

SUPPORTING DOCUMENT 1

Proposal P 301 – Primary Production & Processing Standard for Eggs & Egg Products

Regulation Impact Statement



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Executive summary

- Food borne illness caused by the consumption of egg and egg products cost the Australian economy about \$44 million each year.
- *Salmonella* is the main microbiological hazard associated with eggs. Cracked and dirty eggs have a higher likelihood of being contaminated with *Salmonella*.
- Salmonellosis is the second most commonly reported food-borne illness in Australia. Where the cause of food-borne illness can be identified, eggs are the most commonly identified food vehicle. Eggs that are cracked or contaminated with faeces are regarded as presenting the highest risk to consumers.
- The prevailing health hazard arising out of the consumption of contaminated eggs is currently not being addressed because there is an absence of consistency across jurisdictions as well as across production stages. In addition, there is no national traceability system. Clear identification of the source of each egg is needed to ensure that unsafe eggs are prevented from entering the market. A national traceability system will facilitate a rapid response to the outbreak of illness caused by, or associated with, contaminated eggs.
- The objective of this Proposal is to reduce the likelihood of food-borne illness occurring due to the consumption of contaminated eggs and egg products, while avoiding any unnecessary cost burden on industry, jurisdictions or consumers.
- Options identified are the status quo, industry self-regulation including education and a standard covering the production and processing of eggs.
- Assessment of options indicates that both status quo and industry self-regulation/education are not adequate to address the public health and safety concerns.
- Evidence and advice from the Standards Development Committee indicates that the likelihood of small producers participating in an industry self-regulation scheme is low.
- For public health reasons egg producers and processors support the exclusion of cracked and dirty eggs from the market.
- Jurisdictions support the adoption of a regulatory regime for the egg industry, and three states, namely Queensland, New South Wales and Tasmania have already introduced regulations.
- Regulation of the egg industry has the greatest potential to deliver maximum net benefits to the Australian community, even at a conservative level of 20% efficacy.
- The net benefit from a regulatory option will lie in the range of about \$25million to \$75 million, in the first five years of implementation.
- A review conducted by the Centre for International Economics concluded that the RIS is based on the best available data and assumptions for the level of accuracy required.

1 The regulatory problem

This Proposal deals with the problem of food-borne illness caused by the consumption of eggs and egg products. These illnesses are estimated to cost the Australian economy about \$44 million each year.

A scientific assessment undertaken by FSANZ of the public health and safety of eggs and egg products in Australia¹ identified *Salmonella* as the main microbiological hazard. *Salmonella* bacteria that infect laying birds are pathogenic to humans which cause gastroenteritis. The risk of *Salmonella* is high when egg surfaces are contaminated with faeces and/or are cracked. Damage to the shells allows *Salmonella* to penetrate into the egg contents. Egg pulp that is inadequately heat-treated is also more likely to be contaminated because cracked eggs are usually used in its production. Salmonellosis is the second most commonly reported food-borne illness in Australia. Where the cause of food-borne illness can be identified, eggs are the most commonly identified food vehicle.

The main problems that this proposal seeks to address are the prevalence of dirty and/or cracked eggs in the market and the absence of a national traceability system for eggs. This problem is exacerbated by the large number of small producers who do not have on-farm safety measures in place and often supply unidentified sub-standard eggs to small retail outlets.

There is a need to ensure that cracked and dirty eggs do not enter the market. Systems need to be put in place to divert unsuitable eggs to pulping (which typically involves pasteurisation) or their complete exclusion from the food supply where they are unsuitable to be pulped.

Traceability makes it possible for the targeted recall of suspect eggs, as opposed to industry-wide recall, thereby reducing the financial loss which is to be incurred by the egg industry as a result of an outbreak of illness. A national health and safety program and traceability scheme will also provide the consistency that is required in order to ensure consumer confidence for an industry which operates across state boundaries.

The Risk Assessment also concluded that transmission of *Salmonella* spp. into laying flocks is multi-factorial in nature, including feed, water, pests (rodents and insects), the environment, personnel, new laying stock and equipment. Therefore, there is the need to encourage the application of steps, which are consistent with current biosecurity requirements, to limit the potential for flock to become initially infected with pathogens.

The specific problems targeted by this proposal include: inconsistencies between jurisdictions and production stages, lack of traceability and gaps in regulatory requirements. Full details are provided in section 1.3.5 of the Final Assessment Report.

The following is a summary of this information:

¹Risk Assessment of Eggs and Egg Products, FSANZ, Sep 2009 www.foodstandards.gov.au

Table 1 – Specific Issues

Production/processing step	Perceived gaps
Bird Management	Only adequately addressed by Qld and Tas legislation and industry schemes where implemented. In the main, small businesses have not implemented the industry programs.
Collection and initial sorting	No requirements in the Code for collecting or sorting eggs. Currently restrictions on the sale of cracked and dirty eggs is unclear. The hazards are adequately addressed by Qld and Tas legislation and industry schemes where implemented. In the main, small businesses found not to comply.
Cleaning /washing and drying of intact shell eggs ; and Packing, storage and transport of cracked eggs and raw pulp	Current requirements do not apply if these activities take place at the egg production facility. Only adequately addressed by Qld and Tas legislation and industry schemes where implemented.
Pulping (Commercial off-farm)	Only adequately addressed by Qld legislation. There is a gap in industry scheme which does not apply to processing of egg products.
Pasteurisation	The Code has requirements for pasteurisation however clarification is required.
Storage and distribution of treated (pasteurised products)	There is a regulatory gap in that processed egg products need to be stored or transported under time/temperature control.
Use of eggs and egg products by manufacturing businesses/caterers and other types of food businesses; and Retail sale of shell eggs and egg products	The regulatory requirements are unclear(for example, whether unpasteurised pulp can be sold for use in other foods and whether businesses can use cracked eggs in products that are subsequently heat treated.)
Traceability	There are only traceability requirements in one State (Qld).
Skills and knowledge of food handlers	There is a gap in the need for skills and knowledge for egg producers who may handle cracked and dirty eggs or raw egg pulp.

Currently three states, Queensland, Tasmania and New South Wales (not yet implemented) have their own legislation to control egg safety on-farm. Queensland's regulation includes a requirement to identify individual eggs for traceability purposes. However there are no national regulatory measures in place to minimise the likelihood of eggs, or egg pulp produced on-farm, being contaminated on-farm or during grading, washing or packaging. The absence of such a national regime means that there is no assurance that eggs moving across state boundaries conform to any minimum safety standard. Given that the major suppliers have interstate operations and supply across state borders, national inconsistency has potential cost implications. Additionally, a voluntary industry scheme exists to manage food safety (Egg Corp Assured). However, its application is limited to 30% of producers and covers about 80% of eggs sold.

There is support from industry and Australian governments for regulatory measures to reduce the likelihood of contaminated eggs reaching the market. This will result in a reduction of egg related cases of illness. There is also national support for putting in place traceability systems and improving national regulatory consistency.

2 Objective

The objective of this Proposal is to reduce the likelihood of food-borne illness occurring due to the consumption of contaminated eggs and egg products, while avoiding any unnecessary cost burden on industry, jurisdictions or consumers.

3 Options

In order to decide the most cost-effective approach to achieving the objective, FSANZ proposed different risk management options. These options included the *status quo* as a comparative measure against which appropriate non-regulatory and regulatory approaches can be assessed. Three options were proposed.

Option 1A – Reject the Proposal – maintain the status quo

No change made to the existing regulatory regime.

Option 1B – Reject the Proposal - industry self-regulation (including education)

Industry members without a food safety program in place to voluntarily implement measures to ensure contaminated eggs and egg products do not enter the market place and that eggs and egg products are traceable. It will also include an education campaign which will teach consumers and industry how to improve the safe handling of eggs.

Option 2 – Approve the draft standard – government regulation

Egg producers and processors will be required to comply with regulatory requirements for the production and processing of egg and egg products by way of an amendment to the Code.

Table 2 Comparison of options

Option	Description
Status quo	<p>The Code contains requirements for egg processing, definition of eggs and egg products and conditions applicable to their retail sale. The Code also provides for safe handling and storage and hygienic food preparation.</p> <p>Egg Food Safety Program in three States. Traceability requirements only in Queensland. NSW have yet to implement their recently introduced regulations.</p> <p>Voluntary AECL food safety quality assurance program. The program is for egg producers only.</p>
Self regulation	<p>Voluntary AECL food safety quality assurance program adopted by all egg producers</p> <p>Voluntary AECL food safety quality assurance program to cover egg processing for all egg processors</p> <p>Education campaign targeting consumers, food handlers and industry.</p>

Regulation

Mandatory procedure for control of inputs, waste disposal, health and hygiene, acquisition of skills, design construction and maintenance of premises, equipment and transportation, processing of egg products, traceability and sale and supply of egg and egg products.

4 Impact analysis

The Assessment Reports for this Proposal have provided the necessary information to comply with the Council of Australian Governments (COAG) requirements for regulatory impact analysis. FSANZ has consulted the Australian Government's Office of Best Practice Regulation (OBPR) with the view of meeting these requirements.

The decision reached through the assessment of Proposal 301 has been based on an analysis that has considered the following:

- the parties affected by the Proposal and the solution
- the results of an assessment of the risks posed by the consumption of eggs and egg products in Australia
- the efficacy and practicality of food safety control measures
- the costs and benefits to the community of the interventions associated with each option.

The parties mainly affected by outbreaks of food-borne illness and also most likely to be affected by the proposed solutions are:

- consumers of egg and egg products
- businesses involved in the production, distribution and sale of eggs and egg products and
- State and Territory agencies that investigate food-borne illness and enforce provisions of legislation.

Consultation with these parties occurred through the Standard Development Committee (SDC), during industry visits and through public consultation at Initial and Draft Assessment stages. The views and comments of stakeholders are summarised (in Attachment 3 of the Final Assessment Report) and have been taken into account in developing the proposed standards and analysing risk management options.

FSANZ has considered the costs and benefits of the risk management options on each of the affected parties. There are assumptions and limitations underpinning the impact analysis including:

- The conclusions of the analysis must be regarded as indicative, rather than as definitive, as they are based on data from a number of businesses, jurisdictions and other sources.
- The *status quo* or 'do nothing' option is the base case against which other options are compared. It represents the prevailing situation and does not imply any changes.
- The impact analysis for options 1B and 2 is the additional or incremental costs and

benefits when compared to the status quo.

- Wherever possible, impacts have been quantified. In absence of specific information, FSANZ has drawn on the best available evidence, such as secondary studies and other general information.
- Due to lack of Australian data, FSANZ has made use of international data on adverse health outcomes pertaining to countries with comparable levels of health care and disease incidence. However the computation of costs for such health incidents are based on recommended Quality Adjusted Life Years (QALY) values / health care costs in Australia (AUD).
- Efficacy of an option means effectiveness in reducing the burden of food-borne disease.
- Government and business compliance costs for the Regulatory Option are based on detailed information provided by State Governments².
- Impacts on small business have been separately identified and reported wherever possible.
- A discount rate of 7% applies to both costs and benefits in FSANZ's calculations.
- Sensitivity analyses are undertaken to ascertain a range of outcomes for the impact analysis.
- The regulatory option is estimated to deliver a 20% to 50% efficacy rate (See analysis under Option 2).

5 Option 1A – status quo

	<p><i>The major advantage of this approach is that there are no new costs³. However the disadvantages are that the outbreaks of egg related illness and the associated burden on those falling ill and their families, their employers and medical services remain the same. The costs to government and industry also remain unchanged.</i></p>						
<table><tr><td>Costs</td><td>Benefits</td></tr><tr><td>\$45m</td><td>\$0</td></tr><tr><td>(annual)</td><td></td></tr></table>	Costs	Benefits	\$45m	\$0	(annual)		
Costs	Benefits						
\$45m	\$0						
(annual)							

It is unlikely that the situation regarding food-borne illness will improve on its own account. If there are opportunities for businesses and consumers to buy cheaper eggs because they are cracked or dirty, if advice to the contrary is not entirely effective and the legislation currently managing hazards is unclear, then the possibility of illness remains unchanged.

² FSANZ requested information on both initial and on-going costs through the Egg Implementation Model Working Group. Detailed information was received from four States (NSW, Queensland, Tasmania and Victoria, which together account for around 80% of the national flock). This data was used to provide indicative ranges of costs which were then extrapolated to estimate overall national costs.

³This refers to the situation at the present time. The *status quo* option does not take into account any future changes such as other States introducing their own requirements in the absence of national requirements (which could potentially mean additional costs to industry if implemented at the State level).

Advice from industry and governments⁴ emphasises that the current problems associated with the sale and use of potentially contaminated eggs and egg products supports the need for an improvement of the *status quo*.

5.1 Costs

5.1.1 Costs to industry

There are costs to industry arising from the outbreak of food-borne illnesses as a consequence of consuming unsafe eggs and egg products. These costs are associated with the loss of reputation, shut down costs, fines and compensation payments. Studies indicate that even businesses with a large annual turnover of \$1.3m - \$13m have either lost sales or have been shut down as a result of being associated with food-borne illnesses. For example, oyster farmers and the local fishing industry of Wallis Lake lost \$700,000 annually after their produce was identified as the cause of around 444 cases of Hepatitis A across Australia⁵.

The NSW Egg Food Safety Scheme⁶ estimated that if egg safety and flock management programs were even 50% effective in reducing food-borne illness, there would be a reduction in the damage to the reputation of the egg industry amounting to \$270,000 per annum. In addition, there would be an estimated reduction in wastage and spoilage which costs the industry around \$405,000 per annum. All together this gives a total of \$675,000 (\$270,000 + \$405,000). If current programs are fully effective, that is 100% effective, then a saving of about \$1.35 m per annum will accrue.

Given that NSW accounts for 33%⁷ of the national value of egg production, the cost of reputation, damage and wastage to industry Australia-wide in 2005 would have been about \$ 4.09 m. Applying the Australian Taxation Office (ATO) CPI inflation rate⁸ of 15% for the period 2005-10, this would amount to \$4.7 m per annum for Australia. However given that Queensland which accounts for 13% of the country's egg industry, already has a food safety scheme for eggs which meets the requirements of the proposed standard, the annual cost in terms of reputation, is estimated at about \$4.09 m (87% of \$4.7 m) nationally.

In addition, there are costs associated with product recall, which average \$13.75m per annum in 2006 for food products in general⁹. According to OzFoodNet¹⁰, in 2007 eggs were suspected as the cause in 16% of identified outbreaks. If we make the assumption that eggs are responsible for 16% of total estimated number of foodborne salmonellosis cases annually, this would amount to \$2.44m at current prices (16% of \$13.75m (\$2.2m) for 2006 adjusted by the ATO's CPI index of 11.14 % for 2006-10).

It is therefore estimated that under the *status quo*, the egg and egg products industry in Australia could be incurring costs as a consequence of reputation damage, inefficiencies and product recall¹¹, amounting to \$6.53 m (\$4.09 m + \$2.44 m) annually.

⁴ Through public submissions, the SDC and broader industry fora.

⁵ Abelson P., Forbes, M.P. and Hall, G. (2006) *Cost of Food-borne illness in Australia and Willingness-to pay principles*. [http://www.ozfoodnet.org.au/internet/ozfoodnet/publishing.nsf/Content/7F6D9DE21AB6F102CA2571650027861F/\\$File/cost-food-borne.pdf](http://www.ozfoodnet.org.au/internet/ozfoodnet/publishing.nsf/Content/7F6D9DE21AB6F102CA2571650027861F/$File/cost-food-borne.pdf)

⁶ The NSW Egg Food Safety Scheme commenced on 18 June 2010 (www.foodauthority.nsw.gov.au) and is currently being implemented. Estimates of costs associated with implementing the scheme were included in their Risk Impact Statement developed in 2005.

⁷ ABS Report 7121 *Establishments with Agricultural Activity by State*.

⁸ <http://www.ato.gov.au/taxprofessionals/content.asp?doc=/content/1566.htm>

⁹ Abelson, P. et al. (2006) *The annual cost of food-borne illness in Australia*.

¹⁰ OzFoodNet Network, (2007) [http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-cdi3204-pdf-cnt.htm/\\$FILE/cdi3204c.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-cdi3204-pdf-cnt.htm/$FILE/cdi3204c.pdf) (p412).

¹¹ A recent recall on cracked and dirty eggs accrued a cost of \$55,000 (see 'Costs to Government')

5.1.2 Costs to the community

The cost of food-borne illness impacts on consumers and the wider community in the form of medical expenses, lost productivity and a reduction in overall health and welfare. In the following table these costs are based on the Australian estimates for Quality Adjusted Life Year (QALY) and Value of Statistical Life (VSL)¹². These indices take into account productivity, welfare and medical costs for a range of effects ranging from a mild gastroenteritis illness to extreme consequences such as death.

Table 3 Average estimated cost of an illness

	Incidence	Days per case	Disability weight	Health cost per case	Medical cost per case	Weighted dollar cost
Gastroenteritis						
- mild	0.857	5.58	0.093	229	0	196
- moderate	0.154	10.65	0.093	438	73	78
- severe	0.018	16.15	0.42	2,998	1,526	81
Reactive arthritis						
- mild	0.011	222	0.21	20,606	0	226
- moderate	0.002	222	0.37	36,306	110	72
- severe	0.0002	222	0.94	92,237	4,063	19
Irritable Bowel Syndrome	0.0002	life long	0.093	200,025	1,526	40
Death	0.001		1	2,150,805	0	2,150
Total						\$2,866

Explanatory notes

A range of adverse health outcomes result from food borne illness, varying from mild gastroenteritis illness to death. Long term adverse health complications include Reactive Arthritis and Irritable Bowel Syndrome. These outcomes have been derived from the Dutch study (Kemmeran, et al. 2006¹³).

Incidence: A mild case of gastroenteritis illness is classified as one that involves no visit to a general practitioner (GP), a moderate case involves a GP visit and a severe case would be one that requires hospitalisation. The breakdown of cases into mild, moderate and severe cases of illness is based on Kemmeren et al. (2006). For example out of 35,000 cases, approximately 30,000, or 85.7%, would experience mild symptoms.

Days per case: A day in perfect health is considered equal to 1.0 Quality Adjusted Life Day (QALD). The number of QALDs lost due to illness has also been derived from the Dutch study where a mild illness may only impact over 5 days whereas a severe illness could affect up to 16 days of an individual's life (Kemmeran, et al. 2006).

Disability weight: This index provides weight age according to the severity of each form of illness. Mathers C, T. Vos, C. Stevenson *The Burden of Disease and Injury in Australia* (1999) AIHW Canberra.

Health cost per case: It measures the amount the community is willing to pay to avoid an adverse health outcome. It is derived from the Quality Adjusted Life Year (QALY) in Australia which is \$151,000 (Abelson, 2007). Adjusted for 6.84% inflation, this amounts to \$161,330 (Australian Taxation Office's Consumer Price Index). Divided by the number of days in a year a QALD will be \$ 442. Hence for mild gastroenteritis, the health cost per case is \$442 x 5.58 days x 0.093 = \$229.

¹² Refer to Abelson, P. (2007) Office of Best Practice Regulation. *Establishing a Monetary Value for Lives Saved: Issues and Controversies*: WP 2008-02:21.

¹³ Kemmeren JM, Mangen M-JJ, van Duynhoven YTHP, Havelaar AH (2006) Priorization of foodborne pathogens – Disease burden and costs of selected enteric pathogens. Bilthoven: National Institute for Public Health and the Environment. Report Nr 330080001.

Similarly for death, the health loss is estimated to equal the Value of a Statistical Life (VSL) \$161,330 discounted at 7% over a life span of 40 years in order to arrive at a Net Present Value of \$2,150,805.

Medical costs: A mild case of gastroenteritis will not warrant any medical treatment. A moderate case is taken to require a doctor's examination, and a GP visit was costed at \$60 in 2002 (Abelson, et al. 2006)¹⁴. For a severe case of gastroenteritis or Irritable Bowel Syndrome (IBD) the cost is estimated to be approximately \$1,254, assuming an average hospital stay of 2 days. In the event of Reactive Arthritis, it is assumed one specialist visit at \$90 for a moderate case and \$ 3,339 for a severe case. Costs used are 2002 prices and derived from *The annual cost of food-borne illness in Australia* (Abelson, et al. 2006). These 2002 prices are adjusted for inflation and are estimated at 2009 prices as \$73 for a GP visit, \$ 110 for a specialist visit, \$1,526 for hospitalisation and \$ 4,063 for a severe hospitalisation case (using ATO's CPI inflation adjustment of approximately 21.7% over 2002-09).

Weighted dollar cost: is the sum of health loss and medical costs proportional to the incidence, e.g. in a moderate gastroenteritis illness, the health cost is \$ 438. In addition there could be medical costs of a GP visit at \$73. The sum of \$511 is then discounted by the likelihood of that event (15.4%) to \$78.

The cost of a general food-borne salmonellosis illness case is therefore estimated to be \$2,866. Studies indicate that taking into account underreporting there may be about 23,000 – 138,000 food-borne salmonellosis cases in Australia in a typical year¹⁵. Taking an average we get 85,000 cases in the community. Since eggs are estimated to account for about 16 % of food-borne illness, there are probably about 12,800 cases of egg-related salmonellosis per year in Australia.

If each salmonellosis case results in a cost of \$ 2,866 then the total costs currently being borne by consumers and the community due to egg-related food-borne illness is approximately \$36.68m per annum. This includes health related costs, loss of income and/or leisure as well as a monetary value attributed to pain and suffering.

5.1.3 Costs to government

Government costs due to the outbreak of food-borne illness cover recalls, compliance and investigation costs. For example, a recent recall incident in relation to eggs in Queensland amounted to at least \$55,000 in costs to government¹⁶.

The annual costs of surveillance, investigation and maintaining current food safety systems were estimated at \$10m annually¹⁷. Apportioning an estimated 16% of these costs to egg-related operations equates to a cost of \$1.78 m per year at current prices (adjusting the 2006 estimate of \$1.6m by the 2006-10 ATO index of 11.14 %).

Therefore total cost per year of the status quo option is estimated at about \$6.53 m for industry, \$36.68m for the community and \$1.78 m for the government. That is a total estimate of \$44.99 m annually.

5.2 Benefits

The benefit that could arise from maintaining the *status quo* option is the absence of any new financial burden, which may occur if there are any changes to the current mode of activity. This applies equally to industry, consumers and jurisdictions.

¹⁴Abelson, P. et al. (2006) Australian Government Department of Health and Ageing. The annual cost of food borne illness in Australia.

¹⁵Hall, G., Kirk, M.D., Becker, N., Gregory, J.E., Unicomb, L., Millard, G., Stafford, R. And Lalor, K. (2005). Estimating food-borne gastroenteritis, Australia. *Emerg Infect Dis.* **11** (8): 1257 - 1264.

¹⁶SFPQ personal communication indicated that investigation involved about 1,200 hours by several agencies. Based on FSANZ's previous experience in collecting enforcement costs, a base officer rate of \$ 45 per hour has been applied, though in practice the costs would have been higher due to the involvement of legal/ senior staff.

¹⁷Abelson et al. 2006. The annual cost of food-borne illness in Australia

6 Option 1B - industry self regulation (including education)



Cost
\$13m

Benefit
Uncertain

The major advantage of this option is that industry already has significant responsibility for egg safety through current industry schemes and it could potentially have a stronger, industry-wide commitment to ensuring egg safety. The major disadvantage is that not all sectors of industry would choose to comply with such a scheme and without a government role consumer confidence in egg safety could be compromised.

Self regulation under the status quo is not only voluntary, but limited to 30 per cent of businesses. However such schemes cover 93% of the national layer flock and 80% of eggs sold. It is a conservative program which involves only modest costs. An effective self regulation/education option for the whole industry, as envisaged here, would have to be industry-wide and involve a major shift in industry thinking and reach.

Self regulation schemes have been in operation for a considerable amount of time, but cost and technical barriers have precluded the adoption of adequate health and safety standards by many. The egg industry has a high number of small and medium sized producers. The current system is not intended as a minimum standard and requires a high degree of professionalism and knowledge for compliance. Many small producers are transitory, because of the low barriers to entry and lack adequate knowledge and experience in health and safety. They have few industry links, little established infrastructure and have little incentive to subscribe to industry self-regulation. Due to cost considerations and complexities they are unlikely to be drawn towards an industry program that calls for best practice.

To support a substantial extension of self regulation an education campaigns and other support is likely to be needed. Education campaigns are tools which can be used to reinforce food safety messages. For education campaigns to be effective, programs based on nationally consistent egg safety messages are best developed and implemented by the jurisdictions. Nationally this could be achieved through the Implementation Sub-Committee in partnership with the egg industry. Some jurisdictions have shown support for education initiatives for the farming sector, food handlers and the public.

The effectiveness of education campaigns and current egg food safety messages (for example, website information, fact sheets and flyers) is questionable as shown in FSANZ's consumer survey.¹⁸ The data suggests that some consumers are unaware of current egg safety messages, that the messages are not effective, or that there are no consistent messages regarding egg handling.

¹⁸This consumer survey was published with the Draft Assessment Report as Supporting Document 2 and is on our website at: <http://www.foodstandards.gov.au/foodstandards/proposals/proposalp301primaryp3426.cfm>

There are also education messages aimed at egg handling in the food service industry. The effectiveness of such campaigns could be questioned as food-borne illness outbreaks associated with eggs at restaurant and catering facilities continue to occur¹⁹.

A self-regulatory option, with additional education programs, is dependent on industry-wide voluntary adoption and is not an obligation. It would be less effective than a regulatory approach to address the public health and food safety problem. Furthermore, advice from the SDC and through broader consultation is that self-regulation is not supported by State or Territory Governments or by the egg industry.

The following specific feedback from egg industry peak has been provided. In the national egg quality assurance program conducted by the AECL, participation is limited to about 30% of egg businesses. The AECL “firmly supports FSANZ in its proposed Standard to include all persons who sell or trade eggs.” They go on to explain that this is because “there are many egg production units unknown to AECL and this is where legislative directives would be of great benefit to the whole of the egg industry.”²⁰

In exploring this option, FSANZ has analysed the costs and benefits of this option to all stakeholders where possible.

6.1 Costs

6.1.1 Costs to industry

Under the self-regulatory option, depending on the number of businesses and the extent to which the industry voluntarily adopts best practice, a wide range of costs may be incurred. The main cost would however be an industry formulated and administered compliance program that would ensure that member farms and processors would adhere to a prescribed set of best-practice guidelines. This would be an industry-financed scheme, where producers and processors would contribute on a pro-rata basis towards the cost of administration.

The Australian Egg Corporation Limited already manages a program where members finance promotion and research and development. The AECL raised \$3.89m for these activities. An industry administered self-regulation bio-security scheme is assumed to be of similar proportions, and costing a comparable amount. Self regulation is therefore estimated to cost about \$3.89 m annually²¹.

This option would also include an education campaign which will have to be undertaken by industry (possibly in conjunction with government) to inform producers, processors and consumers about food safety practices in order to minimise adverse health outcomes and the disease burden arising from the consumption of contaminated eggs and egg products. In 2008 the AECL²² spent \$2.77m on market awareness, education and public affairs activities. A comprehensive industry and public education campaign will be comparable in terms of formulation, design and dissemination, and therefore in costs.

The cost to industry of option 1B is therefore estimated to be \$3.89m for self-regulation and \$2.77m for education, making a total of \$6.66m.

¹⁹ Stephens, N., Coleman D. And Shaw K. (2008) Recurring outbreaks of *Salmonella* Typhimurium phage type 135 associated with the consumption of products containing raw egg in Tasmania
([http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-cdi3204-pdf-cnt.htm/\\$FILE/cdi3204.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-cdi3204-pdf-cnt.htm/$FILE/cdi3204.pdf))

²⁰ Email from AECL 26 October 2010

²¹ The Australian Egg Corporation Limited's (AECL) Annual Report for 2008

²² AECL Annual Report 2008.

These numbers are used as highly conservative proxies for the purpose of attempting to describe the types and costs of programs that would need to be used to support any attempted extension of self regulation to the small and medium sized producers not presently covered. These estimates are likely to be highly conservative due to the difficulties associated with reaching the 70% of producers not covered due to their transitory nature and the education and support they are likely to require.

6.1.2 Costs to consumers

It is anticipated that industry will pass on to consumers some part of the cost burden of self-regulation. This figure is already present in the cost that FSANZ has computed for industry.

Besides the financial burden, self-regulation may also have the effect of limiting the choice of eggs and egg products in the market if industry phases out, or discards, products that have not been produced in accordance with industry schemes.

6.1.3 Costs to government

Under a self-regulatory regime, Governments may incur costs arising out of supporting and maintaining industry's self regulation systems. In 2008, the Government contributed to AECL (through grants) a sum of \$1m²³. The Government may also choose to provide funding to other egg industry bodies or organisations.

In estimating the probable costs of a Government-assisted self-regulation program (\$3.89m per annum), FSANZ has been guided by the existing industry-wide program run by AECL. Thus a comparable Government program for the egg industry, aimed at promoting, implementation and maintaining an industry-wide self-regulation scheme could also cost up to \$3.89m.

In addition the Government may complement industry's education initiatives and could incur up to \$2.77m annually (through an equal contribution to industry's cost of education initiatives). Thus the total cost to Government for a self-regulation program is estimated at about \$6.66m annually.

These numbers are used as highly conservative proxies for the purpose of attempting to describe the types and costs of programs that would need to be used to support any attempted extension of self regulation to the small and medium sized producers not presently covered. These estimates are likely to be highly conservative due to the difficulties associated with reaching the 70% of producers not covered due to their transitory nature and the education and support they are likely to require.

6.2 Benefits

6.2.1 Benefits to industry

The benefits of a self-regulation program for industry, including monetary as well as less-tangible benefits such as improved goodwill and less spoilage/ wastage, are extremely difficult to estimate due to difficulties in achieving substantially improved uptake due to the industry's structure.

²³ AECL Annual Report 2008.

Self-regulation may be considered where there is no strong public health and safety concern and the problem can be addressed by the market itself through, for example, the development of and compliance with, self-regulatory arrangements. However, the market has failed to regulate eggs to the required safety level and government intervention is required to help mitigate this potential market failure.

Table 4 assesses the industry self-regulation option against the Council of Australian Governments (COAG) regulatory impact statement guidelines.

Table 4: Assessment of self-regulation

Factors to be considered	Analysis
There is no major public health and safety concern.	<ul style="list-style-type: none"> • Outbreaks of food-borne illness associated with the consumption of contaminated eggs have been identified as the problem to be addressed by this proposal. • An expanded self-regulatory industry scheme would need to cover all necessary controls for food safety management. If there are any gaps or irregular compliance, the risk of food-borne illness occurring is maintained.
Adequate coverage of the egg industry can be achieved.	<ul style="list-style-type: none"> • The egg industry is a very diverse industry comprised of small (many family owned and operated), medium and large businesses. • There are estimated to be roughly 1400 businesses producing eggs for sale throughout Australia (there is no easy way to identify all egg businesses, particularly those who are not supplying to major retailers or wholesale markets). Around 1200 of these are small or very small producers. • There is a high turnover of businesses involved at the smaller end of the egg production industry. • It only takes one outbreak of food-borne illness (one business) associated with the consumption of eggs to impact on the entire industry.
There is a viable industry association.	<ul style="list-style-type: none"> • An active and extremely professional industry peak body exists (the Australian Egg Corporation Limited (AECL). • However, only larger and more sophisticated businesses are typically actively involved with the association and its programs.
There is a cohesive industry with like-minded or motivated participants committed to achieving goals.	<ul style="list-style-type: none"> • The Egg production industry is extremely diverse meaning a diversity of motivations and understanding amongst participants in relation to managing food safety risks.
Evidence that voluntary participation can work.	<ul style="list-style-type: none"> • A voluntary quality scheme has been developed (Egg Corp Assured). AECL have been promoting and developing this scheme since 2005 with good uptake amongst larger and more sophisticated producers. However, difficulties are evident in relation to substantially increasing uptake amongst small and medium sized businesses.

6.2.2 Benefits to the community

Some increased benefits from the increased safety of some eggs may be expected to be gained by the community. However, given concerns about the likely uptake of a voluntary scheme, these are unlikely to offset costs.

6.2.3 Benefits to government

From the self-regulation option, governments may benefit due to a reduction in recalls, compliance and investigation. However, given concerns about the likely uptake of a voluntary scheme, these are unlikely to offset costs.

Self regulation is not supported from the point of view of its ability to address present concerns. Present self regulation is highly prescriptive and represents a best practice approach and real doubts exist in relation to many small and medium businesses becoming compliant with it. Advice from the SDC and through broader consultation is that self-regulation is not supported by State or Territory Governments or by the egg industry. The AECL “firmly supports FSANZ in its proposed Standard to include all persons who sell or trade eggs.” They go on to explain that this is because “there are many egg production units unknown to AECL and this is where legislative directives would be of great benefit to the whole of the egg industry.” (Email from AECL 26 October 2010)

7 Option 2 - government regulation comprising regulatory elements on farm and on processors



Cost	Benefit
\$20m	\$47-95m
(over 5 years)	

The major advantage of this approach, if businesses comply with the requirements, is that it addresses the identified problem of public health and safety concerns and will achieve the objective of reducing the prevalence of Salmonella in eggs and the availability of cracked and dirty eggs for sale.

Several submissions at Initial Assessment raised concerns that food safety practices could differ with the size of the production facility. Small or backyard producers may not clean, grade or assess their eggs and therefore compromise the safety of their produce. The regulatory option will apply to all businesses involved in the production and processing of eggs and egg products, irrespective of the number of eggs produced or layers kept.

FSANZ has consulted widely on the impacts of this option on small egg producers and considered them separately in the cost benefit analysis.

The proposed standard is applicable nationally and will manage the hazards at the points in the chain where they are most likely to occur. The development of outcome based standards ensures that requirements are flexible enough to allow businesses to decide on the specific measures needed to manage the hazards.

Jurisdictions and industry have shown overall support for through-chain traceability requirements to enable easy identification of eggs and investigations of food-borne illness.

The food safety programs developed in the standard are built around Hazard Analysis Critical Control Point (HACCP) principles, as endorsed through Codex. They respond to the prevailing regulatory failure by compelling egg producers and processors to identify where food safety hazards occur and adopt systems that manage that risk rather than rely completely on regulatory inspections. Its efficacy in reducing the incidence of food-borne illness is the result of the emphasis on risk-based assessment and prevention. Historically physical harm to one or more individuals often preceded action being taken against a producer. Such prosecutions are extremely difficult due to evidentiary problems such as proving causation and the fact that suspect food has often been consumed or disposed of. Under the proposed standard, control measures on-farm are targeted at reducing pathogen load and decrease the capacity for *Salmonella* growth preventing problems before they occur. Furthermore jurisdictions will have the authority to act if adequate health and safety systems are not in place rather than waiting for unsafe product to be discovered either during production or in the marketplace. Hence they will have a greater capacity to preemptively minimise food-borne illness.

The major *disadvantage* of this approach is that industry and government and, potentially, consumers are likely to incur new costs. As a result of this there may be potential unintended consequences such as an increase in the market for un-regulated eggs if implementation and enforcement efforts are not sufficient.

7.1 Costs

The costs in this section do not include compliance costs for egg producers and processors in Queensland and Tasmania as these businesses are already required to comply with a comparable food safety scheme.

7.1.1 Costs to industry

Table 5 Summary of industry costs (in Australian Dollars)

Additional initial costs	Large scale farms	Small scale farms	Total costs
Building / Infrastructure	\$328,820	-	\$328,820
Inputs	\$105,428	\$ 252,250	\$357,678
Training, skills, and development	\$ 41,0000	\$ 201,800	\$242,800
Traceability/ Stamping	\$ 2,800,000	\$ 106,900	\$2,906,900
Implementation or Compliance	\$ 37,272	-	\$37,272
Total initial cost	\$ 3,312,520	\$ 560,950	\$ 3,873,470
Additional ongoing / annual costs			
Health, Hygiene and Food Safety management	\$ 764,885	\$ 201,800	\$966,685
Compliance or Implementation	\$ 448,983	\$ 302,700	\$751,683

Traceability/ Stamping	\$ 800,000	\$ 1,069,000	\$ 1,869,000
Total ongoing costs	\$ 2,013,868	\$ 1,573,500	\$3,587,368

The egg industry in Australia, classified by the number of birds, has the following profile: 94 small producers with less than 600 birds and 244 large producers with more than 600 birds per farm. This is based on data published by the Australian Bureau of Statistics (ABS: 2010 cat no: 7121) and provided by the Australian Egg Corporation Limited (AECL). According to the AECL there are also around 223,700 very small producers Australia-wide. However 99.5% of them hold less than 20 birds each and over 90% do not produce eggs for sale, but rather for domestic consumption and sharing among family and friends. (AECL: *The Australian Egg Industry - A Profile* [2010])

With respect to very small farms, the Victorian Department of Primary Industries estimates that the state has around 500-700 semi-commercial egg producers (20-1,000 bird range); giving an average of 600 farms for Victoria. Assuming that half this number of farms will be in the 20-600 bird range, the state would have 300 very small commercial farms. Since Victoria accounts for 28% of the egg industry, nationally this would indicate about 1,000 very small commercial farms (DPI Victoria May 2010).

This corresponds with AECL's estimate that only 0.5% of the 223,700 very small producers Australia-wide have more than 20 birds each; namely 1,118 farms.

Small farms (<600 birds)	=	94
Very small farms (20<600 birds)	=	<u>1,118</u>
Total	=	<u>1,212</u>

Rounding this figure, for calculation purposes we have assumed there are around 1,200 small chicken egg farms nationally.

Initial costs

Large farms

One-off building/infrastructure costs

The adoption of mandatory minimum standards would require one-off expenses on plant and premises.

According to data provided in NSW Food Authority's Egg Food Safety Scheme Regulatory Impact Statement (2005) it is estimated that within the state, infrastructure costs would be \$115,000. When adjusted for inflation this equates to \$132,330 in current terms (applying an ATO inflation rate of 15.07% over 2005-10). Since NSW accounts for about 33% of the total production, when extrapolated nationally, infrastructure costs will amount to about \$328,820. (Excluding Qld& Tas which account for 18% of the industry)

Since specific data for small farms is unavailable, the costs presented here cover all farms.

One-off input costs

In Victoria, input costs covering infrastructure for the provision of water, feed and chemicals is estimated at \$36,000. Since Victorian producers account for 28% of the national flock, extrapolating this figure nationally, gives a total sum of \$105,428.

One-off skills, training and development costs

Data provided by Victoria indicates that initial training and development within the state will amount to \$14,000; hence the cost of nationally upgrading skills will be \$41,000.

One-off costs for traceability/stamping

Data from Queensland²⁴ indicates that the cost of stamping in the first year of production is estimated at about 0.10c per egg to 0.75 c per egg, depending on the scale of business. Excluding Queensland (which already has a stamping system in place) there are about 150 million dozen eggs produced annually in Australia that will require stamping. Based on the size of producers in Queensland, about 87% of the total output is from the largest farms. These producers would incur a cost of 0.10 c per egg or about \$1.63m and another 8.7 % of the total eggs produced could be stamped at 0.75c per egg or about \$1.17m. Small farms, which account for 4% of the output, are dealt with separately below. Based on Queensland data initial costs of stamping nationally will be approximately \$2.8m.

One-off costs for compliance or implementation

NSW anticipates a license fee which totals \$15,000²⁵. Nationally, this will translate into a one-off implementation cost for businesses amounting to \$37,272.

Based on the above, it is estimated that a total initial cost of about \$3.312 m will apply to large egg producers.

Small farms

Victoria has four commercial duck farms and three or four commercial quail farms²⁶. Other states have not identified duck or quail farms in their jurisdictions. With 8 duck and quail farms for Victoria, there could be around 25 commercial duck and quail farms nationally. They would be small scale operations, serving a niche market, and are therefore included in the small farms section. When added to the 1,200 small chicken egg farms (see 7.1.1 above) it is estimated that there are 1,225 small chicken, duck and quail farms nationally.

One off costs for inputs, skills and training

Victoria has computed that small egg farms would incur about \$250 per farm on setting up suitable water, feed and chemical input facilities. To arrive at a national figure we take 82% (to exclude Qld and Tas of 1,200 which gives us 984 small chicken farms, plus 25 (duck and quail in VIC): 1009 small egg farms costing \$252,250.

For upgrading skills and knowledge, at \$200 per farm, for 1,009 small farms the cost is expected to be \$201,800.

One-off stamping costs

In Queensland 83% of producers with less than 500 birds, have reported that manual stamping equipment suitable for their level of operations costs \$100 (Safe Food Production Queensland: July

²⁴ Data provided by Safe Food Production Queensland, August 2009

²⁵ data provided by NSW Food Authority

²⁶ Data provided in May 2010 by the Victorian Department of Primary Industries

2010). Excluding Queensland where egg stamping is already in practice, the other 1069²⁷ small producers would incur a cost of about \$106,900.

Based on the above, it is estimated that a total initial cost of about \$560,950 will apply to small egg producers.

Ongoing/annual costs

Large farms

Ongoing costs to producers and processors relate to general food safety management and traceability. This includes health and hygiene of personnel, visitors and flock at production and processing units.

Ongoing costs for health, hygiene and food safety management

In Victoria, large producers and processors would incur additional costs of up to \$65,000 per annum state-wide in order to comply with health and hygiene requirements. Costs provided by NSW indicated additional food safety management²⁸ costs per year are approximately \$504,000 per annum state-wide. Given that these two states contribute about 61% of national egg production, the annual cost of \$569,000 (NSW and Victoria) have been extrapolated to \$764,885 per annum Australia-wide (Excluding Qld and Tas).

Ongoing compliance or implementation costs

In addition, there may be other costs such as record keeping, auditing and accreditation in demonstrating compliance. Costs for large producers and/or processors in Victoria are estimated at \$45,000 per annum state-wide for a range of activities, including cleaning and sanitation programs, testing and vaccination. Similarly, NSW reported approximately \$289,000 per year state-wide for implementation costs. Therefore total implementation or compliance costs of Victoria and NSW combined of \$334,000 could be scaled up to about \$448,983 per annum for the industry Australia-wide.

Ongoing traceability and identification costs

The ongoing cost of traceability and identification requirements for large scale producers and processors is estimated up to \$800,000 per year; it is the higher of the following two estimates:

(1) Base costs of traceability and identification requirements for large businesses in Victoria is reported at \$246,000 per annum and is extrapolated nationally to about \$820,000 annually. However this amount is adjusted and scaled down to approximately \$ 713,400 to discount costs of Queensland producers who are already stamping their eggs.

(2) Data from Queensland²⁹ indicates that the cost of stamping in the second year of production was estimated as being between 0.031c per egg – 0.2 c per egg, depending on the scale of operations. Excluding Queensland, there are about 150 million dozen eggs produced annually that would potentially require stamping. Based on the break up for Queensland, about 87% of the total output is from the largest farms that would incur a cost of 0.0312 c per egg or \$490,000 per annum. In addition another 8.7 % of the total eggs produced from medium scale firms could be stamped at 0.2c per egg or \$315,000 (details of the remaining 4% small farms is considered separately). This gives a total of about \$800,000 per annum as ongoing costs of stamping for medium and large scale producers.

²⁷ Qld has 13% of the industry. 87% of 1,200= 1044 (chicken) +25(duck & quail)= 1069

²⁸ The NSW Food Authority licenses food businesses which must implement and maintain a food safety program based on Codex' HACCP, or *Standard 3.2.1* of the [Food Standards Code](#).

²⁹ Data provided by Safe Food Production Queensland, August 2009

Based on the above, it is estimated that an ongoing cost of about \$2.013 m per annum will apply to large egg producers.

Small Farms

Ongoing Costs for health, hygiene and food safety

The ongoing costs for small producers and processors for health, hygiene and food safety are estimated at \$200 per annum for each farm³⁰. This gives a total of about \$201,800 for 1,009 small chicken, duck and quail farms nationally.

Ongoing Implementation or Compliance Costs

With regard to ongoing implementation costs, Victoria reported \$300 per annum, for each small farm. This is described as the costs arising from the need to keep records to satisfy accreditation requirements. This will give a total of about \$302,700 per annum for 1009 small farms in Australia.

Ongoing Stamping Costs

(1) Victoria identified traceability costs as \$1,000 per farm. Excluding Qld where a traceability regime is already operating, we have 1069 small farms nationally, for whom ongoing stamping costs amount to \$ 1,069,000.

(2) Alternatively, costing traceability on a per egg basis, Queensland³¹ reported that small farms in their second year of stamping incurred a cost of 0.083 cents per egg. This applies to the 4.3% small egg producer output (see calculation above). Excluding Queensland (where traceability is already in place) there is a national output of 150m dozen eggs. 4.3% of this figure amounts to 6.45m dozen eggs, and at 0.083 cents, stamping them will cost about \$65,000 for the rest of egg producers in Australia.

Taking the higher of the two figures, additional ongoing stamping costs are estimated to be about \$1,069,000.

Based on the above, it is estimated that an ongoing cost of about \$1,573,500 per annum will apply to small egg producers.

7.1.2 Costs to the community/ consumers

The cost to consumers could be an increase in the cost of eggs and egg products on the market, to the extent that industry passes on the additional costs to the consumers. However these costs are already incorporated in the computations FSANZ made for industry.

7.1.3 Costs to government

The Department of Primary Industries Victoria estimate that in order to introduce an effective traceability system, a state-wide central database with associated software would have to be set up. IT systems at council level will have to be revised to enable them to administer a unique identifier system. This is estimated to cost \$200,000 (DPI July 2010). When extrapolated nationally (excluding Qld), a traceability system will cost about \$621,500.

³⁰ Estimated on-going 'health and hygiene' costs for egg producers with <500 birds (Victorian Department of Primary Industries)

³¹ Data provided by Safe Food Production Queensland

There will be enforcement costs incurred by jurisdictions on implementing the standard. NSW Food Authority reported a once off setup cost of \$50,000. In addition, Safe Food Production Queensland reports an initial set up cost of approximately \$8,400, and of \$17,300 in ongoing annual costs. Depending on the cost recovery practices employed by the jurisdictions, industry may contribute towards these enforcement costs.

For NSW and Queensland implementation set up costs total \$58,400. Together these states account for 46% of the industry, nationally (but excluding Queensland) this will give us a total of \$110,452. When the electronic traceability system (\$621,500) is added, initial government costs will be \$731,952.

With regard to ongoing costs, Queensland has reported a cost of \$17,000 which gives about \$130,769 nationally.

7.2 Benefits

7.2.1 Benefits to industry

At 6.2.2 above it was assumed that an industry-wide compliance with primary production and processing control measures, even where voluntary, could result in a 50% reduction in the risk of illness.

Hence, a mandatory standard can be expected to deliver a minimum of 50% benefit to industry due to a lower propensity for the erosion of business reputation, litigation, recalls as well as fines, penalties and shut downs in some cases. Conforming to a standard will mitigate such commercial adversity and nationally the egg industry will have a benefit conservatively assessed at about \$2.75m annually. At 5.1.1 above it was computed that current industry costs in these areas impose a burden of \$5.45m on industry; a 50% reduction will provide a benefit of \$2.75m.

Traceability can deliver significant benefits to industry, because any delay in identifying the source of contamination results in major industry losses due both to loss of consumer confidence, and the need to withdraw even safe products from the market. The extent of such industry loss was evident in the US where in 2010 food-borne illness caused by contaminated eggs led to around 2000 illnesses and a fall in the average price of eggs of about 40%. Around 500 million eggs were recalled and the loss of revenue for the US egg industry in the month of September 2010 was estimated at US\$125million. If an appropriate traceability system had been put in place the losses associated with this outbreak might have been more limited.

7.2.2 Benefits to community and consumers

Consumers and the community will benefit from the reduced risk of food-borne illness as a consequence of the adoption of the national standard. This would lead to improved health, welfare and productivity.

After Queensland introduced its Egg and Egg Products Food Safety Scheme in 2005 there has been a reduction in the number of identified outbreaks where eggs were suspected as the cause of illness, although this reduction has not necessarily been reflected in the total

number of notified salmonellosis cases in Queensland³². More important however is the fact that traceability improves outbreak control and reduces the incidence of illness should there be an outbreak.

Table 6 Queensland food-borne illness linked or likely linked to egg farm practices³³

Year	Number of incidents	Number of people affected	Source of eggs	National egg-associated outbreaks of gastrointestinal illness ³⁴
1996-2003	12	Almost 800 cases, including at least 56 hospitalisations and 2 deaths	Not traceable	n/a
2006	0	-	-	16 outbreaks; 191 cases
2007	1	73 cases	Seven separate outbreaks traced to one egg farm within 48 hrs	24 outbreaks; 629 cases
2008	0	-	-	23 outbreaks; 531 cases
2009	0	-	-	n/a
2010	1	34 cases	Traced to one egg farm within 24 hrs	n/a

Under the *status quo* option, it was estimated that the loss to the community, in terms of health, welfare and productivity, from an individual *Salmonella* food-borne illness was \$ 2,866 per case. With the implementation of the standard the reduced disease burden is expected to be in the range of 35%-70%. Again taking a conservative estimate of a reduction of egg-related disease of 20%-50%, that is 2,560-6,400 less cases of illness.

The underlying data on illness from eggs and egg products dates from 2005/06 and has not been adjusted to take into account any reduction in illness as a result of the subsequent introduction of State regulations as data to do so does not exist. In our monetary estimate of the benefits (see Table 8 at 7.3 below) we have not discounted for it. However it is expected that the sensitivity analysis applied to net benefits would compensate for this and other uncertainties that impact on our calculations. We do not anticipate that the effect of any 'error' in the estimates would alter the existence of a net benefit, but it could appear to reduce the benefits to some degree.

7.2.3 Benefits to government

Governments will also benefit from improved food safety and reduced food-borne illness due to the introduction and enforcement of the national egg standard. The current burden of food-borne illness related investigation, surveillance and recall costs was estimated under the *status quo* option at \$1.78m annually. In light of the costs of non-compliance and response in relation to egg-associated food-borne illness, the jurisdictions have indicated support for and a need to address the food safety risks posed by cracked and dirty eggs and

³² National Notifiable Disease Surveillance Scheme. <http://www9.health.gov.au/cda/source/cda-index.cfm>, Accessed on 17 January 2011.

³³ Data supplied by SafeFood Production Queensland

³⁴ OzFoodNet, 23 September 2010

inadequate traceability requirements through a national primary production and processing standard for eggs³⁵.

Applying a conservative 20%-50% reduction in disease, there will be a savings of about \$610,000 for Government in the area of recall, investigation and surveillance. Benefits arising from reduced medical and hospital costs have already been included in the community and consumer benefits. The primary production and processing Standard will make the application of the current requirements more straightforward and easy to enforce. Therefore the government will also benefit from consistent implementation across the states.

There will also be other benefits such as consumer and industry well-being, potential savings in litigation and increased goodwill which are not quantified in monetary terms.

³⁵ Slinko, V., McCall, B., Stafford, R., Bell, R., Hiley L., Sandberg, S., White, S. And Bell, K. (2009) Outbreaks of *Salmonella* Typhimurium type 197 of multiple genotypes linked to an egg producer (in publication).

Table 7 Summary of costs and benefits (in Australian Dollars)

Option	Impacts, costs and benefits			Outcome
	Business (large & small)	Government (Australian Govt, state/territory, local government)	Other Stakeholder groups (e.g. consumers)	(Net Benefits/Cost)
Option 1A – Status quo	Costs \$6.5m Reputation damage and business losses	Costs \$1.7m Recall costs, investigation and surveillance	Costs \$36.6m Food-borne illness to the community	Costs \$44.99m
No additional benefits for <i>status quo</i> .				
Option 1B – Self Regulation	Costs \$6.6 m Cost of voluntary program & education campaign Benefits Not quantified Improved reputation /reduced risk and damage etc	Costs \$6.6 m Equal contribution towards a self regulation program, Benefits Not quantified Savings in recall, surveillance & investigation	Costs Industry could pass on increase costs to consumers Benefits Not quantified Health, welfare and productivity (including savings in medical costs)	Costs \$13.32m Net costs Not quantified Improved reputation for industry; savings in recall for Government and industry; and health, welfare and productivity for consumers
Self Regulation is not supported by the SDC and it is not considered a viable option as the likelihood of small producers not complying is high. The efficacy of this option is unknown.				

<i>Option</i>	<i>Impacts, costs and benefits</i>			<i>Overall impacts</i>
	Business³⁶ (small, medium and large) and Industry	Government (Australian Govt, state/territory, local government)	Other Stakeholder groups (e.g. consumers)	(Net Benefits/Cost)
Option 2 – regulatory (mandatory minimum standard)	<p>Costs</p> <p>\$3.8 m initial \$3.5 m ongoing</p> <p>Benefits</p> <p>\$2.75m Improved reputation /reduced risk & damage etc</p>	<p>Costs</p> <p>\$ 731,952 initial \$ 130, 769 ongoing</p> <p>Enforcement costs</p> <p>Benefits</p> <p>\$610,000. Savings in surveillance, recall & investigation</p>	<p>Costs</p> <p>Industry could pass on increase costs to consumers</p> <p>Benefits</p> <p>\$22.49 – 56.23mpa Health, Welfare and productivity</p>	<p>Benefits</p> <p>Net Benefits in present value ranges from \$25m - \$75m</p> <p>Depending on 20% - 50% efficiency of standard</p>
Costs to industry includes plant, premises and equipment, inputs, training , stamping and implementation				

³⁶ Queensland, which already has an egg stamping system, is excluded from such costs in the calculation.

7.3 Net cost/benefits over time

The net cost/benefit of this option is considered over its first five years of implementation. This requires discounting current costs and benefits by 7% per annum in order to arrive at their net present value. As the following table indicates, this results in a net benefit of between \$26m and \$75m over five years, should this option be implemented.

Table 8 Net present benefit/cost over 5 years (in Australian Dollars)

Costs	Year 1	Year 2	Year 3	Year 4	Year 5
Industry cost	7.46m	3.587m	3.587m	3.587m	3.587m
Govt Enforcement Costs	862,721	130,769	130,769	130,769	130,769
Total Costs	8.3 m	3.6 m	3.6m	3.6m	3.6m
Discount Rate 7% (1.07 for Y2, 1.07 ² for Y3 etc)	1	1.07	1.07 ²	1.07 ³	.07 ⁴
Present Value of Costs (i.e. PV or Total Costs/Discount rate)	8.3m	3.3m	3.1m	2.9 m	2.7m
Present Value of Costs over first 5 years \$20.34m					
Benefits					
Industry: Reduced risk /damage/ goodwill	2.75m	2.75m	2.75m	2.75m	2.75m
Savings from foodborne illness, (2560 cases at 20% efficacy) OR	7.33m	7.33m	7.33m	7.33m	7.33m
Savings from foodborne illness, (4480 cases at 35% efficacy) OR	12.83m	2.83m	12.83m	12.83m	12.83m
Savings from foodborne illness, (6400 cases at 50% efficacy)	18.34m	18.34m	18.34m	18.34m	18.34m
Government surveillance Investigation and recall	\$610,000	\$610,000	\$610,000	\$610,000	\$610,000
Total Benefits at 20% efficacy OR	10.69m	10.69m	10.69m	10.69m	10.69m
Total Benefits at 35% efficacy OR	16.19m	16.19m	16.19m	16.19m	16.19m
Total Benefits at 50% efficacy	21.7m	21.7m	21.7m	21.7m	21.7m
Discount Rate 7% (1.07 for Y2, 1.07 ² for Y3 etc)	1	1.07	1.07 ²	.07 ³	1.07 ⁴

Present Value of Benefits (20%)	10.69m	9.99m	9.33m	8.72m	8.15m
Present Value of Benefits (35%)	16.19m	15.13m	14.14m	13.21m	12.35m
Present Value of Benefits (50%)	21.7m	20.2m	18.9m	17.71m	16.55m

Total PV of Benefits over 5 years

@ 20% efficacy – 46.88m

@ 35% efficacy – 71.02m

@ 50% efficacy – 95.06m

Net Benefit at PV over 5 years	@ 20% efficacy	\$ 26m
	@ 35%	\$50m
	@ 50%	\$75m

When sensitivity analysis is applied in order to compensate for the uncertainties underlying these calculations, the net benefit does not go below \$24m over the first five years. Detailed calculations appear in Appendix 1 below

8 Conclusion and preferred approach

The impact analysis concluded that the costs for maintaining the *status quo* (i.e. choosing Option 1A) outweigh the benefits. This option is not supported by FSANZ as it does not achieve the stated public health and safety objectives and does not comply with COAG requirements for public policy.

Self-regulation (Option 1B) is not a viable option because evidence and advice from the SDC indicate that the likelihood of small producer participation is low and consequently the public health and safety objectives will not be fully achieved. Moreover it will mean incurring large costs in return for very meagre benefits.

With regard to processors, for public health reasons, industry has throughout been very supportive in retaining the requirement for liquid eggs to be treated to destroy pathogens, and that cracked and dirty eggs not to be made available to the public or to businesses (such as bakeries and food service) for use in manufacturing other products. Jurisdictions, for the same reason, have also continued to support the inclusion of regulatory requirements in the Code. In addition some States have introduced their own legislation, which indicates that they do not consider a self-regulation option as adequate.

Given that the costs of implementing a self regulation option is very high and unlikely to outweigh the benefits, it is not a viable option.

Option 2: the introduction of a primary production and processing Standard for Eggs and Egg Products has the greatest potential to deliver maximum net benefits to the community. Even at a conservative level of 20% efficacy, the benefits outweigh the costs. In practice, the net benefits from the standard are expected to be much higher, should there be a greater reduction in the burden of disease i.e. 35% - 50%.

The total cost incurred over five years in implementing this option at a discounted rate of 7% per annum gives a present value cost of about \$20.3m. The corresponding benefit over five years will range from \$46m to \$95m depending on the level of efficacy of the standard. Hence the net benefit from a regulatory option will lie in the range \$25m to \$75m in the first five years of implementation. Hence only option 2 best meets the public health and safety objectives whilst complying with COAG requirements for public policy.

Appendix 1: Sensitivity analysis

Table A : Sensitivity Analysis in million AUD

Scenario	Year1	Year2	Year3	Year4	Year5	Total in AUD
One						
Total Benefits at 20% efficacy 0R	10.69m	10.69m	10.69m	10.69m	10.69 m	
Total Costs	8.3 m	3.6 m	3.6 m	3.6 m	3.6 m	
Net Present Benefits/Costs	2.39	7.09	7.09	7.09	7.09	30.75
Discount rate factor 7%	1	0.93458	0.87344	0.8163	0.7629	
Discounted net benefits /costs (7%)	2.39	6.63	6.19	5.79	5.41	26.41
Discount rate factor 3%	1	0.970874	0.942596	0.915142	0.888487	
Discounted net benefits /costs (3%)	2.39	6.88	6.68	6.49	6.3	28.74
Discount rate factor 11%	1	0.900901	0.811622	0.731191	0.658731	
Discounted net benefits /costs (11%)	2.39	6.39	5.75	5.18	4.67	24.38
Two						
Total Benefits at 35% efficacy 0R	16.19m	16.19m	16.19m	16.19m	16.19m	
Total Costs	8.3 m	3.6 m	3.6m	3.6 m	3.6m	
Net Present Benefits/Costs	7.89	12.59	12.59	12.59	12.59	58.25
Discount rate factor 7%	1	0.93458	0.87344	0.8163	0.7629	
Discounted net benefits /costs (7%)	7.89	11.77	11	10.28	9.6	50.54
Discount rate factor 3%	1	0.970874	0.942596	0.915142	0.888487	
Discounted net benefits /costs (3%)	7.89	12.22	11.87	11.52	11.19	54.69
Discount rate factor 11%	1	0.900901	0.811622	0.731191	0.658731	
Discounted net benefits /costs (11%)	7.89	11.34	10.22	9.21	8.29	46.95
Three						
Total Benefits at 50% efficacy	21.7m	21.7m	21.7m	21.7m	21.7m	
Total Costs	8.3 m	3.6 m	3.6m	3.6 m	3.6m	
Net Present Benefits/Costs	13.4	18.1	18.1	18.1	18.1	85.8
Discount rate factor 7%	1	0.93458	0.87344	0.8163	0.7629	
Discounted net benefits /costs (7%)	13.4	16.92	15.81	14.78	13.81	74.72
Discount rate factor 3%	1	0.970874	0.942596	0.915142	0.888487	
Discounted net benefits /costs (3%)	13.4	17.57	17.06	16.56	16.08	80.67
Discount rate factor 11%	1	0.900901	0.811622	0.731191	0.658731	
Discounted net benefits /costs (11%)	13.4	16.31	14.69	13.23	11.92	69.55

Table B: Summary of sensitivity Analysis for Net Present Benefits for 5 Years at 3%, 7% and 11% Discount Rates in AUD

Scenario	Discount Rate		
	3%	7%	11%
1- NPB (Benefits at 20% efficacy)	28.74	26.41	24.38
2- NPB (Benefits at 35% efficacy)	54.69	50.54	46.95
3- NPB (Benefits at 50% efficacy)	80.67	74.72	69.55