



Inclusion of Porcine in the NMD

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1 Introduction

The New Zealand Food Safety Authority (NZFSA) is proposing to include the porcine industry in the National Microbiological Database (NMD) programme in 2009.

This discussion paper outlines the reasons for this move and the manner in which NZFSA proposes to engage with the porcine industry to implement the programme.

1.1 Purpose

This discussion paper seeks feedback on NZFSA's proposed NMD porcine programme and the rationale for it, in particular the conjunction with the development of the NZFSA *Salmonella* Strategy.

1.2 Benefits of the inclusion of porcine in the NMD programme

NZFSA's proposed inclusion of porcine in the NMD programme has a number of benefits.

Fundamentally, it addresses the need for the development of a standardised microbiological sampling programme for the porcine industry. This also provides commercial benefits to the operator such as providing a means to demonstrate the microbiological quality of meat supplied to secondary processors.

The data can be used by operators to contribute to a number of other microbiological monitoring programmes by both gathering on-going process data and microbiological performance targets. It will also provide a national profile to demonstrate the suitability of New Zealand porcine product for international trade, by providing assurance to countries that New Zealand is managing porcine with the same internationally respected programme used for other meat species.

Finally it will provide a microbiological standard for New Zealand product against which imported meat could be compared.

A standardised microbiological programme will give industry confidence in their hygienic slaughter and dressing processes. This will serve as a very powerful ally and real time indicator in the event of any public health issues (for example *Salmonella* outbreaks) where sources of the epidemic or outbreak strain need to be determined. The collection of standardised microbiological data of porcine at primary processing will also permit a robust risk analysis to be undertaken across New Zealand.

2 Background

In 1997 the NMD programme commenced in response to market access requirements for the US. It was applied to the bovine and ovine meat industries in 1997, expanded to bobby calf species in 1999 and caprine in 1999. In 2001 MAF Food (NZFSA from July 2002) engaged with the domestic cervine and poultry industries to develop voluntary NMD programmes suitable for the requirements of these industries, in particular applying the benefits of the NMD programme for Risk Management Programmes (RMP) and microbiological process control purposes.

In 2001 the Terms of Reference for a project titled 'Porcine NMD' were drafted. The project began in early 2002 with the task of developing a porcine NMD programme.

In 2002 US market access requirements resulted in the inclusion of ratites (ostrich and emu) in the NMD. By July 2002 the ostrich and emu industry was participating in the NMD.

During 2001 and 2002 the template size was standardised and applied to cervine, ostrich and emu species. The 25cm² template size was employed as the standard template size following acceptance of an equivalence submission to the US regarding the appropriate template to use for bobby calf sampling. This template size was used for the trial as part of the Porcine NMD Project in 2002.

2.1 The Porcine NMD project

The Porcine NMD project was initiated by MAF Food in early 2002. Discussions were held with representatives from New Zealand Pork Industry Board and the Abattoirs Association. Four premises were visited in March 2002; Lakeview AB67 Levin, Land Meat New Zealand Limited ME131, Taranaki Abattoir Stratford AB018 and Sockburn ME69 to review slaughter and dressing practices with a view to develop a sampling plan for porcine carcasses and to review further processing.

Land Meat agreed to assist MAF Food with a trial of several different carcass sites for sampling and provided results from each of these throughout 2002. In December 2002 NZFSA analysed the data with consideration of the EU and US requirements and recommended the following 25cm² sampling sites; outside hind leg, the lower flap between the two lower nipples and the outside shoulder site.

In 2003, further development of the porcine NMD project was put on hold by NZFSA. Despite this NZFSA has received enquiries from the porcine industry who wished to know when the porcine NMD

programme would be implemented and requested the recommended carcass sample sites for use in their own microbiological monitoring programmes.

During the NZFSA Laboratory Assurance Scheme (LAS) Certified Trainer courses in 2003 and 2004 the recommended porcine sampling sites were publicised. Interested industry persons continued to apply LAS Certified/Associate Trainer standards to porcine sampled at their premises. As a result NZFSA listed porcine samplers on the LAS website for a number of years.

2.2 NZFSA Statement of Intent

In July 2008, NZFSA published a Statement of Intent 2008-2011 that details the organisation's objectives and targets for the next three years. One of the outcomes is the improved safety and suitability of food that will be measured through the performance target 'After five years 30% decrease in Salmonellosis'. The development of a NZFSA *Salmonella* strategy is seen as the most appropriate means to co-ordinate work to reduce the incidence of foodborne salmonellosis.

3 Options considered by NZFSA

In 2008, NZFSA reviewed the options for the microbiological monitoring of porcine species and has considered three options; no change to the current system of no NMD participation, voluntary participation in NMD, or the introduction of a mandatory New Zealand Standard for porcine at primary processing. These three options are detailed below:

3.1 Option one: maintaining the *status quo*; no participation

Maintaining the status quo would require the NZFSA to take no additional action to develop a mandatory system to monitor the microbiological quality of porcine carcasses at primary processing, ie to determine the effects of slaughter and dressing (and cutting and boning). The development and implementation of any monitoring programme would be voluntary across all of the pig processors or on a premises by premises basis. NZFSA would continue to provide advice and information, such as the recommended sampling sites, as requested.

On the basis of the limited number of surveys conducted in New Zealand it is not possible to determine the risk of transmission of *Salmonella* from pork meat, therefore putting in place any

national standard may be seen as being over precautionary when evidence to suggest that there is a problem is not available.

However, NZFSA does not consider that maintaining the status quo is an acceptable option as it leaves one major species (porcine) absent from the New Zealand microbiological standards effectively applied by all other major species.

3.2 Option two: voluntary participation

The cervine and poultry domestic meat industries voluntarily participated in the NMD as a national monitoring system from 2001 until April 2005 when NMD became a New Zealand standard; whereas the porcine industry has not voluntarily participated in the NMD or implemented an equivalent system for the microbiological monitoring of pigs and pork meat.

With no industry wide monitoring programme there is no assurance for the secondary processor (including manufacturers of Uncooked Comminuted Fermented Meat (UCFM)) of the microbiological quality and any subsequent effect on the rest of the food supply chain. Under the requirements of the premises' RMP there should be a mechanism for the microbiological evaluation of pigs to validate the selection of critical control points for Hazard Analysis Critical Control Point (HACCP)/RMP so that compliance with the Animal Products Act 1999 (APA) can be consistently achieved. At present across the pork industry there is no standardised sampling protocol or sample sites and this prevents comparison of data and the evaluation of the hygiene of processing.

During the intervening period from 2003 to 2008 the porcine industry has not made progress to develop voluntarily an industry wide programme for porcine that would enable the comparison between processors and support the requirements under the APA to review the RMP, eg using the monitoring data from the NMD.

3.3 Option three – Mandatory inclusion of porcine in NMD

In early 2008 NZFSA agreed that it was necessary to determine the best method for microbiological management of pigs and looked again at the application of the NMD programme to porcine. There is currently limited microbiological testing conducted for porcine. Microbiological testing has been carried out on individual premises and there is no industry wide programme. As a result, NZFSA reviewed the past NMD Porcine project and in May 2008 commenced drafting a NMD programme that included porcine, based on the results from the trial conducted in 2002.

4 NZFSA's proposal to include porcine in NMD

4.1 Introductory discussions

NZFSA met with representatives of the porcine industry (Abattoirs Association New Zealand and New Zealand Pork) on 24 July 2008. At this meeting a presentation outlining the current NMD programme, a draft Notice and excerpts from the draft Schedule relating specifically to porcine were delivered. Following the meeting the draft pre-consultation material was circulated to industry members and a teleconference with representatives from the porcine industry and processors was held on 5 September 2008.

4.1.1 Issues arising from the teleconference

During the teleconference on 5 September, the industry representatives raised the following concerns about the proposed NMD programme:

- Sampling Plan: the sampling of 5 carcasses per week irrespective of throughput.
- Imported pig meat.
- Very low throughput premises (VLT) and whether the sample size could be related to volume of throughput at each particular abattoir. NZFSA has requested throughput data on the number of pigs being processed by each premises.
- Whether the implementation of a porcine NMD programme will place additional and unnecessary costs and burden upon farmers who send pigs to slaughter (custom killing). *Note that if a pig goes through a slaughter premises with an RMP it is regulated product, even though the farmer may get the pig back.*
- The ranking of premises according to data for the 80th percentile for *E. coli* and the appropriate and proportionate response if an abattoir fails the *Salmonella* performance target should be considered.
- Class of pigs: There should be some flexibility in any porcine-NMD programme that takes account of the limited numbers of some classes of pigs; these may be processed infrequently and at low numbers, e.g. suckers and choppers.

4.2 Proposed NMD programme including porcine

NZFSA has considered the concerns raised by industry. Based upon the level of information and knowledge currently available the proposed porcine NMD programme will require:

Weekly sampling of 5 fresh porcine carcasses for *E. coli*, Aerobic Plate Count (APC) and *Salmonella*. The NMD is not a throughput based or an accept/reject testing programme, but a process control tool used to ensure the microbiological standards of hygienic slaughter and dressing (and boning and cutting) are being met on an on-going basis. A sample of 5 carcasses is the minimum required to be able to provide the preferred statistical confidence and to review the process. Statistically there is no relationship between the lot size and the sample size for a homogeneous lot. A large homogeneous lot can be assessed using as many samples as a small lot if the same level of risk is to be upheld. *An alternative approach for very low throughput (VLT) is discussed at section 4.9.*

- Given the current data gap *Salmonella* testing has been included to help determine whether New Zealand pig meat is a significant cause of food-borne salmonellosis.
- Three 25 cm² sites to be sampled per carcass; outside hindleg, lower flap between the lower two nipples and the outside shoulder site. This reflects the conclusions of the NMD porcine trial in 2002.
- Random rotational sampling between different classes of pigs; suckers, porkers, baconers and choppers as appropriate. This should ensure that choppers, the least frequently processed, are sampled in any month that they are processed whilst providing good coverage of all the other pig classes.
- A summary report posted on the NZFSA web-site by the NMD administration that includes the National Profile of all porcine results for that quarter. Quarters for reporting are defined as:
 - 1st Quarter: January 1 – March 31,
 - 2nd Quarter: April 1- June 30,
 - 3rd Quarter: July 1 – September 30,
 - 4th Quarter: October 1 – December 31.
- Premises will be ranked in descending order each quarter according to the percentage of their *E. coli* and APC results for porcine carcass above the National Profile, 80% percentile values.
- The testing of primal cuts or bulk product was not included because microbial contamination of the carcass occurs during slaughter and dressing. There are no additional contamination events

expected to occur following this, thus there is not any advantage to be gained through additional sampling of processed product.

NZFSA will consider any additional data that the porcine industry is able to provide about the throughput at premises of the different classes of pigs and the proportion of commercial versus non-commercial pigs processed.

It is intended that the porcine NMD will commence in early 2009, and can replace or be used in conjunction with the microbiological monitoring programmes that some pig processors already have in place as part of their microbiological verification.

4.2.1 Demonstrating compliance with the programme

The proposed porcine NMD programme will require weekly testing, when a premises is processing porcine.

The key features for demonstrating compliance are for the operator to establish:

- Client relationship with LAS approved laboratory;
- NMD controller;
- Notification of premises, NMD controller and laboratory details to the NMD Administrator;
- Random sampling undertaken by trained samplers;
- Ensuring data has been entered on the NMD website within 7 days of sampling;
- Reporting of *Salmonella* positive events to NZFSA Verification Agency (NZFSA VA) verifier immediately upon notification of the positive result;
- Review of data on a weekly basis; and
- Review of quarterly profiles and ranked lists.

NZFSA VA verifiers are required to review the application of the NMD porcine programme every 6 months. Laboratories must review samplers on a regular basis which would usually be at least every 6 months to coincide with the NZFSA VA verifier review.

4.3 Industry meetings

NZFSA has held preliminary discussions with the porcine industry and would encourage further meetings during the consultation and the implementation phases of this project.

The value of such meetings was proven with the poultry industry during the consultation in 2007 to determine *Campylobacter* limits and appropriate responses. The two meetings conducted with industry during the consultation period proved invaluable to determine practicalities and for both parties to exchange information, consider expert advice and develop robust wording for the final document.

NZFSA looks forward to meeting with representatives from the pork industry; including the New Zealand Pork Industry Board and the Abattoirs Association to discuss and facilitate the inclusion of porcine in the NMD programme.

4.4 A New Zealand standard

Since March 2005 the NMD programme has provided a New Zealand microbiological standard for the primary processing of meat products for the New Zealand market. The advantage of using what was initially an overseas market access requirement and a voluntary programme for poultry and cervine industries is that an additional microbiological programme, separate from NMD, is not required to be applied for meat products sold in New Zealand.

NZFSA considers that a separate programme would incur greater costs to industry and that the existing microbiological programme provides the necessary process control information. The NMD programme by virtue of random sampling represents all processing scenarios and thus it is considered that further microbiological sampling is unnecessary to determine if a process is meeting hygienic slaughter and dressing standards. Until now the porcine industry has been noticeably absent from the New Zealand standard in this respect.

4.5 Uncooked Comminuted Fermented Meat (UCFM)

The Food (Uncooked Comminuted Fermented Meat (UCFM)) Standard 2008 comes into force on 1 December 2008. This requires all manufacturers of UCFM to have validated processes to ensure that the number of *Escherichia coli* at the end of production complies with the microbiological limits in Standard 1.6.1 of the Australia New Zealand Food Standards Code. The manufacturers must know the *E. coli* count for in-going raw meat ingredients to the 98th percentile in order to determine (and adjust) the validated process to meet the processing standard. For meat produced in New Zealand the

98th percentile for *E. coli* can be taken from the NMD for the respective species, the supplier of the raw meat or data collected by the manufacturer. Most UCFM is made from bovine, cervine and porcine meat of which only porcine is not included in the NMD programme.

4.6 NZFSA *Salmonella* Strategy

Over the next 12 months the NZFSA *Salmonella* Strategy is in the information gathering phase. Information gathered will direct the Strategy and provide a basis for risk management decisions on which food or food related sectors need the greatest focus.

4.7 Imported pork

There is likely to be an increase in the amount of pig meat imported into New Zealand. There have been concerns raised about the microbiological quality of this meat and the effect that this will have on processors supplying only the New Zealand market. Under the World Trade Organisation Sanitary and Phyto-Sanitary (WTO SPS) provisions any requirements for imported product, eg the establishment of microbiological limits, without applying the same standard to New Zealand product creates a barrier to trade. Therefore, a national standard must be set first.

4.8 Costs

It is expected that operators will replace their existing sampling with the NMD programme, or should they choose to do so would run the NMD programme in conjunction with their existing microbiological programme.

NZFSA notes that the majority of porcine RMPs are at premises which already participate in the NMD for other species. The inclusion of porcine to the NMD will add the cost of testing a further species. Such premises will already be familiar with NMD processes: training of samplers according to the NMD porcine programme and submission of demographics for NMD.

An abattoir new to the NMD programme would need to ensure that staff are qualified to take samples. The cost of attending the certified trainer course is \$200 plus transport. In addition the premises will need to nominate an NMD controller, undertake administrative set-up and a NZFSA VA review to confirm their participation.

To ensure results have been submitted to NMD and to review trends the operator does require internet access. There are no fees incurred by NZFSA NMD Administration to set up the NMD portal. Once the system is operational, the operator needs to perform a weekly check of the data and

respond to the data as appropriate (as specified in the respective RMP and in the NMD Notice) to any increased microbiological loading as observed in the trend analysis.

There may be additional costs incurred through the assistance of the NZFSA VA who can provide on-site assistance and technical expertise. NZFSA acknowledges that there are different levels of knowledge and as such the costs will vary according to the individual premises.

Information to hand on the current costing to industry of existing microbiological programmes indicates that it is equivalent to the NMD programme. Figures submitted to NZFSA estimate laboratory testing for samples on a weekly basis would amount to \$20 - \$25 per sample site for APC and *E. coli* testing and a composite *Salmonella* analysis per 5 carcasses would be \$18 - \$30 depending on whether confirmation steps were required. Charges for the NMD programme of 5 carcasses and 3 sites per carcass adds up to approximately \$750 per week, which is comparable to existing charges industry is likely to be paying for microbiological quality control testing to meet RMP and/or customer requirements.

Costs provided by industry suggest that the costs to the individual premises may increase by \$450 relative to the throughput of pigs at slaughter. NMD is not throughput based, the same number of test is required per week regardless of throughput to establish representative data across New Zealand.

4.9 Very low throughput (VLT)

Industry is concerned that those processors with very low throughput will incur disproportionately greater cost per carcass than others.

There are no provisions for Very Low Throughput (VLT) premises provided for in the NMD Schedule consultative draft. However NZFSA has reviewed information regarding throughput of all porcine RMP operators and will consider a reduction to 3 carcasses per processing week, instead of 5 carcasses, for operators processing less than 10,000 pigs per annum.

This would incur an estimated saving of \$250 (\$500 for 3 carcasses, instead of \$750 for 5 carcasses) per processing week for VLT operators; those processing less than 10,000 pigs per annum. If agreeable this provision will be included in the final version of the NMD programme Schedule.

5 Implementation period

NZFSA will consider an implementation period of up to 3 months following the signing of the NMD Notice before it becomes compulsory to comply with NMD which requires testing every processing week.

A 3 month period should allow sufficient time for operators to become aware of the programme requirements to:

- Submit demographics and inform the NMD Administrator of their details for the NMD portal;
- Arrange sample transport;
- Establish a client relationship with a laboratory; and
- Allow the laboratory time to ensure samplers gain experience and are trained and/or reviewed to develop skills and experience for taking porcine samples.

It also provides an opportunity for operators to become familiar with review of results and responses required, including ensuring that data is submitted to NMD within 7 days of the sampling date and that any positive *Salmonella* results are immediately reported to NZFSA VA.

6 Consequential changes

As a consequence of setting the proposed new standard, NZFSA proposes to:

- Update the NMD web site data entry portal to include porcine species capability;
- Ensure NMD Certified Trainer courses are run in early 2009 (or earlier) to upskill existing Certified Trainers and develop training opportunities for new Certified Trainer applicants;
- Offer NMD training reviews utilising NZFSA VA training resources throughout New Zealand which will include porcine sampling;
- Provide guidance to LAS approved laboratories with NMD testing in their scope of approval regarding the porcine sampling and analysis requirements of NMD; and

- Encourage regular porcine industry meetings with NZFSA to review quarterly reports and progress of the implementation of the porcine NMD programme.

7 Next steps

Following the close of the consultation period NZFSA will prepare a summary of submissions that will be posted on the NZFSA website. NZFSA will consider the submissions received on this discussion paper when developing a further version of any porcine NMD programme that will be recommended to the Director (Standards) for issue under the Animal Products Act 1999.

NZFSA is proposing to review the porcine NMD programme 12-months after the requirements come into effect. The review will consider the applicability of such a programme, the value of the data and the risk to human health from salmonellosis that may be attributable to the consumption of New Zealand pig meat.

8 References

MAF Biosecurity. Draft Import Standards for Pig Meat and Pig Meat Products.

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