Listeria monocytogenes Risk Management Strategy 2008 – 2013

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1 Introduction

The New Zealand Food Safety Authority's (NZFSA) mission is to protect consumers and enhance New Zealand's position as a trusted supplier of food. NZFSA recognises the significance of human listeriosis, especially for vulnerable consumers in New Zealand and the contribution that food and in particular ready-to-eat foods stored chilled, make to this. Outcome 1 of the NZFSA Statement of Intent[1] 2008-2011 is the "Improved safety and suitability of food" and states that, "We will improve the safety of food, reducing the prevalence of foodborne illness". NZFSA has identified *L. monocytogenes* as a priority to be demonstrated through the implementation of a strategy and a performance target of "no increase in reported incidence of foodborne listeriosis after five years". Further, the SOI 2008 states that, "NZFSA will reduce *Listeria* in 2008/09 by reviewing *Listeria* standards".

While the SOI is not seeking to achieve a decrease in the incidence of listeriosis, the status quo will not be maintained without positive intervention. This is because there are an increasing number of at-risk consumers due to an aging population and an increase in the availability and variety of ready-to-eat foods; both factors have the potential to increase infection rates. In addition, it is not known if current risk management controls applied by industry are adequate or the most effective means. Therefore, a *Listeria monocytogenes* management strategy is essential if there is not to be an increase in cases of illness.

The NZFSA *Listeria monocytogenes* risk management strategy will:

- Ensure that risk management options for the control of *L. monocytogenes* are effective and applied consistently across all food businesses.
- Take account of international developments in *L. monocytogenes* risk management through involvement in international fora and collaborations.
- Provide enhanced and effective information to all stakeholders for reducing the potential for *L. monocytogenes* contamination of food and exposure of consumers.
- Document a process that will monitor and review progress of the strategy to meet the SOI performance target.
- Identify and prioritise research needed to inform and support the *L. monocytogenes* risk management options applied or proposed.

[1] NZFSA Statement of Intent 2008-2011. E.77 SOI (2008) available from http://www.nzfsa.govt.nz/about-us/accountability-documents/statement-of-intent/2008/soi-2008-2011.htm.

2 Objectives of the *Listeria monocytogenes* Risk Management Strategy

The objectives of the *Listeria monocytogenes* risk management strategy are as follows:

1. To achieve no increase in foodborne human listeriosis cases.
2. To engage with industry, other stakeholders and consumers in order to ensure that any outcomes developed are practical, feasible and cost effective.
3. To effectively communicate the strategy and outcomes to all stakeholders (including consumers).
4. To make well informed risk management decisions on appropriate control measures and their implementation.
5. To design and implement an ongoing monitoring and review programme to assess the effectiveness of risk management decisions.

3 Background

3.1 Human Listeriosis

Listeriosis is an illness caused by the bacteria *Listeria monocytogenes,* commonly referred to as *Listeria* or *L. monocytogenes*. Other species of the *Listeria* genus have not been associated with human illness.

There are two forms of listeriosis: non-invasive and invasive. Non-invasive listeriosis is typically characterised by diarrhoea, fever and muscle pain and is similar to other foodborne illnesses. However, invasive listerioisis initially presents with mild flu-like symptoms which may progress to septicaemia, meningitis, encephalitis or death. This form of illness typically affects those with an impaired immune function. The ability of the bacteria to invade the foetus during pregnancy is of major concern as this may result in spontaneous abortion or stillbirth, and typically occurs in the absence of recognisable maternal symptoms.

Within Europe there has been an increase in the observed cases of listeriosis in particular in people over 60 years of age. It is possible that this pattern may be repeated in New Zealand due to a change in the population demographics as people live longer. In addition, there has been a greater demand for convenience foods, typically those where there may be a greater risk for the presence of *L.*

monocytogenes due to the length of shelf-life, chilled storage and those that receive only minimal processing.

Listeriosis is a notifiable disease in New Zealand; and given the severity of invasive listeriosis, under-reporting is unlikely. The incidence of reported listeriosis in New Zealand is similar to that seen in other comparable countries and has averaged 0.5 per 100,000 population over recent years. While the incidence of serious illness is low, the severity of the illness is such that NZFSA has a performance target for listeriosis of "no increase in reported incidence of foodborne listeriosis after five years".

Cases of non-invasive listeriosis are unlikely to be diagnosed except when an outbreak occurs as the symptoms are similar to other foodborne illnesses but laboratory testing for the bacteria in faeces is not routine. However any strategy that is designed to reduce the incidence of invasive listeriosis could be expected to lead also in a decrease to non-invasive cases which would be reflected in a general decrease in gastro-intestinal illness.

3.2 Food as a Source of Listeriosis

Food is the major source of *L. monocytogenes*; expert scientific consultation determined that 90% of the reported listeriosis cases in New Zealand are foodborne[2].

Listeriosis is typically associated with chilled, long shelf-life, ready-to-eat (RTE) foods that do not undergo a listericidal step or where there is a risk of post-processing contamination. Typical foods include smoked fish, pâté, cooked meats, smallgoods, unpasteurised milk and dairy products. Therefore, the joint Australia and New Zealand Food Standards Code has established microbiological limits for certain high risk foods that have been associated with past outbreaks and food incidents. This does not cover the full range of RTE foods now available to the New Zealand consumer.

In 1992 there was an outbreak of listeriosis in New Zealand linked with the consumption of contaminated seafood and there has been a cluster of illnesses associated with the consumption of cooked meats. *L. monocytogenes* has been detected more recently in cooked meats, seafood products and mixed pasta salads.

For non-invasive listeriosis to occur in the general population, ingestion of foods with levels of contamination greater than 10^5 cfu/g appears to be required. The illness is usually evident within two days of consuming contaminated food. By contrast, in vulnerable consumers, the invasive form can occur after ingestion of as few as 100-1000 cells and the symptoms of illness may not be seen for as long as 90 days, but usually around 30 days. This makes linking the illness to a particular food difficult.

[2] Cressey, P. and Lake, R. (ESR) 2005. Ranking Food Safety Risks. Development of NZFSA Policy 2004-2005. Prepared as part of a New Zealand Food Safety Authority contract for scientific services.

The FAO/WHO risk assessment[3] concluded that a concentration of *L. monocytogenes* not exceeding 100 cfu/g in food at the point of consumption presented a low risk to the general population.

Listeria species including *L. monocytogenes* are ubiquitous environmental bacteria and can be isolated from raw ingredients and unprocessed foods, from food premises and equipment and from the domestic kitchens including refrigerators. Food can be contaminated at any point in the food supply chain i.e. from farm to fork. *L. monocytogenes* are more resistant than other non-sporing bacteria to a wide variety of environmental stresses, e.g. can grow under refrigeration temperatures, acidified conditions (to pH 4.2) and at low oxygen levels. For these reasons there is a particular challenge in reducing numbers present in, or eliminating them, from foods.

The most effective risk management control is the application of a listericidal step that will inactivate all *L. monocytogenes* present; the most common is heat treatment e.g. pasteurisation and cooking. However not all foods are heat processed and as RTE foods are intended to be eaten without further processing; the most important risk management approaches for preventing illness are considered to be those that:

- reduce the amount and opportunity for contamination of food with *L. monocytogenes*;
- minimise the potential for microbial growth to occur in the food; and
- communicate to at-risk consumers to avoid foods that have the greater potential to be contaminated.

The application of Good Operating Practices (GOP) and Hazard Analysis Critical Control Point (HACCP) can prevent the contamination or post-processing contamination of RTE foods. Follow-up investigations after recent food incidents involving *L. monocytogenes* contamination of food have however indicated that appropriate risk management controls may not have been identified or may not be implemented correctly.

The strategy will focus on the risk management controls that are practical and feasible whilst being cost effective. The nature of the risk management controls applied may vary between the different sectors of the food industry and individual food businesses.

[3] Food and Agriculture Organization of the United Nations and the World Health Organisation. **2004**. Risk Assessment of *Listeria monocytogenes* in Ready-to-Eat Foods. Technical Report. Microbiological Risk Assessment Series, No. 5.

3.3 Risk Management Framework

NZFSA's risk management framework (RMF) provides a systematic process whereby knowledge of risk and evaluation of other factors relevant to control of hazards is used to choose and implement regulatory standards or other measures. The four generic steps involved in applying a RMF are shown in Figure 1. Effective risk management incorporates appropriate risk communication and stakeholder representation at all steps.

Figure 1: Components making up the Risk Management Framework

Step 1 of the Framework has been undertaken and the unpublished report *Intelligence Gathering: Proposal for a New Zealand Standard for Listeria monocytogenes in ready-to-eat foods* provides an overview of current risk management activities and an analysis of the gaps that exist. The focus will now be on developing further the risk management options identified and evaluating them (step 2) before moving into the implementation stage. The monitoring and review element of the strategy will need to be linked with the DFR5 Monitoring and Review project to determine whether food businesses improve current practices through the application of the risk management controls for *L. monocytogenes* and any associated guidance, and secondly whether the reported cases of listeriosis does not increase. The RMF approach is reflected in Annex One: Timeline and Work Programme.

3.4 Evaluation and Application of the Risk Management Options to the New Zealand Food Supply

Risk management controls for food safety may be applied at several points in the food supply chain i.e. from farm to fork. In the case of *L. monocytogenes*, specific controls are currently applied at the border for imported foods and in the processing environment for commercial production of RTE foods, e.g. through GOP, the application of HACCP and microbiological testing. For other sectors, including food retail and food service, generic requirements for safe food production, following the prescriptive requirements of the Food Hygiene Regulation 1974, have been seen as sufficient controls. Additional risk management is currently provided through communicating to vulnerable consumers and their carers about selecting and preparing foods, so as to minimise the risk of exposure to *L. monocytogenes*.

The report (unpublished) *Intelligence Gathering: Proposal for a New Zealand Standard for Listeria monocytogenes in ready-to-eat foods* identifies the key omissions and inconsistencies between the different industry approaches to control *L. monocytogenes.* These are further considered in the paper (draft) *Options for the Management of Listeria monocytogenes in Ready-to-Eat Foods* and the output of the *Listeria* working group in 2007 that showed a preference to develop generic guidelines based on GOP and the application of HACCP to control *L. monocytogenes* and to develop regulatory requirements based on the future legislative framework.

In developing this strategy, it should be noted that Codex has developed guidance documents for the management of *L. monocytogenes* and that a number of countries are developing and implementing risk management policies based on available risk assessment work. Reference to these will facilitate the development of a scientifically based strategy by NZFSA.

4 Work Streams

4.1 *Listeria monocytogenes* Risk Management Steering Group

NZFSA has a *Listeria monocytogenes* Risk Management Steering Group to co-ordinate and develop the work and activities relating to achieve the performance target in the Statement of Intent 2008 of no increase in the number of cases of listeriosis reported. The steering group will review and update activities to ensure that the objectives are achieved. The steering group includes representatives with relevant expertise from the key business groups within NZFSA, industry and other stakeholders as appropriate.

4.2 Main Work Streams[4]

The work required to deliver the risk management strategy falls into the following work streams:

1. Development of a **risk based framework** for all foods in relation to *L. monocytogenes* to underpin strategy development and implementation.

2. Identification of a harmonised and consistent approach to the control of *L. monocytogenes* using mechanisms such as a **national standard and/or generic guidance material**.

3. Review of current systems applied in industry used to control *L. monocytogenes* in the environment and on food products and identification of the most appropriate **risk management** controls in a New Zealand context (based on the output of work stream 2).

4. **Implementation activities** including the provision of guidance and training for food businesses and other stakeholders.

5. **Scientific projects and intelligence gathering** by NZFSA to provide or support, as appropriate, the evidence base for decisions.

6. Review and enhancement of the NZFSA **risk communication** activities in relation to *L. monocytogenes* for consumers.

7. Participation in **international activities** and collaborations to assist with the development of risk based controls for *L. monocytogenes*.

8. Design and development of an approach to **monitor and review** progress against the NZFSA Statement of Intent performance target of no increased number of cases of listeriosis.

4.3 Risk Based Framework

Risk categorisation allows a focus on those foods and processes which have been shown through international research and profiling to present the greatest risk to consumers.

It is recognised by the *Codex Committee* on Food Hygiene (CCFH) that manufactured foods pose different risks for being a source of *L. monocytogenes.* The focus of this strategy will be on those foods and processes that provide the highest risk. To ensure appropriate application of the strategy and to inform the development of a possible national standard and of the associated support material and systems, the parameters for assigning a food to a category will need to be clearly defined. This will need to take into account the outcomes of the CCFH working group which is developing

[4] These work streams are not intended to be sequential and in many cases may be carried out concurrently.

microbiological criteria for *L. monocytogenes* in food, taking into consideration the nature of food available for consumption in New Zealand.

It is proposed that foods should be categorised in relation to their potential to support the growth of *L. monocytogenes* and the potential for the bacteria to be present[5] as this will identify where the greatest risk to consumers exist. The factors that permit the growth of *L. monocytogenes* in foods are clearly defined and may be justified based upon scientific evidence. Three risk categories of foods are proposed. These are[6]:

1. Foods which may be contaminated with *L. monocytogenes* and in which growth can occur during the stated shelf life[7] (High risk foods).

2. Foods which may be contaminated with *L. monocytogenes* at the end of the manufacturing process but which will not support growth of the bacteria during the stated shelf life[8] (Medium risk foods).

3. Foods where contamination with *L. monocytogenes* is unlikely and there is very limited potential for growth to occur[9] (Low risk foods).

The application of specific microbiological criteria to the high and medium risk categories is being considered in line with development in Codex. As there are some situations and food types where testing may not be helpful or relevant, a low risk category has been suggested. This categorisation system has the advantage that it is based upon the qualities of the specific food, and so foods with

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5 As described in the draft paper Options for the Management of *Listeria monocytogenes* in Ready-to-Eat foods.

6 The risk categories reflect the categorisation proposed by the Codex working group developing risk management options for *Listeria monocytogenes*.

7 A food in which there is ≥1 log growth of *L. monocytogenes* during 1.3 times the expected shelf-life under reasonably foreseeable conditions of distribution, storage and use.

8 Foods in which growth of *L. monocytogenes* cannot occur:

- pH <4.4, water activity (aw) < 0.92, or a combination of factors e.g. pH <5.0 and aw <0.94;
- short shelf-life foods (<4/5 days); and
- frozen foods.

9 Foods categorised as low risk include:

- foods that receive a listericidal process in the final packaging, e.g. canned foods;
- foods that receive further processing (or consumer risk mitigation generally occurs), e.g. for raw meat, raw finfish, fresh, uncut or unprocessed vegetables and fruit (excluding sprouted seeds); and
- other foods with qualities that prevent the growth of *L. monocytogenes*, e.g. alcoholic drinks, honey, sugar, bread, etc.

similar characteristics would be included in the same category. As food manufacturers may reformulate foods to move them to a lower risk category, reliance solely on a name to identify a food's risk categorisation is not practical or inherent to the categorisation.

4.4 National Standard and/or Guidance Material

A generic standard and guidance material may be required to ensure that appropriate and enforceable requirements for *Listeria monocytogenes* risk management are applied consistently across all food operators.

The Intelligence Gathering report has identified that a New Zealand regulatory standard[10] is likely to be required to ensure that the risk management strategy is adopted appropriately into all aspects of the food safety control regime in addition to the development of guidance material. Further consideration will be needed as to the nature of a possible standard, e.g. microbiological criteria, and where it would be most appropriately located within the food chain and legislative system. Ideally, such a standard would be developed in collaboration with Food Standards Australia and New Zealand (FSANZ) so that a common approach would apply across industry in both countries, given that this is essentially a single consumer market.

The Intelligence Gathering phase identified that the current microbiological criteria and standards for *L. monocytogenes* are applicable to a limited number of food types and that there are different approaches taken to manage *L. monocytogenes* between and within different food industries. It is the intention of NZFSA to develop a consistent and harmonised approach for the control of *L. monocytogenes* whilst recognising issues specific to industry sectors. As such, it is likely that there will be a number of different approaches taken through the provision of a regulatory standard and guidance material to achieve the performance target. In developing a standard, consideration would be given to identifying:

- the type of food;
- the nature of the process;
- the microbiological criteria;
- the point(s) in the food chain where the criteria is applied;
- any sampling and testing plan; and
- any actions that should be taken if the limit is exceeded.

10 As described in the draft paper Options for the Management of Listeria monocytogenes in Ready-to-Eat foods.

Any standard could also detail such things as:

- the responsibilities of the various parts of the food supply chain; and
- the minimum requirements for effective *L.* monocytogenes control management including GOP, e.g. the monitoring of the processing environment and finished product, traceback and recall procedures when appropriate.

This list is not exhaustive and other control measures will be considered as part of the generic standard or as part of the generic GOP or as amendments to be made to the Animal Products Act, Food Act and joint Australia and New Zealand Food Standards Code.

4.5 Risk Management Controls

Listeria monocytogenes risk management is currently undertaken by some food manufacturers but the requirements vary within and between industry sectors.

The intention of the *Listeria monocytogenes* risk management strategy is to ensure that all food businesses have appropriate control systems in place to prevent food being a source of infection for consumers. For food businesses, these may be specific pathogen management systems, while for others, e.g. food service, the controls may be those that are applied generically for the production safe food.

Codex has developed guidelines for the application of the general principles of food hygiene to *L. monocytogenes* management which will provide the basis for a New Zealand approach.

The Intelligence Gathering reviewed existing legislation and Codes of Practices, together with information provided on actual practices from food manufacturers associated with a food incident. The results provide evidence to base an approach for any standard development. Costs of implementing the strategy can be minimised by where possible modifying the existing systems, rather than requiring new systems where appropriate. It will also identify any sectors where controls currently being applied are inappropriate according to the proposed risk categorisation of the foods being produced, as well as any industry sectors producing high risk foods which are not adequately covered by current requirements.

4.6 Implementation Activities

An improved understanding of *L. monocytogenes* and risk mitigation strategies for its control is central to effective risk management. The development of educational material and guidance for specific industries and stakeholders, such as those associated with developing, approving, auditing,

maintaining and verifying food safety systems, are fundamental in ensuring the success of the *Listeria monocytogenes* risk management strategy.

Guidance and training could include:

- Development of guidance for food businesses to assist in the control of *L. monocytogenes,* e.g. through GOP and application of HACCP, monitoring of the environment and final product, and examples of corrective actions. Guidance may include manuals, guides, CoPs, fact-sheets, website resources for industry sectors and check-lists that outline GOP for the control of *L. monocytogenes*.
- Seminars, conferences and workshops which target relevant food manufacturers and stakeholders, e.g. processors, food service, food retail, evaluators and verifiers.
- Where appropriate and possible NZFSA assistance with in-house training

The *Listeria monocytogenes* risk management steering group will provide assistance and advice to other NZFSA staff working in associated areas, e.g. RMP template development OTP-FCP template development for food service, food retail and other relevant sectors to include GOP for the control of *L. monocytogenes*, as well as those FCPs in other areas. This will ensure that the *L. monocytogenes* control measures identified in the generic standard are incorporated and a consistent approach is taken throughout the food supply chain.

4.7 Scientific Projects and Intelligence Gathering

The *Listeria monocytogenes* risk management strategy will be informed by the outcomes of scientific projects and intelligence gathering.

The findings from NZFSA funded work will be used to inform the strategy development and to assess the applicability of the risk mitigation strategies and to inform any gaps identified.

4.7.1 Completed Projects

- Survey of Ready-to-Eat Dairy Products for Quantitative Levels of *Listeria monocytogenes* (ESR Food, 2003-2004).
- Exposure to *Listeria monocytogenes* via Unpackaged Ready-to-Eat Meats (ESR Food, 2004-2005).
- National Typing Database (ESR Food, 2003-2005) Expansion to Include Typing of *Listeria monocytogenes.*
- Survey of *Listeria monocytogenes* in Ready-to-Eat Non-Leafy Green Salads (ESR, 2008).

4.7.2 Intelligence Gathering

The NZFSA report "Intelligence Gathering: Proposal for a New Zealand Standard for *Listeria monocytogenes* in Ready-to-eat Foods" provided an overview of the current status of listeriosis as a health issue, knowledge of contamination levels in foods, issues for industry and regulators, and the systems currently available for managing *L. monocytogenes* contamination in New Zealand. The results from the completed NZFSA funded research (at February 2008) were included in the Intelligence Gathering.

The report identifies gaps and inconsistencies across the New Zealand food industry in how potential or actual *L. monocytogenes* contamination is managed, varying from sectors with very specific controls to those with no specific requirements and only the general requirement for food to be safe. In virtually all cases, the gaps and issues identified could be attributed to the lack of an overarching strategy and/or policy for managing *L. monocytogenes* across the entire food supply, rather than a failure on the part of industry or regulators to implement regulations or control measures.

4.7.3 Risk Profiles for New Zealand

NZFSA has funded the development of a number of risk profiles for *L. monocytogenes* in relation to different types of food available to the New Zealand consumer:

- *Listeria monocytogenes* in Ice-cream
- *Listeria monocytogenes* in Low Moisture Cheese
- *Listeria monocytogenes* in Processed Ready-to-Eat Meat
- *Listeria monocytogenes* in Ready-to-Eat Salads
- *Listeria monocytogenes* in Soft Cheeses

4.7.4 Current Projects

NZFSA is funding a number of research projects that are relevant to the development of the *Listeria monocytogenes* risk management strategy (current at 16th June 2008):

- Exposure Assessment to *Listeria monocytogenes* via Delicatessen Ready-to-Eat Salads (with Dressings)
- Revised Risk Profile *Listeria monocytogenes* in Ready-to-Eat Meats
- *Listeria* Survival in Cheese Manufacture

- Growth of Foodborne Pathogens on Foods under Non-Static Refrigeration Temperature Conditions

4.7.5 Future Projects

NZFSA is funding ESR in the financial year 2008/2009 for the:

- Validation of Regulatory Strategies to Reduce *Listeria monocytogenes* Contamination in Ready-to-Eat Food Manufacturing Premises and Ready-to-Eat Foods
- *Listeria* dynamic growth
- Modelling non-thermal death of pathogens

4.8 Risk Communication

The key goal of good risk communication is to promote understanding and context of an issue, reasons for decisions and actions and in doing so empower people to make sound and valid decisions and judgments.

As part of the *Listeria monocytogenes* risk management strategy's work programme communication control measures will be reviewed and implemented. The strategy and its outcomes will be effectively communicated to all stakeholders (including consumers).

The work programme will, where necessary, review and enhance current NZFSA communication messages for consumers, stakeholders and industry. The overall intention relating to this strategy is to:

- identify key audiences and target messages to each of them appropriately
- proactively inform interested parties (both public, industry and other stakeholders) of major developments, milestones and decisions (and the reasons for those decisions).
- communicate via multiple methods, where appropriate, to ensure that interested parties have every opportunity to get the information they need, in the way they need it, in a timely manner.
- use existing NZFSA publications as much as possible as communication vehicles (Food Focus, 4degreesC, Food Connect, industry newsletters, NZFSA website, media releases, fact sheets, etc).
- use new and targeted communication channels as required and appropriate in order to reach those not otherwise covered.

- work with associations and groups along the farm-to-fork continuum to use, where possible and appropriate, existing channels those associations and groups already have in place (including continuing to educate consumers on safe food handling behaviours in the home).

4.9 International Activities and Collaborations

NZFSA works closely with international counterparts to share and discuss scientific approaches and results in order to maximise the benefits of scientific knowledge of *Listeria monocytogenes* in foods.

NZFSA should engage with international counterparts to ensure that any national or international approaches developed are consistent and does not disadvantage market access for New Zealand food products. NZFSA will work with:

- **Codex International standards.** The *Codex Alimentarius Commission* is regarded as a key body for international food related standard setting activities. Codex has adopted 'Guidelines on the application of general principles of food hygiene to the control of *Listeria monocytogenes* in foods'. The Codex Committee on Food Hygiene (CCFH) is currently working to develop microbiological criteria for *L. monocytogenes* and NZFSA are participating in this working group.

- **Australia.** NZFSA will propose a review of the current regulatory controls around *L. monocytogenes* that are applicable at the national level in Australia and New Zealand to FSANZ. This will provide an opportunity to effectively collaborate in amending microbiological limits within the joint Australia and New Zealand Food Standards Code. NZFSA will work closely with FSANZ to ensure that the revised criteria provide the necessary and appropriate support for the risk management strategy, and ensure consistency of approach across the two countries.

- **Other Regulatory Authorities**. The NZFSA will also work with other competent food authorities as appropriate, particularly those where strategies are under development.

4.10 Monitor and Review

Baseline surveys and data and the on-going monitoring for performance and targeted surveys may be necessary to assess the effectiveness of control measures implemented by food businesses.

Listeriosis is a notifiable disease in New Zealand; NZFSA will monitor progress against the performance target using the data collected by ESR as part of routine disease surveillance.

NZFSA will develop an approach to accurately determine the effectiveness of the control measures implemented at various stages of the food chain such as:

- food manufacturing

- food retail
- food service.

5 Annex 1: Timeline and Work Programme

Risk Based Framework			
Activity	**Notes**	**Target Completion Date**	**Latest Possible Completion Date**
Development of a risk categorisation tool for foods available to the New Zealand consumer for food businesses.	Consider outcomes of the CCFH working group on *Listeria monocytogenes* and outputs from FSANZ.	End Sept 2008	End Dec 2008
Develop evidence based reasoning for the inclusion and exclusion of certain food-types from each risk category for food businesses.	Consider outcomes of the CCFH working group on *Listeria monocytogenes*.	End Sept 2008	End Dec 2008
Development of microbiological criteria for each risk categorisation.	Consider outcomes of the CCFH working group on *Listeria monocytogenes*.	End Sept 2008	End Dec 2008
Discussion with officials to determine whether foods should be classified for compliance and enforcement purposes.		End Sept 2008	End Dec 2008
Develop an approach for compliance and enforcement purposes if appropriate.		End Nov 2008	End Jan2009
National Standard and/or Generic Guidance Material			
Activity	**Notes**	**Target Completion Date**	**Latest Possible Completion Date**
Finalise Options Development and Consideration reports to inform the risk management approaches.		End Nov 2008	End Dec 2008

Development of generic guidance, templates, etc. for the manufacturing industry to control *Listeria monocytogenes* through GOP, the monitoring and testing of the environment and product, and corrective action with input from industry sectors.	With involvement of relevant industry sectors to consider the most appropriate control mechanisms for high, medium and low risk products.	End April 2009	End June 2009
Development of technical criteria to be included in the standard based on generic guidance.	With involvement of relevant industry sectors.	End April 2009	End July 2009
Customise generic guidance as appropriate.	1. Seafood 2. Cooked meats 3. Other sectors (including food retail and food service) to follow Need to consider work in other areas of NZ Standards, e.g. Code of Practice for the secondary processing of poultry, etc. On-going discussion and review with NZ Standards FSSI team.	June 2009 August 2009	
Discussion with Policy and Legal group to determine the most appropriate instrument for any standard.		End June 2009	End Sept 2009
Drafting of legal instrument[11].		End Aug 2009	End July 2009

[11] Any legal instrument can be drafted concurrently with the Policy discussion paper.

Drafting of the policy discussion paper[4].		End Sept 2009	End Dec 2009
Consultation period.		End Dec 2009	End March 2010
Consideration of submissions and review.		End March 2010	End May 2010
Promulgation		End May 2010	End July 2010
Risk Management Controls			
Activity	**Notes**	**Target Completion Date**	**Latest Possible Completion Date**
Review current industry material to identify gaps and inconsistencies between different sectors and the Codex guidelines		End July 2008	End Sept 2009
Review current industry material and international documents to identify appropriate risk management controls for *L. monocytogenes*.		End July 2008	End Sept 2009
Implementation Activities			
Activity	**Notes**	**Target completion date**	**Latest Completion Date**
Investigate mechanisms and resources for the implementation		End Nov 2008	End Jan 2009
Develop an approach for the implementation of the control measures identified		End Mar 2009	End June 2009

Incorporate guidance for food	On-going discussion and		

manufacturers', food retail and food service in the FCP and RMP manuals and guidance, etc.	review with NZ Standards FSSI team.		
Determine most appropriate mechanism(s) to disseminate GOP, etc.	On-going discussion and review with NZ Standards P&P team.		
Initial dissemination of guidance to industry and other stakeholders through workshops, seminars, etc.	As guidance becomes available.	July to Dec 2009	March 2010
Discussion with compliance and enforcement officials to determine whether specific guidance for compliance and enforcement officials is required.		From June 2009	
Scientific Projects and Intelligence Gathering			
Activity	**Notes**	**Target completion date**	**Latest Completion Date**
Intelligence Gathering: Proposal for a New Zealand Standard for *Listeria monocytogenes* in Ready-to-Eat Food.	Finalise and Publish. Review and maintain as a living document.	End Aug 2008	End Oct 2008
Identify options for research.	*Listeria* Research Working Group.	End Aug 2008	End Sept 2008

Identification of regulatory risk-mitigation strategies to reduce *Listeria monocytogenes* contamination in ready-to-eat food manufacturing premises and ready-to-eat foods.	ESR research project.	June 2009	
Validation of identified regulatory risk-mitigation strategies to reduce *Listeria monocytogenes* contamination in ready-to-eat food manufacturing premises and ready-to-eat foods.	ESR research project.	June 2009	
Risk communication			
Activity	**Notes**	**Target completion date**	**Latest Completion Date**
Progress report on website	Monthly reporting	Ongoing	
Review NZFSA's current consumer information on *Listeria*	Identify if existing is adequate or needs updating, or new resources developed.	End Nov 2008	
International Activities and Collaboration			
Activity	**Notes**	**Target Completion Date**	**Latest Possible Completion Date**
Participate in the Codex Committee on Food Hygiene Working Group.	Participation to ensure that the microbiological standards developed are suitable for New Zealand and do not barriers to trade.		Ongoing

Australia	Engage with FSANZ to propose a revision of the *L. monocytogenes* microbiological standards in standard 1.6.1 in the joint Food Standards Code.		Ongoing
Engage with other competent authorities.	On-going.		Ongoing
Monitoring and Review			
Activity	**Notes**	**Target completion date**	**Latest Completion Date**
Investigate sources for baseline data.		End Sept 2008	End Dec 2008
Design and develop a system to monitor and review progress against the performance objective.		End Jan 2009	End Apr 2009
Monitor and review progress.		Annually	