement of 1.5 times.

The Equity percentage shown is at the time of cage replacement. This provides a guide as to the ability to provide loan security. It should be noted however that financiers often place a significant discount on the value of specialised assets such as cages when calculating a security value (with birds generally having no value as security). This often results in security offered to support loans being a limiting factor in borrowing for egg producers.

8.1 Scenario 1 – cages replaced by year 10

Table 10: Proposed changes to the code apply after 10 years

	Farm A	Farm B	Farm C
NPV ($000's)	$7,499	-$33	-$1,209
NPV/Bird ($)	$43	$0	-$60
Max debt at cage replacement ($/bird)	$49	$41	$35
Equity at cage replacement	20%	44%	44%
Interest cover on cage replacement	1.9	1.8	1.2

Note: Farm C continues to make cash losses after cage replacement. While there is sufficient cash available to cover interest payments, after allowance for capital replacement a cash loss is forecast.

8.2 Scenario 2 – cages replaced by year 15

Table 11: Proposed changes to the code apply after 15 years

	Farm A	Farm B	Farm C
NPV ($000's)	$9,465	$1,540	-442
NPV/Bird ($)	$54	$22	-$22
Max debt at cage replacement ($/bird)	$39	$31	$30
Equity at Cage Replacement	37%	57%	51%
Interest cover on cage replacement	2.4	2.3	1.4

Note: Farm C continues to make cash losses after cage replacement. While there is sufficient cash available to cover interest payments, after allowance for capital replacement a cash loss is forecast.

8.3 Scenario 3 – cages replaced by year 18

Table 12: Proposed changes to the code apply after 18 years

	Farm A	Farm B	Farm C
NPV ($000's)	$10,358	$2,011	-$159
NPV/Bird ($)	$59	$29	-$8
Max debt at cage replacement ($/bird)	$34	$24	$27
Equity at Cage Replacement	44%	66%	57%
Interest cover on cage replacement	2.9	3.0	1.5

Note: Farm C continues to make cash losses after cage replacement. While there is sufficient cash available to cover interest payments, after allowance for capital replacement a cash loss is forecast.

8.4 Scenario 4 – cages replaced by year 20

Table 13: Proposed changes to the code apply after 20 years

	Farm A	Farm B	Farm C
NPV ($000's)	$10,878	$2,237	-$23
NPV/Bird ($)	$62	$32	-$1
Max debt at cage replacement ($/bird)	$30	$19	$24
Equity at Cage Replacement	49%	73%	61%
Interest cover on cage replacement	3.2	3.7	1.7

Note: Farm C continues to make cash losses after cage replacement. While there is sufficient cash available to cover interest payments, after allowance for capital replacement a cash loss is forecast.

9 Analysis of results

There is significant cost to all producers associated with cage replacement with furnished colonies. The following summary shows the cost (decrease in NPV from the status quo) per bird when the scenario is compared with the status quo position.

9.1 Farm A

Table 14: Changes in NPV per bird of various scenarios, Farm A

Farm A	Cage replacement by			
	Year 10	Year 15	Year 18	Year 20
Decrease in NPV /Bird	$31	$21	$15	$12
Max debt at cage replacement ($/bird)	$49	$39	$34	$30
Equity at Cage Replacement	20%	37%	44%	49%
Interest cover on cage replacement	1.9	2.4	2.9	3.2

It is likely that Farm A would have the ability to make the change to furnished colonies in year 10 provided that cash surpluses are retained in the business and dividends paid to shareholders significantly reduced prior to the need to replace cages. This is not likely to be an acceptable proposition for investors. Extending the timeframe to year 18 would be more acceptable however is still likely to result in significantly reduced returns to investors during that 18 year period.

9.2 Farm B

Table 15: Changes in NPV per bird of various scenarios, Farm B

Farm B	Cage replacement by			
	Year 10	Year 15	Year 18	Year 20
Decrease in NPV/Bird	$37	$15	$8	$5
Max debt at cage replacement ($/bird)	$41	$31	$24	$19
Equity at Cage Replacement	44%	57%	66%	73%
Interest cover on cage replacement	1.8	2.3	3.0	3.7

Farm B would also have difficulty meeting a timeframe of 10 years from both a debt servicing and lending security perspective. Again, the ability to meet the requirements in year 15 would depend on the retention of cash in the business. A prudent investor would see the inability to remove cash from the business over this period as unacceptable and would not commit to reinvestment.

9.3 Farm C

Table 16: Changes in NPV per bird of various scenarios, Farm C

Farm C	Cage replacement by			
	Year 10	Year 15	Year 18	Year 20
NPV/Bird Cost	$68	$30	$16	$9
Max debt at cage replacement ($/bird)	$35	$30	$27	$24
Equity at Cage Replacement	44%	51%	57%	61%
Interest cover on cage replacement	1.2	1.4	1.5	1.7

This representative farm appears unlikely to be able to meet the costs of replacing cages with furnished colonies in a 10, 15 timeframe. With a 18 or 20 year timeframe the farm continues to make a cash loss after allowance for capital replacement. Longer timeframes may see the ability to meet the requirements of the code however debt servicing ability remains marginal and there will be an ongoing need for capital replacement that will need to be met.

The cost per bird derived from the forecasts is not linear according to the size of the unit (i.e. the cost per bird is lower for Farm B than Farm A with the highest cost to Farm C). This relates to the retention of cash within the business as it has been modeled. Farm A has been treated as a company structure and dividends paid to shareholders. Farms B and C have been treated as partnerships and cash surpluses beyond partners drawings are retained in the business. This impacts the need to borrow and therefore the cost of cage replacement.

9.4 Impact of cage age

A further scenario was run looking at the impact on farms with younger cages than the average age used in the modelling. For the purposes of this scenario, it was assumed that the average cage age on all units was 4 years old. To account for the more recent cage replacement likely to have occurred on these farms the opening debt levels were increased by $5.00 per bird across all three farm sizes. The following table demonstrates the change in cost and other key indicators for the 20 year scenario.

Table 17: Changes in NPV per bird demonstrating the increased impact on producers with newer cages than the averages used.

	Farm A	Farm B	Farm C
NPV/Bird Cost - for average cage age	$12	$5	$9
NPV/Bird Cost - for 4 year old cages	$17	$12	$17
Max debt at cage replacement – average age	$30	$19	$24
Max debt at cage replacement – 4 year old	$38	$31	$33

Equity at cage replacement – average age	49%	73%	61%
Equity at cage replacement – 4 year old	39%	57%	42%
Interest cover on cage replacement – average	3.2	3.7	1.7
Interest cover on cage replacement – 4 year old	2.5	2.3	1.2

Note: Farm C continues to show cash losses after cage replacement under this scenario in the same way that it does under the shorter timeframe scenarios.

The above results show that there likely to be a significantly greater impact than that demonstrated on producers that have cages that are newer than the average ages used in this analysis.

9.5 Conclusions

A timeframe of 10 years for the full introduction of furnished colonies would result in a very high cost for all the farms modelled in this analysis. This results from the need to replace cages well before the expected replacement date. The larger the producer the more able they are likely to be to meet the requirements, however all producers are likely to be faced with difficulties in borrowing sufficient money to complete the conversion.

A timeframe of 15 years would allow the two larger model farms sufficient time to generate cash surpluses to enable the conversion to be done however this will see investor returns and the ability to withdraw cash from the businesses severely restricted. This may not form an acceptable investment for producers in this category who may in turn decide not to invest in the conversion required. The costs are significantly reduced when the timeframe is extended to 18 or 20 years.

The small model farm is likely to find conversion to furnished colonies difficult to achieve. A number of the smaller operators have already acknowledged this and have indicated they would exit the industry. For the model farm a timeframe of 10 or 15 years would almost certainly result in an inability to meet the requirements. A longer timeframe of 18 or 20 years would increase the chances of the conversion being made, although this will remain difficult.

While average cage ages have been used for each model, there will be a far greater impact on those producers that have newer cages. Cage ages of 8, 9, and 10 years have been used for Farms A, B and C respectively. If the average age is assumed at 4 years for each Farm and debt levels at $5 per bird higher, the cost per bird increases by $5 per bird for Farm A and $7 for Farm B while Farm C would not generate sufficient cash to cover costs, assuming a twenty year timeframe was allowed to meet the proposed changes to the code.

10 Market impact and ability to pass on costs

The EPF is commissioning a separate report that will consider the impact of changes in egg supply and demand and the ability of producers to pass on cost increases.

The data gathered from producers suggests there could be a significant reduction in the volume of eggs produced from caged systems. This is as a result of producers leaving the industry or converting to Free Range or Barn operations. Data collected suggests that total production of caged eggs could decrease by up to 20%. There would be a small increase in the production of Free Range or Barn eggs, representing approximately 1% of existing caged hens. This would have a significant impact on egg markets.

What is not clear is how existing operators will respond to the reduction in hen numbers. It is possible that those in a position to do so will increase production to benefit from this reduction in supply and the resultant likely price increase.

International and New Zealand studies show that price is an important consideration in purchase decisions for eggs. The largest consumers of eggs in New Zealand are likely to be the most price sensitive (lower income and larger families and industrial users), reducing the ability to increase prices.

Retail prices are generally set by supermarket sales, with this being the largest outlet for eggs. The relatively weak selling position of producers supplying the supermarkets, the high price elasticity of eggs in the retail market, and the potential for substitution with imported processed egg in the industrial segment combine to also suggest that passing on cost increases will be difficult in the longer term.

For the purposes of the analysis contained in this report we have assumed that there is no change in the retail price of eggs as a result of the change in production systems.

11 Summary and conclusions

This report demonstrates the impact on three model farms of 4 different timeframes associated with the introduction of the proposed changes to the code.

There is a significant cost to the three model farms of the conversion to furnished colonies. This cost is reduced significantly with an increased timeframe allowed for conversion of existing cages.

The model farm analysis indicates that the large and medium size farms will be able to meet the requirements provided they have a timeframe of at least 15 years and that all cash surpluses generated over this period are committed to reinvestment. This would not be an acceptable proposition for investors. The small farm will have difficulty meeting the requirements over 15 years however may be able to achieve conversion in an 18 or 20 year period.

In all cases introduction of the proposed changes results in significant loss of free cashflow to farm owners.

The ability for individual producers to meet the requirements will depend on a number of factors. These include the availability of land, age of current cages, existing levels of borrowing, cost and revenue structures and the need to withdraw cash from the business to satisfy the requirement of shareholders or owners. In order to complete this analysis for the three model farms a number of assumptions have been used around these factors. In making these assumptions care has been taken not to overstate the impact of the proposed change to the code. Therefore in reality the cost to an individual farmer may be considerably greater than that shown in this analysis

The ability for producers to pass on increased costs is not clear. While many have indicated they will exit the industry and therefore there will be a reduction in egg supply, it is possible that larger operators will increase production to compensate for the reduction in supply. If this does occur, the structure of the industry and nature of egg markets would indicate that the ability to pass on increased costs in the long term may be limited.

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Appendix A: Producer survey form

NAME _____ CONFIDENTIAL

The Minimum Standard 10 proposed under the NAWAC Code of Welfare review currently in progress is as follows:

Minimum Standard No. 10 – Providing for behavioural needs

(a) Hens must be able to stand erect in all parts of the floor space available to them and must have sufficient space per bird that individuals in a group can stretch and flap their wings.

(b) Hens must have access to appropriate, discrete nest boxes in sufficient numbers to allow all hens to lay in a nest.

(c) There must be sufficient perching space to allow all birds in the group to perch. Perch design must be such as to minimise the risk of injury.

(d) An area must be provided to allow foraging and dust bathing and an abrasive area for claw shortening.

(e) Aberrant behaviours such as feather pecking, aggression and cannibalism and stereotypic activities must be controlled by selection of management tools appropriate to the husbandry system.

(f) Existing enclosures that do not satisfy the requirements of minimum standard no. 10 are to be replaced by ….????

(g) Any new facilities to house layer hens constructed after the date of issue of this code must meet the requirements of Minimum Standard No. 10

Based on current knowledge, free-range, barns and furnished cages (also known as colony cages, enriched cages) will meet the requirements of Minimum Standard 10 but current cages in present use by producers will not meet this Standard.

The Code will stipulate a transition period within which producers will be required to make the changes from existing systems to systems that comply with the requirements of the draft Minimum Standard 10.

In order to comply with the new minimum standard current cages will need to be replaced. Existing cage systems cannot be modified to provide for the requirements of the standard.

In general terms the new enriched colonies will be 120 - 150 cm higher than standard cages and 200- 300 cm wider per row. This may have an impact on the number of birds able to be housed in your shed as the number of rows and tiers that fit in the shed may be reduced. .

This means that where a shed has 3 rows of existing cages with no additional space (or ability to reduce aisle width) then it is likely that only two rows of enriched cages will be possible (4 row sheds will likely fit 3 rows), and where rows have 4 tiers and no additional space only 3 tiers will be possible. Please note that this will vary for each shed depending on available space, including existing aisle widths.

To meet the Minimum Standard there will also be a requirement to provide more space per bird (750 sq cm). Depending on the enriched cage system used this may see a need for a reduction in the number of birds per row also.

The following questions will help in assessing the impact of the new Minimum Standard through seeking your likely response and the implications of this.

Question 1: Please provide the following information for each shed on your property.

SHED NO	1	2	3	4	5	6	7
Shed Capacity/Birds							
Actual No Birds (in Shed)							
Number of rows per shed							
Number of tiers high							
Aisle width between rows							
No of Birds per/Cage							
CM^2/Bird							

If you have more than 1 size of cage in each shed please record each size in a separate column

Question 2: In order to meet the requirements of the Minimum Standard as outlined above would you be more likely to:
(Tick the one box that best summarises your intentions. If you wish, you may make further comments on additional paper).

- ☐ A Alter cages in existing sheds.
- ☐ B Replace cages in existing sheds.
- ☐ C Alter existing sheds and replace cages.
- ☐ D Build new shed(s) to replace existing sheds.
- ☐ E Build new shed(s) to house displaced birds.
- ☐ F Change to a free range or barn system.
- ☐ G Exit (leave) the Egg Industry.

Question 3: If you answered **A or B** above (Alter cages in existing sheds or replace cages in existing sheds), please answer the following questions:

a) What reduction (if any) in the number of birds is this likely to result in?

_____

Question 4: If you answered **C, D or E** above (Build new sheds or alter existing sheds), please answer the following questions:

a) Do you have land available to build new shed(s)?

☐ Yes ☐ No ☐ N/A

b) Do you have sufficient land area to build new/larger sheds without breaching any land coverage restrictions in your District Plan

☐ Yes ☐ No ☐ Don't know

c) Are you likely to be subjected to height restrictions with any new building?

☐ Yes ☐ No ☐ Don't know

d) Will any new building require a new or amended consent to discharge to air?

☐ Yes ☐ No ☐ Don't know

e) Will any new buildings be likely to be subject to setback requirements (i.e. set back from the boundary) under the District Plan?

☐ Yes ☐ No ☐ Don't know

Question 5: If you answered **F** above (Change to a free range or barn system) what reduction in the number of birds is this likely to result in?

_____

In addition to these questions we would like to gather some data on your operation to assist in determining returns. Please note that any information you provide will be held as confidential to the EPF and Nimmo-Bell.

Question 5: What is your best estimate of the actual number of eggs produced per bird in your farming operation in 52 weeks of lay – from 20 weeks to 72 weeks?

☐ Less than 280 Eggs per hen housed
☐ 280 to 290 Eggs per hen housed
☐ 290 to 300 Eggs per hen housed
☐ over 300 Eggs per hen housed

Question 6: Do you make your own feed?

☐ Yes ☐ No

Question 7: Do you grade your own eggs?

☐ Yes ☐ No