Import Risk Analysis: Porcine reproductive and respiratory syndrome (PRRS) virus in pig meat

Review of Submissions

ISBN 978-0-478-29561-0(Print)
ISBN 978-0-478-29562-7(Online)

11 June 2007
This page is intentionally blank
Import risk analysis: Porcine reproductive and respiratory syndrome (PRRS) virus in pig meat

Review of submissions

Biosecurity New Zealand
Ministry of Agriculture and Forestry
Wellington
New Zealand

11 June 2007
Import risk analysis: Porcine reproductive and respiratory syndrome (PRRS) virus in pig meat

Review of Submissions

11 June 2007

Approved for general release

Debbie Pearson
Director Preclearance
Biosecurity New Zealand
This page is intentionally blank
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Executive Summary</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Key Statements</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>Review of Submissions</td>
<td>16</td>
</tr>
<tr>
<td>4.1</td>
<td>Murray Battersby</td>
<td>16</td>
</tr>
<tr>
<td>4.2</td>
<td>Sean Newland</td>
<td>17</td>
</tr>
<tr>
<td>4.3</td>
<td>Steve Kidby</td>
<td>20</td>
</tr>
<tr>
<td>4.4</td>
<td>James and Clare Freeth</td>
<td>21</td>
</tr>
<tr>
<td>4.5</td>
<td>Neil Managh</td>
<td>22</td>
</tr>
<tr>
<td>4.6</td>
<td>Grant Skilton</td>
<td>24</td>
</tr>
<tr>
<td>4.7</td>
<td>Ian &amp; Linda McCallum Jackson</td>
<td>25</td>
</tr>
<tr>
<td>4.8</td>
<td>Ian Barugh</td>
<td>26</td>
</tr>
<tr>
<td>4.9</td>
<td>Peter Macdonald</td>
<td>27</td>
</tr>
<tr>
<td>4.10</td>
<td>Sharon O’Callaghan</td>
<td>29</td>
</tr>
<tr>
<td>4.11</td>
<td>Anon</td>
<td>30</td>
</tr>
<tr>
<td>4.12</td>
<td>Claire Neal</td>
<td>31</td>
</tr>
<tr>
<td>4.13</td>
<td>G A Sexton</td>
<td>33</td>
</tr>
<tr>
<td>4.14</td>
<td>Stephen Macaulay</td>
<td>34</td>
</tr>
<tr>
<td>4.15</td>
<td>Gus Morton</td>
<td>35</td>
</tr>
<tr>
<td>4.16</td>
<td>Ian Joseph Schultz</td>
<td>36</td>
</tr>
<tr>
<td>4.17</td>
<td>Jens Ravn &amp; Steve Sterne</td>
<td>38</td>
</tr>
<tr>
<td>4.18</td>
<td>Spencer And Jacqui Johnstone</td>
<td>40</td>
</tr>
<tr>
<td>4.19</td>
<td>Paul Davey</td>
<td>42</td>
</tr>
<tr>
<td>4.20</td>
<td>Bindi Ground</td>
<td>43</td>
</tr>
<tr>
<td>4.21</td>
<td>Peter Logan</td>
<td>44</td>
</tr>
<tr>
<td>4.22</td>
<td>Graham Taylor</td>
<td>45</td>
</tr>
<tr>
<td>4.23</td>
<td>Ian McIntosh</td>
<td>46</td>
</tr>
<tr>
<td>4.24</td>
<td>Lucy Caddick</td>
<td>49</td>
</tr>
<tr>
<td>4.25</td>
<td>Colin &amp; Karen Battersby</td>
<td>51</td>
</tr>
<tr>
<td>4.26</td>
<td>GD &amp; H Harvie</td>
<td>52</td>
</tr>
<tr>
<td>4.27</td>
<td>Natalie Gerber</td>
<td>53</td>
</tr>
<tr>
<td>4.28</td>
<td>RR Fox</td>
<td>56</td>
</tr>
<tr>
<td>4.29</td>
<td>Colin Kay</td>
<td>57</td>
</tr>
<tr>
<td>4.30</td>
<td>Sam Mcivor</td>
<td>59</td>
</tr>
<tr>
<td>4.31</td>
<td>Carly Sluys</td>
<td>87</td>
</tr>
<tr>
<td>4.32</td>
<td>Dr EBM Welch</td>
<td>91</td>
</tr>
<tr>
<td>4.33</td>
<td>Dr David Lawton et al</td>
<td>95</td>
</tr>
<tr>
<td>4.34</td>
<td>Selwyn Dobbinson</td>
<td>98</td>
</tr>
<tr>
<td>4.35</td>
<td>Roger S Morris</td>
<td>106</td>
</tr>
<tr>
<td>4.36</td>
<td>Danish Meat Association</td>
<td>112</td>
</tr>
<tr>
<td>4.37</td>
<td>Danish Veterinary and Food Administration</td>
<td>113</td>
</tr>
<tr>
<td>4.38</td>
<td>Finland FSA</td>
<td>114</td>
</tr>
<tr>
<td>4.39</td>
<td>Netherlands MAF</td>
<td>117</td>
</tr>
<tr>
<td>4.40</td>
<td>Chris Trengrove</td>
<td>118</td>
</tr>
<tr>
<td>4.41</td>
<td>David Lawton</td>
<td>121</td>
</tr>
<tr>
<td>4.42</td>
<td>John R Clifford</td>
<td>126</td>
</tr>
<tr>
<td>4.43</td>
<td>Joy Philippi</td>
<td>127</td>
</tr>
<tr>
<td>4.44</td>
<td>Dr Debbie Barr</td>
<td>129</td>
</tr>
<tr>
<td>Appendix</td>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>----------</td>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>1</td>
<td>Copies of Submissions</td>
<td>131</td>
</tr>
<tr>
<td>2</td>
<td>Comments from External Technical Experts</td>
<td>270</td>
</tr>
<tr>
<td>3</td>
<td>Comments on Quantitative Model by Dr. Noel Murray</td>
<td>322</td>
</tr>
<tr>
<td>4</td>
<td>Promotion of the Biosecurity (Meat and Food Waste for Pigs) Regulations 2005</td>
<td>325</td>
</tr>
</tbody>
</table>
1. Executive Summary

The MAF import risk analysis on PRRS virus in pig meat was released for public consultation on 25 July 2006 and stakeholder submissions closed on 15 September 2006. Extensions for late domestic submissions were granted to 9 October 2006. Due to delays in sending copies overseas, a further deadline extension until 1 November 2006 was granted to stakeholders from the USA and Canada. Forty four submissions were received, 37 from stakeholders within New Zealand and 7 from overseas trading partners.

The questions, comments and recommendations of these submissions are summarised in this document using direct quotes from each submission. The MAF response to each of these points is given. The full submissions are included in appendix 1 of this document.

Preliminary collation of submissions indicated the following 14 common themes, each of which is addressed in Key Statements in section 3 of this document.

i. It was suggested that it was inappropriate to import any meat that may contain viable PRRS virus and to rely on post-border controls to prevent disease transmission. It was suggested that the status quo measures must be maintained and the approach being taken in this risk analysis is contrary to Biosecurity New Zealand’s goal of managing risks offshore.

ii. Submissions suggested that the risk analysis had underestimated the level of meat scrap generation and had not considered meat that has been disposed of following the expiry of its “use-by date”.

iii. Some stakeholders were concerned that there was no definition of “consumer-ready, high value cuts” in the risk analysis.

iv. It was stated that the minimum infectious scrap size is unknown.

v. Submissions questioned the current level of compliance with the waste feeding regulations [Biosecurity (Meat & Food Waste for Pigs) Regulations 2005] and enforcement of these by MAF. It was stated that MAF did not have adequate resources to enforce compliance with these regulations and MAF had, to date, failed to police these regulations. Compliance with these regulations amongst backyard pigkeepers is described as low in a number of submissions. Conversely, several overseas submissions claimed that MAF’s failure to police these laws could not be used to justify the risk management measures recommended in the risk analysis.

vi. The current level of biosecurity on commercial pig farms in New Zealand was described as poor and it was suggested that this had been over-estimated in the risk analysis. It was also claimed that, if the recommendations of the risk analysis were adopted, this would necessitate improvements in on-farm biosecurity and the costs of these would need to be met by farmers.

vii. A number of submissions state that the risk analysis had under-estimated the risk pathways that exist between the backyard pig population and the commercial sector.

viii. Stakeholders suggested that the risk analysis had under-estimated the economic, social and welfare consequences of an incursion of PRRS virus into New Zealand.
ix. Several submissions compared the risk pathways and economic consequences associated with foot and mouth disease to those associated with PRRS.

x. It was claimed that MAF had underestimated the likelihood of spread from an index property to other properties, regardless of the level of biosecurity in place. Submissions suggested that local spread by aerosol or vectors had been disregarded in the risk analysis.

xi. Stakeholders stated that the current measures in place were not trade restrictive.

xii. Submissions claimed that the likelihood of imported meat containing viable PRRS virus had been underestimated in the risk analysis.

xiii. Stakeholders have stated that PRRS can have a synergistic effect with post-weaning multisystemic wasting syndrome (PMWS).

xiv. Some stakeholders are concerned that there is poor national surveillance for PRRS, and if an incursion of PRRS occurred in New Zealand, disease would be well established in the country before being first recognised.

In order to more fully consider certain points raised in submissions that questioned the interpretation of published scientific studies, a number of technical matters were sent to international PRRS experts for comment. These technical points can be broadly divided as follows:

- general comments regarding the overall level of risk associated with PRRS virus in imported pig meat;
- the use of PCR assay results in the risk analysis;
- the approach the risk analysis took when faced with uncertainty (especially in relation to the likelihood of airborne spread of the virus);
- miscellaneous points relating to individual scientific studies cited in submissions.

As can be seen in appendix 2, although there is some disagreement between experts on some of the above technical points, no new scientific evidence arose that suggested the risk management measures recommended in the risk analysis were not appropriate.

Questions relating to the quantitative model that was included in the published risk analysis were sent to Dr. Noel Murray for comment, and his response is included here as appendix 3.

In response to claims that the garbage feeding regulations have not been adequately publicised, relevant MAF and pork industry publicity material has been included here as appendix 4.

Having considered the responses from stakeholders and other comments shown in the appendices of this document, it is concluded that the recommendations of the risk analysis are sound and can be incorporated into an import health standard for the importation of pig meat.
2. Introduction

Until September 2001 pig meat was imported into New Zealand without sanitary measures for porcine reproductive and respiratory syndrome (PRRS) virus, as the prevailing scientific view was that PRRS virus was unlikely to be transmitted to susceptible pigs through ingestion of pig meat. However, a study commissioned by the Australian Government, carried out in Lelystad in 1999\(^1\), demonstrated that it was possible to transmit the virus by this route. MAF’s preliminary assessment of this study resulted in provisional measures being adopted from September 2001. These measures required that imported pig meat be either cooked or subjected to certain pH levels before being given a Biosecurity clearance in New Zealand. Since these measures were provisional, MAF was obliged to undertake a full risk analysis to examine the risk of introducing PRRS in imported pig meat.

The MAF risk analysis on PRRS virus in pig meat was released for public consultation on 25 July 2006 and submissions closed on 15 September 2006, although extensions for late submissions were granted to 9 October 2006. Due to delays in sending copies overseas, a further deadline extension until 1 November 2006 was granted to stakeholders from the USA and Canada. The following submissions were received:

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Organisation represented/location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 25/9/06</td>
<td>Murray Battersby</td>
<td>Murrellen Pork</td>
</tr>
<tr>
<td>2 29/9/06</td>
<td>Sean Newland</td>
<td>Meat &amp; Wool New Zealand Ltd</td>
</tr>
<tr>
<td>3 8/9/06</td>
<td>Steve Kidby</td>
<td>Paranui Piggery Co Ltd</td>
</tr>
<tr>
<td>4 15/9/06</td>
<td>James and Clare Freeth</td>
<td>Pine Lake Farm</td>
</tr>
<tr>
<td>5 13/9/06</td>
<td>Neil Managh</td>
<td>Ratanui Development Co Ltd</td>
</tr>
<tr>
<td>6 13/9/06</td>
<td>Grant Skilton</td>
<td>Aorere Farms Partnership</td>
</tr>
<tr>
<td>7 22/9/06</td>
<td>Ian &amp; Linda McCallum Jackson</td>
<td>Havoc Farm</td>
</tr>
<tr>
<td>8 15/9/06</td>
<td>Ian Barugh</td>
<td>Massey University</td>
</tr>
<tr>
<td>9 19/9/06</td>
<td>Peter MacDonald</td>
<td>PIC New Zealand Limited</td>
</tr>
<tr>
<td>10 14/9/06</td>
<td>Sharon O’Callaghan</td>
<td>Unknown</td>
</tr>
<tr>
<td>11 15/9/06</td>
<td>Anon</td>
<td>Hawera</td>
</tr>
<tr>
<td>12 15/9/06</td>
<td>Claire Neal</td>
<td>Canterbury Genetics Limited</td>
</tr>
<tr>
<td>13 27/9/06</td>
<td>G A Sexton</td>
<td>Foxton</td>
</tr>
<tr>
<td>14 28/9/06</td>
<td>Stephen Macaulay</td>
<td>Pork Processors Association INC</td>
</tr>
<tr>
<td>15 15/9/06</td>
<td>Gus Morton</td>
<td>Morven Piggeries</td>
</tr>
<tr>
<td>16 18/9/06</td>
<td>Ian Joseph Schultz</td>
<td>MorePork Farm (BOP) Ltd</td>
</tr>
<tr>
<td>17 13/9/06</td>
<td>Jens Ravn &amp; Steve Sterne</td>
<td>Patoa Farms Ltd</td>
</tr>
<tr>
<td>18 15/9/06</td>
<td>Spencer and Jacqui Johnstone</td>
<td>Greendale</td>
</tr>
<tr>
<td>19 15/9/06</td>
<td>Paul Davey</td>
<td>P.M. &amp; S.A. Davey</td>
</tr>
<tr>
<td>20 19/9/06</td>
<td>Bindi Ground</td>
<td>Waratah Farms</td>
</tr>
<tr>
<td>21 14/9/06</td>
<td>Peter Logan</td>
<td>Healy Exports Limited</td>
</tr>
<tr>
<td>22 14/9/06</td>
<td>Graham Taylor</td>
<td>Ariel Farm</td>
</tr>
<tr>
<td>23 15/9/06</td>
<td>Ian McIntosh</td>
<td>Freshpork Farms Ltd</td>
</tr>
<tr>
<td>24 15/9/06</td>
<td>Lucy Caddick</td>
<td>Paerata Piggery</td>
</tr>
<tr>
<td>25 26/9/06</td>
<td>Colin &amp; Karen Battersby</td>
<td>Murrellen Pork</td>
</tr>
</tbody>
</table>

This document addresses the key points made by stakeholders, which are summarised using direct quotes from each submission. Preliminary collation of these submissions indicated a number of common themes or claims. It has been decided to address each of these in the Key Statements section of this document (section 3) and where stakeholders have raised points covered by these Key Statements, they are referenced appropriately in this document.

Risk analyses are carried out by MAF in the context of Section 22 of the Biosecurity Act 1993, Section 22 (5) lays out what MAF is required to do in regard to issuing import health standards to effectively manage the risks associated with the importation of risk goods. Risk analyses are conducted in accordance with MAF's policy statement on “Conducting Import Risk Analyses and Applying them in the Development of Import Health Standards”, which can be found on the MAF website: www.biosecurity.govt.nz/pests-diseases/risk-policy.htm

As explained in that policy, risk analysis provides the best means of ensuring that chief technical officers, or those acting under their delegated authority, fulfil their legal obligations under Section 22 of the Biosecurity Act when developing import health standards. The policy also states that risk analysis is a management tool that incorporates scientific methods to enable regulators to gather and assess information and data in a thorough, consistent, logical and transparent way, to ensure that:

a) organisms that may cause unwanted harm are identified;
b) the likelihood of these organisms being introduced into New Zealand and the nature and possible effect on people, the environment and the economy is assessed;
c) appropriate biosecurity measures to effectively manage the risks posed by these organisms are developed;
d) the results, conclusions and recommendations arising from the analysis are effectively communicated amongst interested parties.
Section 22 (5) of the Biosecurity Act 1993 also requires chief technical officers to have regard to New Zealand's international obligations when carrying out risk analyses to support the issuing of import health standards. Of particular significance in this regard is the Agreement on the Application of Sanitary & Phytosanitary Measures (the “SPS Agreement”) of the World Trade Organization (WTO). MAF’s Policy Statement on the SPS Agreement is also available on the MAF website: www.biosecurity.govt.nz/sps/resources/policies/raspspol.htm

A key obligation under the SPS Agreement is that sanitary measures must be based on scientific principles and maintained only while there is sufficient scientific evidence for their application. In practice, this means that unless MAF is using internationally agreed standards, all sanitary measures must be justified by a scientific analysis of the risks posed by the imported commodity.

Therefore, risk analyses are by nature scientific documents, and they must conform to an internationally recognised process that has been developed to ensure scientific objectivity and consistency. This methodology is outlined in section 2.3 of the risk analysis. The published MAF import risk analysis of PRRSv in pig meat followed published procedures documented in *Import Risk Analysis Animals and Animal Products* (Murray 2002). It should be noted that risk analyses written since 12 April 2006 now follow procedures published as *Biosecurity New Zealand Risk Analysis Procedures Volume 1* (see: www.biosecurity.govt.nz/files/pests-diseases/surveillance-review/risk-analysis-procedures.pdf), which is largely based on the earlier publication by Murray.

In applying this risk analysis process every step has been taken to ensure transparency. The risk analysis provides a reasoned and logical discussion, supported by references to scientific literature. The risk analysis was peer reviewed, first internally and then externally by the recognised international experts listed on pages iii and iv of the risk analysis. Following the risk analysis process, relevant points raised by reviewers were incorporated into the analysis.

In view of their scientific nature, public consultation on risk analyses is predominantly focussed on technical issues. For this reason, this review of submissions will address issues of science surrounding likelihood, not possibility, of events occurring. Speculative comments and economic factors other than the effects directly related to a potential hazard are beyond the scope of the document.

It should also be noted that any import health standard that will be developed using the MAF risk analysis on PRRS virus in pig meat will also consider other potential hazards which may be present in imported pig meat based on the recommendations of MAF’s earlier publication *The importation into New Zealand of meat and meat products – a review of the risks to animal health* (see:www.biosecurity.govt.nz/files/pests-diseases/animals/risk/meat-meat-products-ra.pdf).

---

3 Likelihood: The quality or fact of being likely or probable; probability; an instance of this.
4 Possible: Logically conceivable; that which, whether or not it actually exists, is not excluded from existence by being logically contradictory or against reason.
3. Key Statements

As indicated above, preliminary collation of submissions indicated a number of common themes. Each of these common themes is addressed here by Key Statements. Where stakeholders have raised points covered by these key statements, they are referenced appropriately in this document.

Key Statement 1

It was suggested that it was inappropriate to import any meat that may contain viable PRRS virus and to rely on post-border controls to prevent disease transmission. It was suggested that the status quo measures must be maintained and the approach being taken in this risk analysis is contrary to Biosecurity New Zealand’s goal of managing risks offshore.

Sanitary measures must be based on scientific principles and maintained only while there is sufficient evidence for their application. The sanitary measures described limit imports of fresh or frozen pork to countries free of PRRS or to high value cuts, with all other pig meat requiring further treatment. The sanitary measure of allowing the import of consumer-ready high value cuts has been recommended on the basis that such cuts will be associated with a negligible likelihood of generating fresh meat scraps prior to cooking (see Key Statement 2 regarding the disposal of meat past its “use-by date”). Further measures such as the Biosecurity (Meat & Food Waste for pigs) Regulations 2005 and standard biosecurity practices on pig farms (such as the NZPIB “Farm Biosecurity Policy” www.pork.co.nz/nzpork/technical_papers/6%20Pig%20Health%20and%20Welfare.pdf) will further reduce the risk associated with the imported commodity. The cumulative reduction associated with these measures offers an appropriate level of protection against an incursion of PRRS.

There are a number of steps which provide a “cascade of risk reduction” to ensure that there is a negligible likelihood of consumer-ready, high value cuts of pork from a country with PRRSv establishing infection within a New Zealand herd. These steps include:

i. Only 1.2 percent of meat/carcasses selected randomly from Canadian slaughterhouses are positive for PRRSv (after thawing, so this includes the risk reduction effect of the freeze/thaw cycle).

ii. Imported consumer-ready, high value cuts of pork would have to be purchased by a household that has backyard pigs. 4.41.10 of this document estimates in excess of 15,000 properties in New Zealand with backyard pigs. Data from Statistics New Zealand (http://www.stats.govt.nz/additional-information/dwel-hhold-estimates.htm) records 1,569,100 households in New Zealand, therefore it is reasonable to estimate that around 1 percent of households in this country have backyard pigs. Furthermore, it is not unreasonable to suggest that people with backyard pigs keep them in order to achieve a degree of self-sufficiency for pork supplies, so such individuals may be less inclined to purchase imported high value cuts.

iii. Fresh raw scraps would have to be generated from the imported meat (consumer-ready cuts, by their very nature, are associated with a negligible likelihood of this).
iv. Raw scraps would have to be disposed of quickly - NOT held at room temperature for a period long enough to inactivate the virus (it is highly likely that scraps would sit in a garbage bucket for a while (e.g. overnight) before disposal).

v. Raw scraps would have to be disposed of in garbage (as opposed to “insinkerator”, rubbish bin, or compost heap) – it cannot be assumed that all owners of backyard pigs would dispose of meat scraps in garbage.

vi. Garbage containing raw scraps would have to be fed to backyard pigs - an unknown proportion of backyard pig owners would be disinclined to feed raw pork to pigs on personal/ethical grounds or due to knowledge of the garbage regulations. The likelihood that such scraps would be fed to other animals, such as dogs, should also be considered.

vii. Pigs would have to ingest enough raw scraps to constitute an infectious dose (this would be affected by how long the meat was held at room temperature before, and by competition from other pigs).

viii. Since stomach acid would inactivate virus, it is likely that the raw meat scraps would have to be chewed rather than swallowed whole (if there is competition for food from other pigs, leisurely chewing is unlikely, so infection may be more likely in single pig units).

ix. An infected pig would have to develop viraemia and pass infection on to other pigs (this would require a group of pigs - a single pig is likely to be a “dead end”).

It should also be emphasised that the evaluation of historical imports (section 4.2.3 of the risk analysis), demonstrated that during a 3 ½ year period (1998 to mid-2001) pig meat was imported into New Zealand from PRRS-infected countries without any controls on garbage feeding and the country remained free of PRRS infection.

Key Statement 2

Submissions suggested that the risk analysis had underestimated the level of meat scrap generation and had not considered meat that has been disposed of following the expiry of its “use-by date”.

As stated in section 4.2.6 of the risk analysis, PRRS virus will be inactivated by normal cooking, so the only exposure pathway of relevance is the feeding of raw pork.

The size and quantities of raw meat scraps generated during the preparation of pig meat for human consumption in New Zealand is unknown and this is acknowledged in section 4.2.2.3 of the risk analysis. Acknowledging that it is not possible to accurately estimate the likelihood that scraps of a critical size will be generated prior to cooking, MAF has concluded (section 4.2.2.4) that the likelihood of generating infectious scraps of raw pig meat is non-negligible.

Arteriviruses (such as PRRS) are relatively heat labile and, as discussed in sections 3.4.2 and 4.1.3 of the risk analysis, the titre of PRRS virus present in meat falls by 90 percent after a week at 4°C and (as described in section 4.2.2.2 of the risk analysis) if meat is held at a temperature of 37°C for 24 hours, it could be considered free of infectious PRRS virus. MAF therefore considers that the disposal of meat beyond its ‘use-by-date’ would be unlikely to result in the production of infectious scraps.
Please also refer to the “cascade of risk reduction” described in Key Statement 1.

Key Statement 3

Some stakeholders were concerned that there was no definition of “consumer-ready, high value cuts” in the risk analysis.

The definition of “consumer-ready, high value cuts” will be further developed in the context of an import health standard – the concept behind this is of meat, not from the head, with major lymphatics removed, which will require no further trimming before being cooked. Section 5.2.2.2 of the risk analysis has suggested that such cuts would be associated with a negligible likelihood of generating fresh raw meat scraps prior to cooking.

Based on the above criteria, it is recommended that “consumer-ready, high value cuts” will be commercially packaged for direct retail sale and include bellies, bone-in and boneless roasts, chops, cubed pork, fillets, rib-eyes, spare ribs, stir-fry pieces and steaks.

Key Statement 4

It was stated that the minimum infectious scrap size is unknown.

The risk analysis was careful not to estimate the minimum infectious scrap size and recognises the inadequacy of the data in this regard. As stated in section 4.2.2.4 of the risk analysis, “there has been no attempt to explore the effect of size of scraps and infectivity. Indeed, the infectious dose approach explored by Hermann et al (2005) supports the notion that scraps of any size have the potential to infect an animal orally, and that the likelihood of infection occurring is directly related to the amount of meat fed.”

The risk analysis goes on to state, “it is not possible to accurately estimate the likelihood that scraps of a critical size will be generated prior to further processing (cooking) of imported pig meat, so the likelihood of generating infectious scraps prior to cooking must be considered non-negligible” (emphasis added).

The risk analysis also does not consider the quantities used in feeding trials (500 – 900g) to suggest a minimal infectious scrap size.

Please also refer to the “cascade of risk reduction” described in Key Statement 1.

Key Statement 5

Submissions questioned the current level of compliance with the waste feeding regulations [Biosecurity (Meat & Food Waste for Pigs) Regulations 2005] and enforcement of these by MAF. It was stated that MAF did not have adequate resources to enforce compliance with these regulations and MAF had, to date, failed to police these regulations. Compliance with these regulations amongst backyard pigkeepers is described as low in a number of submissions. Conversely, several overseas submissions claimed that MAF’s failure to police these laws could not be used to justify the risk management measures recommended in the risk analysis.
MAF has acknowledged (section 4.2.5 of the risk analysis) that the feeding of waste food to pigs is probably not an uncommon practice in New Zealand, particularly around the main urban centres of the North Island and it is also acknowledged (section 4.2.5.2) that it is very likely that kitchen waste would be fed to backyard pigs. The exposure assessment conclusion (section 4.2.6) again acknowledges that the minimum scrap size likely to infect a pig by the oral route is unknown although scraps of raw pork illegally fed to pigs would be unlikely to approach the size used in transmission studies. Although it accepted that large scraps past their “use-by-date” may be discarded and fed illegally to pigs, for reasons discussed in Key Statement 2 MAF considers that such scraps would be unlikely to contain infectious virus.

A number of overseas submissions (see 4.36.2, 4.38.14, 4.39.5, 4.42.2, 43.3 and 4.44.6) have suggested that because the Biosecurity (Meat & Food Waste for pigs) Regulations exist in New Zealand, the risk management measures recommended in the risk analysis are unjustified and that pig meat imports should be allowed without sanitary measures against PRRS.

Because it is recognized that the degree of non-compliance with the current garbage feeding regulations is unknown, the risk analysis recommended maintenance of the current cooking or pH treatment requirement for pig meat imported from countries with endemic PRRS, but only for the forms of pig meat that are considered likely to generate significant quantities of fresh raw scraps (unless such imports are to be further processed into consumer-ready, high value cuts in an officially approved facility). Aspects of this matter are covered further in response 4.7.1 below. Please also refer to the “cascade of risk reduction” described in Key Statement 1.

Key Statement 6

The current level of biosecurity on commercial pig farms in New Zealand was described as poor and it was suggested that this had been over-estimated in the risk analysis. It was also claimed that, if the recommendations of the risk analysis were adopted, this would necessitate improvements in on-farm biosecurity and the costs of these would need to be met by farmers.

Good biosecurity (see footnote 2 on page 50 of the risk analysis) is considered by the New Zealand Pork Industry Board (NZPIB) to be good industry practice under existing conditions. The NZPIB encourages all pork producers to institute on-farm biosecurity to maintain and protect the health status of each individual farm. The generic “Farm Biosecurity Policy” developed by NZPIB includes isolation of replacement stock, minimisation of visitors, setting of “visitor” procedures appropriate to the animal health status of the farm and control of animal vectors, such as cats, rats and birds. NZPIB’s Technology Transfer Programme also has initiatives including careful selection of breeding stock and other stock introduced as well as the adoption of “all in – all out” systems (see www.pork.co.nz.nzpork/technical_papers/6%20Pig%20Health%20and%20Welfare.pdf).

One of the authors of NZPIB’s biosecurity policy acknowledges in his submission (see 4.41.17) that the proportion of pig farmers that implement the recommended practices outlined in this policy has increased since PMWS was recognised in New Zealand.
Key Statement 7

A number of submissions state that the risk analysis had under-estimated the risk pathways that exist between the backyard pig population and the commercial sector.

It is acknowledged in section 4.3.1.2 of the risk analysis that, if PRRS was introduced into a backyard piggery, then “some spread to other herds within the backyard sector would be likely, particularly to herds that introduced live animals (including travelling boars) or used semen from the index herd, but possibly to other herds that shared implements such as vehicles or other equipment”.

In the same section of the risk analysis it is stated that “spread to commercial pig herds that observe standard biosecurity practices would be most unlikely”. The basis for that statement is that NZPIB encourages all pork producers to institute on-farm biosecurity to maintain and protect the health status of each individual farm. The generic “Farm Biosecurity Policy” developed by NZPIB includes isolation of replacement stock, minimisation of visitors, setting of “visitor” procedures appropriate to the animal health status of the farm and control of animal vectors, such as cats, rats and birds. NZPIB’s Technology Transfer Programme also has initiatives including careful selection of breeding stock and other stock introduced as well as the adoption of “all in – all out” systems (see www.pork.co.nz/nzpork/technical_papers/6%20Pig%20Health%20and%20Welfare.pdf).

MAF therefore considers the above measures to be “standard biosecurity practices” on commercial piggeries and considers that spread of PRRS from backyard units to commercial units would be unlikely.

Key Statement 8

Stakeholders suggested that the risk analysis had under-estimated the economic, social and welfare consequences of an incursion of PRRS virus into New Zealand.

Article 5.3 of the WTO SPS Agreement lists the relevant factors for assessing the economic impact of a disease as the potential damage in terms of loss of production or sales in the event of entry establishment or spread of a disease, and the costs of control or eradication. These matters are assessed qualitatively in the consequence assessment (section 4.3) of the risk analysis.

The risk analysis acknowledges that PRRS could have a significant direct impact at the farm level. Section 4.3.1.3 of the risk analysis acknowledges that infection of individual breeding herds with PRRS virus may result in significant initial health problems (late-term abortions, stillbirths, weak pigs, lowered farrowing rates, mortality amongst weaned pigs and impaired sow fertility) leading to chronic production losses. The risk estimation (section 4.4) goes on to conclude that, if PRRS did become established in a sector of the pig industry the consequences of PRRS infection would be significant in the breeding herds that became infected. However, the likelihood of secondary spread to any units observing standard biosecurity measures would be negligible.

Since there is limited export of pork from New Zealand, the risk analysis concluded that the introduction of PRRS virus would be expected to have a negligible economic effect in terms of lost exports. Indeed, MAF is unaware of any country outside Australasia that considers PRRS to be a hazard in pig meat, so apart from exports to Australia, there is unlikely to be
any market premium for PRRS freedom. Since PRRS virus affects only pigs, it is concluded in the risk analysis that an incursion of this virus would have negligible effects on humans and the environment. MAF’s Animal Welfare group has indicated that in their view the risk analysis has not overlooked any issues related to animal welfare.

It is sometimes argued that the effects of a disease incursion go beyond the individual farms affected, and that a variety of flow-on negative impacts may be felt, for example by rural service industries. MAF acknowledges that there are flow-on economic effects, but considers that they are likely to be limited. It is noteworthy that Animal Health Australia’s disease strategy for PRRS\(^5\) categorises this disease as one whose economic effects “would not be of a magnitude that would be expected to significantly affect the national economy”. That document goes on to state that “the social and economic effects of a PRRS outbreak would be restricted mainly to its effects on farm productivity”. There is no reason to consider that the same would not apply if the disease were to occur in New Zealand.

**Key Statement 9**

**Several submissions compared the risk pathways and economic consequences associated with foot and mouth disease to those associated with PRRS.**

When FMD was confirmed on 20\(^{th}\) Feb 2001 in the UK, swill feeding to pigs was legal and it was only later that it was banned (as an emergency measure) by the Animal By-Products (Amendment) (England) Order 2001, which came into force on 24 May 2001. Although it is likely that the introduction of FMD virus was via scraps of illegally imported meat in garbage fed to pigs (see report of inquiry at www.defra.gov.uk/animalh/diseases/fmd/pdf/fmd origins1.pdf) the actual route of entry of this virus into the UK remains unknown. MAF, like biosecurity agencies all over the world, is acutely aware of the risk of several exotic animal disease agents posed by illegally imported meat. Indeed, it was in view of these risks that the Biosecurity (Meat & Food Waste for Pigs) Regulations 2005 were promulgated.

It is acknowledged in the risk analysis (section 4.2) that compliance with the current garbage feeding regulations in New Zealand is unknown but that variable compliance with these regulations is likely within different sectors. Because of potential non-compliance with these regulations, the risk analysis has recommended maintaining the current cooking or pH treatment requirement for pig meat sourced from countries with endemic PRRS, but only for the forms of pig meat that are likely to generate significant quantities of raw scraps.

The likely consequences of an incursion of FMD are several orders of magnitude higher than those that could reasonably be expected from an incursion of PRRS. Section 4.3.1.3 of the risk analysis states that the introduction of PRRS virus into pig herds in New Zealand would be unlikely to result in significant indirect costs in terms of domestic or international market reactions and that exports of pork from New Zealand are limited to a few hundred kilograms annually to Pacific Islands and Singapore. By contrast, even the reporting of clinical suspicion of FMD in New Zealand would be likely to lead to an immediate suspension of exports of animals and animal products followed by closure of overseas markets upon laboratory confirmation of this diagnosis. Financial losses associated with FMD would be likely to include the loss of export earnings from animals, animal products and byproducts, the costs of control measures and compensation, and costs associated with the storage of animal products

(e.g. meat and dairy products) during the period of no exports. A report prepared by the Reserve Bank of New Zealand and the Treasury in 2003 (www.rbnz.govt.nz/research/0130346.html) estimated that an outbreak of FMD in New Zealand would result in cumulative losses in nominal GDP of around $6 billion after 1 year, and around $10 billion after 2 years. By comparison, in the NZPIB submission on this risk analysis the total costs of a PRRS epidemic are estimated at about $20 million ($7.1m direct and $12.7m indirect). These costs would amount to about 0.3 percent of the costs estimated for the first year of an FMD outbreak.

**Key Statement 10**

It was claimed that MAF had under-estimated the likelihood of spread from an index property to other properties, regardless of the level of biosecurity in place. Submissions suggested that local spread by aerosol or vectors had been disregarded in the risk analysis.

As stated in the risk analysis (section 3.4.5), it is widely agreed that the major route of spread of PRRS between farms is the movement of infected pigs, with the second most important route of spread being infected semen. Transmission of PRRS via fomites such as boots, clothing and contaminated needles, has been demonstrated and the risk analysis acknowledges that systems are essential to prevent transmission by contaminated fomites.

There is limited evidence available regarding the role of vectors such as insects and wild birds in transmission of PRRS and the results of these studies, as indicated in the risk analysis, have been difficult to reproduce. Zimmerman et al (1997)\(^6\) did report infection of mallard ducks with PRRSV although the subsequent study by Trincado et al (2004)\(^7\) concluded that “the transmission of PRRSV by adult mallard ducks or ducklings may be an extremely rare event, or may not occur at all under field conditions”. This latter paper also cited personal communications from two other independent researchers (K. Lager and F. Osorio) who had failed to transmit PRRSV from mallard ducks to pigs.

Section 3.4.5.5 of the risk analysis acknowledges that airborne transmission of PRRSV was assumed to be responsible for spread of PRRSV in a number of studies published in the early 1990s. However, studies carried out in the late 1990s were unable to demonstrate airborne transmission of PRRSV over distances greater than 1 metre. Dee et al (2005)\(^8\) did demonstrate movement of PRRSV in aerosol form through a PVC pipe over a distance of 150 metres although they acknowledged that these studies involved large volumes of air inoculated with a high concentration of virus and transported at high speeds, and that these results “cannot be extrapolated in the field”. Other limitations of this model included the use of optimal conditions that did not allow for the influence of environmental and physical variables, and the fact that virus was prevented from dispersing into the atmosphere. The authors of this study concluded that “even under the ideal conditions of this experiment, only three of the six pigs became infected, despite having been exposed to large quantities of air that had been inoculated with large quantities of PRRSV. It therefore appears that, in the field, the

---


transmission of PRRSv by aerosols is probably a rare event, if it occurs at all”. There is further discussion concerning the aerosol transmission of PRRSv in appendix 2 of this document. Please also refer to the “cascade of risk reduction” described in Key Statement 1.

Key Statement 11

Stakeholders stated that the current measures in place were not trade restrictive.

No country outside Australasia considers it credible or justifiable to have any risk management measures in place for PRRS in pig meat. For most countries, New Zealand’s credibility would increase if MAF were seen to be removing measures that are considered unnecessary, excessively trade restrictive and a technical barrier to trade under the WTO.

Article 2.2 of the SPS agreement states that “Members shall ensure that any sanitary or phytosanitary measure is applied only to the extent necessary to protect human, animal or plant life or health, is based on scientific principles and is not maintained without sufficient scientific evidence, except as provided for in paragraph 7 of Article 5.”

Article 5.6 also states that “Without prejudice to paragraph 2 of Article 3, when establishing or maintaining sanitary or phytosanitary measures to achieve the appropriate level of sanitary or phytosanitary protection, Members shall ensure that such measures are not more trade-restrictive than required to achieve their appropriate level of sanitary or phytosanitary protection, taking into account technical and economic feasibility.”

Although imports of pig meat into New Zealand have increased since the introduction of the current control measures for this commodity, if the current measures cannot be scientifically justified then New Zealand, as a signatory of the SPS agreement, cannot continue to require their implementation.

Data presented in table 2 of the published risk analysis indicates that, between 2000/01 and 2003/04, the amount of pork imported into New Zealand from countries with PRRSv fell by more than 13 percent whilst, over the same period, the amount of pork imported into New Zealand from countries free of PRRSv increased by more than 235 percent. MAF recognises that a number of factors may have accounted for this change in trading pattern although it is not unreasonable to suggest that the measures introduced in 2001 are likely to have had a significant impact on this.

Submissions by some trading partners (e.g. 4.37.2 and 4.44.7 in this document) consider that any measures for PRRS in pig meat can be seen as excessively trade restrictive and a technical barrier to trade. However, the recommendation of the risk analysis constitute the removal of some measures that are no longer considered necessary, but the adoption of other measures that effectively manage the risks identified in specific forms of pig meat.

Key Statement 12

Submissions claimed that the likelihood of imported meat containing viable PRRS virus had been under-estimated in the risk analysis.

The quantitative release assessment model (which was included in the risk analysis as appendix 1) was completed in 2001 before the publication of the study results of Magar and...
Larochelle in 2004\(^9\). It was concluded from the results of the model that there was a low likelihood (0.3 percent) of PRRS virus being present in pig meat from countries with endemic PRRS.

The study of Magar and Larochelle examined a total of 1,027 meat samples from 2 different abattoirs. 74.3 percent of pigs were shown to be seropositive to PRRSv and PRRSv was detected in 1.9 percent of meat samples by PCR (i.e. 19 meat samples). Eleven of these PRRSv positive meat samples were used in feeding trials and seven of these were shown to transmit infection to other pigs. From these results, the risk analysis concluded that around 1.2 percent\(^{10}\) of pigs at slaughter in countries with endemic PRRS can be expected to have infectious virus in meat. MAF considers this figure to be of a similar magnitude to the prediction from the quantitative model.

However, MAF considered that the figure (1.2 percent) derived from the Magar and Larochelle study was a more accurate reflection of the likelihood of infectious PRRSv being present in pig meat than the figure (0.3 percent) predicted by mathematical modelling. This higher figure is the one reflected in the release assessment conclusion (section 4.1.4).

The limitations of earlier field studies are discussed in section 4.1.2.2 vii of the risk analysis, although none of these earlier studies which examined significant numbers of meat samples were able to suggest that the likelihood of PRRSv being present in pig meat at slaughter was in excess of 2 percent.

MAF considers the publication of Magar and Larochelle to represent the most robust study into the presence of PRRSv in pig meat at slaughter that is currently available and, based on this, a likelihood of PRRSv being present in pig meat from countries with endemic PRRS is expected to be in the region of 1.2 percent. There is no evidence to suggest that this likelihood will be any greater than 2 percent, which MAF believes is appropriate to describe as ‘low’.

MAF acknowledges that, although this likelihood is low, it is not negligible and this is reflected in the release assessment conclusion. Further discussion relating to the evidence regarding the period of viraemia in pigs infected with PRRSv can be seen in the response to 4.30.19 below and in appendix 2 of this document. Please also refer to the “cascade of risk reduction” described in Key Statement 1.

**Key Statement 13**

*Stakeholders have stated that PRRS can have a synergistic effect with post-weaning multi-systemic wasting syndrome (PMWS).*

MAF acknowledges that PMWS has been associated with a generalised immunosuppressive effect which can predispose affected animals to a wide-range of (possibly) secondary infections, including PRRS. MAF notes that one of the authors of NZPIB’s biosecurity policy acknowledges in his submission (see 4.41.17) that the proportion of pig farmers that implement the recommended biosecurity practices has increased since PMWS was recognised in New Zealand, and such improvements in biosecurity will reduce the likelihood of PRRS spreading from an index property if it were introduced by any pathway.

---


\(^{10}\) i.e. 7/11 x 1.9%
Key Statement 14

Some stakeholders are concerned that there is poor national surveillance for PRRS, and if an incursion of PRRS occurred in New Zealand, disease would be well established in the country before being first recognised.

MAF acknowledges (section 4.3.1.2 of the risk analysis) that the likelihood that an incursion would be detected in a backyard herd is considered to be very low, given the background of endemic diseases and other production-limiting factors in the backyard environment. However, as described in section 4.4 of the risk analysis, MAF considers that spread of infection from such herds to commercial herds would be likely only if commercial herds had inadequate biosecurity practices.

MAF’s post-clearance biosecurity surveillance team is currently developing a joint PRRS surveillance programme with NZPIB although the details of this have not yet been finalised.
4. Review of Submissions

4.1 MURRAY BATTERSBY

4.1.1 I support the technical matters raised by NZPIB

*MAF response:* Noted.

4.1.2 It appears that the risk analysis proposed by MAF does admit that it will allow PRRS infected pig meat into the country. Its seems to rely on post border measures to control it …

*MAF response:* Please refer to Key Statement 1 in section 3 of this document.

4.1.3 There is no definition of what is to occur when a product has passed its use by date

*MAF response:* Please refer to Key Statement 2 in section 3 of this document.

4.1.4 There is no definition of "consumer ready - high value cuts."

*MAF response:* Please refer to Key Statement 3 in section 3 of this document.
4.2 SEAN NEWLAND

4.2.1 This work did not indicate a minimum size below which infection did not occur so relying on the scrap volumes used in those studies to estimate risk levels does not seem logical. These only indicate the volumes fed, nothing more.

*MAF response:* Please refer to *Key Statement 4* in section 3 of this document.

4.2.2 Note that in many household situations scraps are aggregated from a number of dwellings to feed pigs (personal observation)

*MAF response:* Please refer to *Key Statement 2* in section 3 of this document.

4.2.3 If "likely processing methods" are to be used in the risk estimation (as they mitigate the risk) then what happens if they are not required to be followed (they are only "likely") or if they change over time?

*MAF response:* Section 4.2.2.3 of the risk analysis states “Since the majority of meat purchased for human consumption in households is likely to be in the form of ready to cook cuts, it is concluded that the overall likelihood of generation of raw scraps of pig meat from households is low. The likelihood of raw pig meat scraps being generated by restaurants, retail outlets, processors and manufacturers is considered to be higher than for households”. The risk analysis goes on to conclude that (Section 4.2.6 para v) “the form of pig meat likely to be imported into New Zealand and the likely processing that it is submitted to prior to being sold for human consumption means that it is very unlikely to contain infectious PRRS virus”.

The risk analysis has not relied on these likely processing methods (such as freezing or refrigeration) to ensure that there is a negligible likelihood of infectious PRRSv in pig meat imported into New Zealand. Please also refer to the issues addressed in *Key Statement 1* in section 3 of this document and the responses to 4.30.38 and 4.43.4 below.

4.2.4 There have been a number of concerns raised (with MAF) by the PIB regarding the lack of enforcement of the feeding regulations and examples of where these regs have been ignored documented. Unless MAF were to undertake adequate enforcement activities and increase the level of compliance (something that it is not possible for the industry to do over ALL producers) then this is a dangerous assumption to add in to the risk estimation.

*MAF response:* Please refer to *Key Statement 5* in section 3 of this document.

4.2.5 What are the "standard biosecurity practices"? Is there such a thing in the NZ commercial industry and if not how can they be relied upon to limit the spread of PRRS if it got here?

*MAF response:* Please refer to *Key Statement 6* in section 3 of this document.
4.2.6 The comment regarding “no significant impact on exports” may be correct from an official market access perspective - it does not take into account however any commercial premium NZ pork may receive due to the current health status (with regard to) PRRS

MAF response: Please refer to Key Statement 8 in section 3 of this document.

4.2.7 The comment (with regard to) “inadequate biosecurity practices” is of concern. Why should an industry take on further compliance costs (and there will be costs associated with such practices) to allow the importation of imported product that poses a real risk of introducing a significant exotic disease?

MAF response: Please refer to Key Statement 6 in section 3 of this document. MAF disagrees that the importation of a product complying with the recommended sanitary measures poses a ‘real risk’ of introducing a significant exotic disease, and is of the opinion that the recommended sanitary measures will provide an appropriate level of protection against the introduction of PRRS into New Zealand.

Section 4.2.3 of the risk analysis demonstrates that during a 3 ½ year period (1998 to mid-2001) pig meat was imported into New Zealand from PRRS-infected countries without any controls on garbage feeding and the country remained free of PRRS infection.

4.2.8 One advantage NZ producers (not only the pork industry) have is that the health status of NZ animals does not, in many cases, require a high (and therefore costly) level of farm biosecurity processes. This is a commercial advantage to the industries involved and by prevention of the entry of exotic diseases through appropriate border controls (rather than relying on "in country" activities) this advantage is maintained.

MAF response: MAF agrees that the high health status of livestock in New Zealand can provide commercial advantages. However, given the presence of PMWS in New Zealand, it may no longer be credible to suggest that commercial pig enterprises here can rely on a lower standard of on-farm biosecurity than similar operations overseas.

The sanitary measures recommended in this risk analysis have been suggested to provide an appropriate level of protection against the introduction of PRRS virus into New Zealand. It should also be noted that Article 5.6 of the SPS agreement (to which New Zealand is a signatory) states that “…when establishing or maintaining sanitary or phytosanitary measures to achieve the appropriate level of sanitary or phytosanitary protection, Members shall ensure that such measures are not more trade-restrictive than required to achieve their appropriate level of sanitary or phytosanitary protection, taking into account technical and economic feasibility.”

4.2.9 If either of the "high value cut" options are to be followed a precise definition of these is required

MAF response: Please refer to Key Statement 3 in section 3 of this document.
4.2.10 The intimation that NZ industry should put in place "appropriate biosecurity practices" specifically as means to mitigate risks associated with imported goods where such practices are being included within the reasoning to allow the imports. Any additional practice adds cost. If the practices are not needed now the NZ producer has a commercial advantage - which is one of the reasons we (NZ Inc) attempt to keep out exotic diseases

**MAF response:** As PMWS is recognised as endemic in New Zealand, it is difficult to argue that standard biosecurity practices (such as recommended by NZPIB) are not required on all commercial pig units in this country. Please also refer to Key Statement 6 in section 3 of this document.

4.2.11 The intimation that if PRRS did get here it would only impact on the non-commercial herd and this would have no real impact on the wider industry. This ignores the realities of the commercial market place…

**MAF response:** Please refer to Key Statement 7 in section 3 of this document.

4.2.12 …ignores the impact on the credibility of the NZ biosecurity system with trading partners

**MAF response:** Please refer to Key Statement 1 in section 3 of this document. MAF would also like to refer to issues raised in Key Statement 11 and re-iterate that, for most countries, New Zealand’s credibility would increase if MAF were seen to be removing measures that are considered unnecessary, excessively trade restrictive and a technical barrier to trade under the WTO.
4.3 STEVE KIDBY

4.3.1 …it is not the serious pork producers that flaunt the rules, and an outbreak of foreign disease will occur, it is the back yarders with 3-4 pigs and still collect garbage, and don’t adhere to the new regulations, these people, and there’s thousands of them, even on TradeMe, this is where you, MAF loose sight and control of the problem we see, that you see as not a problem.

MAF response: Please refer to Key Statements 5 and 7 in section 3 of this document.

4.3.2 …I wish to cast my disapproval at this possibility of allowing imported meat not only pig meat into this country and the lifting of bans to do so, for the simple reason that where there is a risk to this country, and our clean green image, we should not jeopardise this in any way.

MAF response: Please refer to Key Statement 1 in section 3 of this document.
4.4 JAMES AND CLARE FREETH

4.4.1 An incidence of PRRS on our farm would have a significant effect on the viability of our business and we would be unable to sustain the losses that would inevitably be incurred over a long period.

*MAF response:* Please refer to *Key Statement 8* in section 3 of this document.

4.4.2 ...there are a large number of pigs in back-yards across New Zealand which are fed scraps, and which do not adhere to the food waste regulations...If a housewife or restaurateur had bought one of these imported high-value cuts...and discarded part of the uncooked meat prior to cooking...this could be fed to a back-yard pig, thus introducing the PRRS virus...there is a risk that the disease could then be carried by birds through the muck on their feet, from this animal to a local pig farm... It is the responsibility of the government to protect our interests and provide a safe environment in which we can produce pigs without fear of disease being brought in from abroad.

*MAF response:* Please refer to *Key Statements 2, 7 and 10* in section 3 of this document.

4.4.3 We therefore support NZPIB’s stance that current measures are maintained – that all meat imported from countries where PRRS is endemic is treated by cooking or curing.

*MAF response:* Please refer to *Key Statement 1* in section 3 of this document.
4.5 NEIL MANAGH

4.5.1 …the strength of N.Z. agriculture has been that it is free of the many animal health issues that plague most other countries of the world.

*MAF Response:* Noted. Please also see the response to 4.2.8 above.

4.5.2 We fully support the submission of the New Zealand Pork Industry Board detailing areas where the risk analysis has under-estimated the risk to the New Zealand pig herd.

*MAF Response:* Noted.

4.5.3 While there are regulations in place that mean that all meat should be heated to 100C for one hour before it is fed to pigs, it is a faulty assumption on Biosecurity New Zealand’s part to assume that this happens. We are aware that there is no policing of these regulations, and a very low level of follow up to reported cases of non-compliance. Does Biosecurity New Zealand have figures available to demonstrate the level of compliance with these Regulations, which provides facts on which to justify all its proposed options?

*MAF response:* Please refer to *Key Statement 5* in section 3 of this document.

4.5.4 Importantly, the 2001 Foot and Mouth Disease outbreak in the UK is thought to have been started by feeding infected meat to pigs despite such feeding being illegal.

*MAF response:* Please refer to *Key Statement 9* in section 3 of this document.

4.5.5 …non-commercial operators farm alongside commercial piggeries, and so despite our best efforts we are at risk from air-born spread of disease.

*MAF response:* Please refer to *Key Statement 10* in section 3 of this document.

4.5.6 Expert opinion is that PMWS came via infected meat. Given that PMWS is in New Zealand it is even more important to the commercial pork industry to be protected from PRRS because the on-farm impact of these diseases is additive.

*MAF response:* The precise nature of the circumstances of the first detection of PMWS in New Zealand in late 2003 are the matter of some scientific debate, and speculation about this is beyond the scope of the risk analysis and this review of submissions. Please also refer to *Key Statement 13* in section 3.
4.5.7 Surely a similar approach will not be adopted with Foot and Mouth Disease...why then is it acceptable for an exotic disease which puts the New Zealand pork producing industry at risk?

*MAF response:* Please refer to *Key Statement 9* in section 3 of this document.

4.5.8 Maintaining the current treatment measures is not a barrier to trade. Imports have grown significantly (almost doubled) since 2001 when the treatment measures against PRRS infected meat were put in place.

*MAF response:* Please refer to *Key Statement 11* in section 3 of this document.

4.5.9 New Zealand and Australia are the only two countries where PRRS is not present. This reflects well on New Zealand’s biosecurity status.

*MAF response:* Section 4.2.3 of the risk analysis points out that several countries in Europe have remained free of PRRS, namely Sweden, Finland, Norway and Switzerland. Furthermore, Sweden and Finland import substantial quantities of pig meat from countries where PRRS is present.
4.6 GRANT SKILTON

4.6.1 …our farm would not be economically viable in the face of a PRRS outbreak in our herd.

*MAF response:* Please refer to Key Statement 8 in section 3 of this document.

4.6.2 Of major concern to us is the assumption that because feeding of uncooked pig meat to pigs is illegal, that the risk of PRRS virus infecting pig farms by the feeding of uncooked pig meat is negligible…there is probably a reasonable amount of uncooked pig meat being fed to sows now, and so the fact that it is illegal is not an acceptable strategy to prevent a PRRS incursion.

*MAF response:* Please refer to Key Statement 5 in section 3 of this document.

4.6.3 Despite a high level of bio-security on our farm, if one of these neighbouring farms did become infected, there is a high risk of our herd becoming infected given the close proximity (300-500m) of these other herds to our herd. Birds, vehicles and even aerosols are potential vectors for the disease...

*MAF response:* Please refer to Key Statement 10 in section 3 of this document.
It is our opinion that MAF currently do not have the resources to deal with this law (2005 Garbage Feeding Law). It has never been communicated to the pig keeping public and is not being policed.

**MAF response:** A concerted effort has been made to publicise the Biosecurity (Meat and Food Waste for Pigs) Regulations 2005 following their promulgation (please see the media release and fact sheet included in appendix 4). Biosecurity New Zealand and the New Zealand Pork Industry Board have agreed to work together to educate all groups with responsibilities under these Regulations.

On behalf of MAF, the New Zealand Pork Industry Board periodically reminds their members about the Regulations (please see the GAP newsletter also included in appendix 4) and NZFSA has incorporated information about the Regulations in the Codes of Practice being drafted for the restaurant and hospitality sector. MAF recognises that communication is a continuous process and requires continued efforts to publicise these Regulations to both pig farmers and waste food generators.

MAF’s Compliance and Enforcement Group follows up on every compliant it receives from the public and the New Zealand Pork Industry Board has been very helpful in this regard.

Biosecurity New Zealand has committed to a rigorous communication campaign which will compile a comprehensive list of key contacts in stakeholder organisations including farmers, waste collectors, waste generators, and local authorities. Over time a comprehensive stakeholder engagement strategy will identify ongoing opportunities for the campaign to engage with and work collaboratively with these organisations. This campaign will also produce a range of resources and education tools that can be referred to, used or distributed by audiences throughout the country. Information will also be available on the Biosecurity New Zealand website and will be developed in consultation with stakeholders and based on their needs.

Please also refer to **Key Statement 5** in section 3 of this document.
4.8  IAN BARUGH

4.8.1  I believe that any risk of an exotic disease is too great.

*MAF response:* Please refer to *Key Statement 1* in section 3 of this document.

4.8.2  …it is likely that the initial outbreak could occur with a person with nothing at stake taking short cuts and feeding untreated waste food to their back yard pigs.

*MAF response:* Please refer to *Key Statement 5* in section 3 of this document.

4.8.3  I think as a minimum New Zealand should maintain the current regulations in place for cooking and curing pig meat from countries that have the PRRS virus in a transitional facility and ideally not import pig meat at all from these countries.

*MAF response:* Please refer to *Key Statements 1* and *11* in section 3 of this document.
4.9 PETER MACDONALD

4.9.1 PRRS is a commercially devastating disease for any pig producer to contend with.

*MAF response:* Please refer to Key Statement 8 in section 3 of this document.

4.9.2 There is a lot of scientific literature to say that PRRS can be spread by air, insects and birds. If PIC became infected with PRRS we have the potential, through the supply of breeding stock and semen, to quickly spread the disease through out the NZ pig industry.

*MAF response:* Please refer to Key Statement 10 in section 3 of this document.

4.9.3 …around 1.2 percent of meat imported from PRRS infected herds will contain viable virus. At least 40 percent of pork consumption is imported. The risk is not non-negligible and requires retention of transitional treatment for all pork imports from PRRS infected countries.

*MAF response:* Please refer to Key Statement 1 in section 3 of this document.

4.9.4 MAF do not have the resources to police and ensure compliance to the (Meat and Food Waste) regulations.

*MAF response:* Please refer to Key Statement 5 in section 3 of this document. Please also see the response to 4.7.1 above.

4.9.5 We are very concerned that if “uncooked high value cuts” are garbage fed to pigs the risk of introducing PRRS into the area and that disease being transmitted via birds, insects or air to one of our farms is increased.

*MAF response:* Please refer to Key Statement 10 in section 3 of this document.

4.9.6 Currently there are no PRRS surveillance mechanisms in place to detect the presence of PRRS on slaughter of NZ pigs. Therefore PRRS could remain undetected for a long period of time, increasing the spread of the disease.

*MAF response:* Please refer to Key Statement 14 in section 3 of this document.

4.9.7 PIC fails to understand why imported high value cuts do not pose a greater risk. High food safety standards mean that meat will get rejected and subsequently disposed of…the uncooked meat will end up being fed to back yard operators.
**MAF response:** High value, consumer-ready cuts will be associated with a negligible likelihood of generating fresh scraps of raw pig meat. Please refer to *Key Statements 2 and 3* in section 3 of this document.
4.10 SHARON O’CALLAGHAN

4.10.1 MAF is dreaming if they think that they will get a hundred percent compliance on the cooking of food scraps destined for the pigsty… and the policing of this would be cumbersome, expensive and ineffective…

*MAF response:* Please refer to Key Statement 5 in section 3 of this document.
4.11 ANON

4.11.1 We cannot afford the risk of PRRS in this country At All and the minimal level of enforcement of food waste regulations and the wide open gaps that are available for people to flaunt the rules makes this proposition a definite no brainer.

*MAF response:* Please refer to *Key Statement 5* in section 3 of this document.
4.12 CLAIRE NEAL

4.12.1 Canterbury Genetics Ltd is against the proposed changes because of the potential for PRRS to enter the country and spread.

*MAF response:* Please refer to *Key Statement 1* in section 3 of this document.

4.12.2 Uncooked meat products are fed to pigs, sometimes by people with a lack of knowledge of the regulations, lack of adequate facilities to cook at 100°C for 1 hour, or blatantly ignoring the rules. I have myself in the past witnessed where uncooked restaurant food waste was fed to pigs in ignorance.

*MAF response:* Please refer to *Key Statement 5* in section 3 of this document.

4.12.3 Current bio security on many pig units is poor.

*MAF response:* Please refer to *Key Statement 6* in section 3 of this document.

4.12.4 The cost of this disease (PRRS) to our industry would be huge… If PRRS were to become established in NZ, my feeling would be that then there would be no Pork Industry left in New Zealand.

*MAF response:* Please refer to *Key Statement 8* in section 3 of this document.

4.12.5 No definition is given of what a ‘high value cut’ is.

*MAF response:* Please refer to *Key Statement 3* in section 3 of this document.

4.12.6 High value cut returned on the plate partially uneaten (and not cooked at 100°C for 1 hour), added to the pig waste, and then fed to some backyard raised pigs which could then filter into the breeding herd chain and it would then only (be) a matter of time before PRRS infects the whole industry.

*MAF response:* Please refer to *Key Statements 5* and *7* in section 3 of this document.

4.12.7 If this is allowed to proceed will meat infected with FMD be released knowingly into the country?

*MAF response:* The recommendations of this risk analysis do not affect the existing measures in place for animals and animal products from countries that are not free from FMD virus. For further discussion, please refer to *Key Statement 9* in section 3 of this document.
4.12.8 The UK outbreak in 2001 was attributed to feeding of infected meat to pigs and it was illegal to feed swill at that time.

*MAF response:* Please refer to *Key Statement 9* in section 3 of this document.

4.12.9 We believe that the risk analysis does not take into account actual practices on commercial and non-commercial farms.

*MAF response:* Please refer to *Key Statement 6* in section 3 of this document.
4.13  G A SEXTON

The concerns raised in this submission regarding possible negative effects on developing new pig farming operations were noted. These matters are discussed in detail in the response to the NZPIB submission (see section 4.30 of this document).

Further, as discussed in Key statement 6, the NZPIB encourages all pork producers to institute on-farm biosecurity to maintain and protect the health status of each individual farm. The generic “Farm Biosecurity Policy” developed by NZPIB includes isolation of replacement stock, minimisation of visitors, setting of “visitor” procedures appropriate to the animal health status of the farm and control of animal vectors, such as cats, rats and birds.
4.14 STEPHEN MACAULAY

4.14.1 …there is a general acceptance of Biosecurity New Zealand’s recommended sanitary measures…

*MAF response:* Noted.

4.14.2 …the Regulations (Biosecurity (Meat & Food Waste for Pigs) Regulations 2005) will only be effective if they are enforced…There seems to be an acceptance that the general principles and practices for managing biosecurity risks tend to be lower in smaller pig herds…We question how creditable the Regulations can be if Biosecurity New Zealand do not enforce these.

*MAF response:* Please refer to *Key Statement 5* in section 3 of this document.

4.14.3 Based on the Import Risk Analysis, there is a non-negligible likelihood that chilled or frozen pig meat from a country (with) endemic PRRS will harbour infectious PRRS virus when imported into New Zealand…this should also be reflected in the operational practices allowable within the pork processing facilities.

*MAF response:* The handling of waste packaging (such as cartons) in pork processing facilities is covered under the relevant standard for transitional facilities. MAF Standard 154.02.18 (see:www.biosecurity.govt.nz/files/border/transitional-facilities/animals/154-02-18.pdf) requires that animal product waste and the original packaging material shall be disposed of as specified in the import health standard and the methods used shall be approved by the supervisor. In principle, waste products from processing or unwanted animal product shall be treated or disposed in an approved manner so that any potentially associated organisms can do no harm.
4.15  GUS MORTON

This submission raised issues concerning the interaction of PRRS with PMWS, the disposal of pig meat past its “use by date” and economic impacts on the domestic pig production industry. Please refer to Key statements 2, 8 and 13.
4.16  IAN JOSEPH SCHULTZ

4.16.1 I agree that the risk likelihood of the PRRS being found in frozen imported pork products is real.

MAF response: MAF has acknowledged in section 4.1.4 that it considers there will be a non-negligible likelihood that chilled or frozen pig meat from a country with endemic PRRS will harbour infectious PRRS virus when imported into New Zealand. However, please also refer to the “cascade of risk reduction” described in Key Statement 1 in section 3 of this document.

4.16.2 Even if there are rules which stipulate that imported pig meat must not be fed to pigs, someone in the chain of disposal will find a way to divert the food to a friendly backyard pig farmer.

MAF response: Please refer to Key Statement 5 in section 3 of this document.

4.16.3 I agree with the Import Risk Analysis where it accepts that commercial pig farms which process food waste properly are not at risk of contracting PRRS, as commercial piggeries have too much at stake to risk not treating scraps properly.

MAF response: Noted.

4.16.4 The minimum quantity of meat required to infect a pig is unknown. The Import Risk Analysis makes an unsupported claim that it is improbable that the volume of scraps generated by a single household at any one time will approach the relatively large quantities (500-900g) that were used in the field trial. I see no evidence to suggest that 500-900g is “large”. Indeed if these quantities did routinely cause infection, then it surely can be assumed that a lesser quantity will also cause infection, even if at a lower rate.

MAF response: Please refer to Key Statement 4 in section 3 of this document.

4.16.5 It is quite common for 500-900g of pork to be disposed of at once. A power failure of a household freezer typically means that larger volumes of uncooked meat have to be disposed of.

MAF response: Please refer to Key Statement 2 in section 3 of this document. In addition, the titre of PRRS virus present in meat can be expected to fall by 75 percent in a single freeze/thaw cycle (as stated in section 4.1.3 of the risk analysis) and this effect would further reduce the likelihood of generating infectious meat scraps through the scenario described.
4.16.6 My experience with PMWS and with the large pool of backyard piggeries in my area is that any virus that is prevalent in the wider group will eventually pass into commercial piggeries.

*MAF response:* Please refer to *Key Statements* 7 and 10 in section 3 of this document.

4.16.7 Along with all livestock farmers in New Zealand, we have a huge reliance on our freedom from many diseases that are endemic in the countries with which we trade…We must not relax our guard.

*MAF response:* Please refer to *Key Statement* 1 in section 3 of this document and the response to 4.2.8 above.

4.16.8 I am concerned that the precedent set here will carry through to other food imports.

*MAF response:* Please refer to *Key Statement* 1 in section 3 of this document. Please also refer to the responses given to 4.30.2 and 4.31.14 below.
4.17 JENS RAVN & STEVE STERNE

4.17.1 Using the information provided in the analysis, we estimate that this will effectively allow between 25 and 100 tonnes of untreated and infected meat to be distributed around the country each year.

**MAF response:** The risk analysis (section 4.1.4) acknowledges that there is a non-negligible likelihood that chilled or frozen pig meat from a country with endemic PRRS will harbour PRRS virus when imported into New Zealand.

4.17.2 We don’t know what BNZ consider to be a high value cut, other than that they describe these cuts as those that are expected to yield few scraps or trim. On this basis, the authors of the analysis must consider chops, steaks and roasts as high value cuts as they state that it is very unlikely that these would generate scraps. This is simply not true.

**MAF response:** Please refer to Key Statement 3 in section 3 of this document. Consumer-ready, high value cuts will be associated with a negligible level of fresh raw scrap generation prior to cooking. MAF accepts that roast joints of meat and other cuts listed may be associated with the generation of scraps of cooked meat although, as described in section 4.2.1 of the risk analysis, normal cooking can be considered to inactivate PRRS virus.

4.17.3 In our own experience the amount of food waste that ends up on backyard pig farms is surprisingly large and is derived from all sorts of sources such as retirement homes, army camps, boarding schools, restaurants, butcher shops, supermarkets and individual households.

**MAF response:** As described above (4.17.2), PRRS virus will be inactivated by normal cooking and risk is associated with the generation of raw scraps prior to cooking. Please also refer to Key Statement 2 in section 3 of this document.

4.17.4 …we acknowledge that the only plausible way for infected pig meat to lead to an infected pig is if the pig is exposed to the meat … The likely feeding of such meat to pigs and the consequent infection of the pigs with PRRS will be on backyard operations.

**MAF response:** Infection of pigs would require exposed to fresh raw meat containing infectious PRRS virus before the virus is inactivated (e.g. within 3 to 24 hours at 37°C as indicated in section 3.4.2 of the risk analysis). Please also refer to Key Statements 5 and 7 in section 3 of this document.
4.17.5 It is not uncommon for these (backyard and semi-commercial) pig keepers to share waste food sources, trade pigs with each other and to move boars between farms. It is completely incorrect to suggest that no breeding occurs on these farms. The number of properties on which a small herd of pigs is kept in NZ is huge and they are distributed throughout virtually every corner of the country.

_MAF response:_ Section 2.1.2 of the risk analysis acknowledges that the backyard pig population of New Zealand is a relatively little-understood sector and goes on to suggest that it is generally assumed that herds with less than 20 pigs are unlikely to be breeding units. However, section 4.3.1.2 also acknowledges that there may be backyard breeder units comprising tens of sows and also that some spread of PRRS to other backyard herds would be likely, particularly to herds that introduced live animals (including travelling boars) or used semen from the index herd, but possibly also to other herds that shared implements such as vehicles or other equipment. Please also refer to Key Statement 7 in section 3 of this document.

4.17.6 We simply cannot prevent the movement of birds (as an example) between backyard pigs units and our own – although we try! We believe it would only be a matter of time before our herd became infected with PRRS once it became established in NZ.

_MAF response:_ Please refer to Key Statement 10 in section 3 of this document.

4.17.7 As the single largest employer in our area, our contribution to the community extends beyond the immediate staff we employ. Were it not for the work we provide, many of our staff would have to move to other areas in search of opportunities, most of these people have children in the local school, shop locally and so on…Our herd also consumes about 20,000 tonnes of feed a year, most of which is derived from ingredients grown in NZ and all of which is processed in Canterbury. To suggest that the impact of PRRS on our farm would only impact on those directly involved with the farm is completely wrong.

_MAF response:_ Please refer to Key Statement 8 in section 3 of this document.
4.18 SPENCER AND JACQUI JOHNSTONE

4.18.1 ...the back-yard pig industry is particularly high during the lead up to Christmas, whereas the statistics used in AgriBase are based on the census as at 30 June. The figure at 31 October of “herds” of 1-10 pigs could well be double that provided in Table 4 of the risk assessment.

*MAF response:* Section 2.1.2 of the risk analysis states that “This relatively little-understood sector of the pig industry is thought to be characterised by short term fluctuations both in the number of herds and the number of animals”.

4.18.2 Despite the illegality of feeding uncooked food to pigs, it is probable that more than 90 percent of these back-yard operations consider that the rules don’t apply to them.

*MAF response:* Please refer to Key Statement 5 in section 3 of this document.

4.18.3 MAF has dedicated little or no resources to policing the feeding of uncooked waste and has a record of failing to follow up on breaches of the Act, or of responding in such a manner that the offender is not really deterred.

*MAF response:* Please refer to Key Statement 5 in section 3 of this document.

4.18.4 PRRS can also be spread via faeces and there are many potential vectors not mentioned in the assessment – flies, birds, rodents etc ... It is virtually impossible to keep flies, birds and rodents from crossing boundary fences.

*MAF response:* Please refer to Key Statement 10 in section 3 of this document.

4.18.5 “mallard ducks were susceptible to infection via drinking water” and “shed the virus in faeces for up to 3 weeks”. Does this mean that the virus is also carried in water?

*MAF response:* As indicated in section 3.4.2 of the risk analysis, the fragility of PRRS virus means that it is relatively quickly inactivated in the environment. Please also refer to Key Statement 10 in section 3 of this document.
4.18.6 Feral pigs are another possible means of disease spread, and they certainly don’t cook their food before eating it!

**MAF response:** Section 4.2.5.1 of the risk analysis indicates that the likelihood of raw pig meat scraps being consumed within 24 hours of disposal as garbage is remote and that the likelihood of exposure of feral pigs to uncooked scraps that are infectious for PRRS is considered to be very low.

The role of feral pigs is also discussed in section 4.3.1.1 of the risk analysis and the likelihood of PRRSv being maintained in the New Zealand feral pig population is considered to be negligible. Because of this, and the low likelihood of contact between feral pigs and commercial pigs, the consequences of introduction of PRRSv into the feral pig population are considered to be negligible.

4.18.7 A 0.1 percent risk is still too high, considering the tonnage of meat that is imported, the possibility of that meat being fed uncooked to another pig in NZ and the virulent spread that is likely to follow, which will seriously damage the NZ pig industry.

**MAF response:** Please refer to Key Statement 1 in section 3 of this document.

4.18.8 The message from pig producers in infected countries is that we do NOT want PRRS, it is a devastating disease.

**MAF response:** MAF agrees that PRRS is unwanted and the virus is listed on the unwanted organisms register (http://mafuwsp6.maf.govt.nz/uor/searchframe.htm) as a notifiable organism in this country. Section 4.4 of the risk analysis concludes that there is a non-negligible likelihood of release of PRRS virus in imported pig meat and sanitary measures have been recommended (section 5.2.3) to provide the appropriate level of protection against PRRS. Please also refer to Key Statement 1 in section 3 of this document.

4.18.9 The risk assessment assumes that everyone operates legally. As we have portrayed, this is certainly not the case – the high risk occurs in numerous small, back-yard operations feeding uncooked waste.

**MAF response:** Please refer to Key Statement 5 in section 3 of this document.
4.19 PAUL DAVEY

4.19.1 We need to note that even though swill feeding was strictly illegal in England by 2001, the outbreak of Foot and Mouth Disease in that country has been widely attributed to swill feeding of pigs

**MAF response:** Please refer to *Key Statement 9* in section 3 of this document.

4.19.2 …an incursion of PRRS into New Zealand will have a significant impact on the pork industry and those who service it.

**MAF response:** Please refer to *Key Statement 8* in section 3 of this document.

4.19.3 …regulatory relaxation (as proposed) raises the risk of disease incursion of PRRS etc to an unacceptably high level.

**MAF response:** Please refer to *Key Statement 1* in section 3 of this document.

4.19.4 From a mixed farming operation perspective, relaxing such controls increases the risk of other harmful diseases entering New Zealand.

**MAF response:** Please refer to *Key Statement 1* in section 3 of this document.

4.19.5 Current rules for the import of pig meat into New Zealand must not be relaxed and waste feeding regulations must be strictly enforced.

**MAF response:** Please refer to *Key Statement 1* in section 3 of this document.
4.20 Bindi Ground

4.20.1 Uncooked meat products are fed to pigs, sometimes by people with a lack of knowledge of the regulations, lack of adequate facilities to cook at 100°C for 1 hour, or blatantly ignoring the rules.

*MAF response:* Please refer to Key Statement 5 in section 3 of this document.

4.20.2 Current bio security on many pig units is poor ... The cost of improving biosecurity is incurred by the farmer.

*MAF response:* Please refer to Key Statement 6 in section 3 of this document.

4.20.3 No definition is given of what a ‘high value cut’ is.

*MAF response:* Please refer to Key Statement 3 in section 3 of this document.
4.21 PETER LOGAN

4.21.1 We are in agreement with the content of the document with respect to the current Transitional Licence system which effectively creates a defacto Trade Barrier, protecting the Australian Pork Market from USA/Canadian competition within New Zealand.

MAF response: A number of other submissions have suggested that the current measures in place do not act as a barrier to trade (see 4.5.8, 4.32.19 and 4.40.10). However, if the current sanitary measures for imported pig meat cannot be scientifically justified then New Zealand, as a signatory of the SPS agreement, cannot continue to require their implementation. Please also refer to Key Statement 11 in section 3 of this document.

4.21.2 Thus, we believe that all Boxed Pork meat (meat purchased by Chemical Lean rating so processors have little or no wastage) is value added by this process and is able to be further processed by any competent Restaurant, Takeaways, Wholesale Distributor, Butcher and/or Retailer.

MAF response: Please refer to Key Statement 3 in section 3 of this document.

4.21.3 Due to the targeted value added nature of the products they (Food Service Operators and Manufacturers) are able to buy for immediate use and/or further processing, they are able to operate with little risk of wastage.

MAF response: It is reasonable to assume that the likelihood of fresh raw pig meat scraps being generated by food service operators and manufacturers would be higher than for households.

4.21.4 …we think a clear definition of Higher Value Cuts and Officially Approved Facility should include all Boxed Frozen Pork products (with the exclusion of carcase products) that are able to be processed on a premises that currently is able to further process meat products.

MAF response: Please refer to Key Statement 3 in section 3 of this document. Please also see the response to 4.14.3 above.
4.22 GRAHAM TAYLOR

4.22.1 To suggest that ‘high value’ meat scraps would not find their way into the porcine food chain is flawed as every meat product has a degree of trim that is discarded. Public awareness of ‘use-by dates’ also means meat products are discarded into the waste stream.

*MAF response:* Please refer to *Key Statement 2* in section 3 of this document.

4.22.2 It appears the Food Waste Regs are not policed in any meaningful way.

*MAF response:* Please refer to *Key Statement 5* in section 3 of this document.

4.22.3 Unfortunately it is the layer of the pig industry, outside the commercial farmers, who will place NZ at the greatest risk as these people freely trade in pigs, waste food, and illegal un-inspected pig meat. Some also release pigs into the wild for later hunting further spreading disease in an uncontrolled population.

*MAF response:* Please refer to *Key Statement 7* in section 3 of this document.

The role of feral pigs is discussed in section 4.3.1.1 of the risk analysis and the likelihood of PRRSv being maintained in the New Zealand feral pig population is considered to be negligible. Because of this negligible likelihood and the low likelihood of contact between feral pigs and commercial pigs, the consequences of introduction of PRRSv into the feral pig population are considered to be negligible.

4.22.4 Should PRRS enter the NZ pig herd the results would be devastating.

*MAF response:* Please refer to *Key Statement 8* in section 3 of this document.
4.23  IAN MCINTOSH

4.23.1 Assuming the 1100 sow outdoor breeding unit was infected...the consequence through to bacon if the figure (estimated cost) was only $NZ500/sow, equates to a minimum of $183,000 per year over the first 3 years. The flow on effect to the abattoir at Freshpork Bay City would be significant as a reduced kill significantly increase the killing charge per animal.

*MAF response:* Please refer to *Key Statement 8* in section 3 of this document.

4.23.2 Where live animals were used to test if meat was infective (apparently only two trials reported in the literature (p33-34)) the technique of virus isolation is totally discredited and PCR, while more sensitive, is assumed to be the benchmark rather than being presented as only an indicator...If PCR has been validated against live animal feeding trials then this information should have been presented.

*MAF response:* Risk can only be assessed based on the scientific information available at the time. MAF is not aware of any such validation study. Please also see the response to 4.30.19 below which discusses virus isolation and PCR results from a number of studies. This issue is also discussed in some detail in appendix 2.

4.23.3 If PCR technology is flawed in its application then the calculation of the risk (1.2 percent, page 34) of the presence of the PRRS virus in meat from slaughtered pigs in a country with endemic infection will be incorrect.

*MAF response:* MAF is unaware of studies suggesting that PCR technology is flawed, however there is a need for caution in interpretation of the results of such studies as discussed at length in appendix 2 of this document. Please also refer to *Key Statement 12* in section 3 of this document.

4.23.4 In 100 percent of trials (two) where the ultimate test was used i.e. live pigs, despite a negative tissue culture result and inoculating the pigs via the least infective route and using meat that would have been through a process which kills 75 percent of the PRRS virus, the meat still delivered a highly infective dose as indicated by the number of pigs developing clinical disease.

*MAF response:* This is acknowledged in the risk assessment.
4.23.5 As many pigs in NZ are injected around birth or weaning with a needle common to most, if not all pigs on the day, should PRRS virus infect even one young pig via the oral route then common farm practices could quickly transmit the virus...Otake et al 2002 reports that dirty needles will transmit the PRRS virus.

**MAF response:** The risk analysis acknowledges the work cited by this submission in section 3.4.5.3. Section 4.1.2.1 of the risk analysis states that the transmission dynamics of PRRS within a herd can be complex and are influenced by herd size and opportunities for contact between subpopulations of susceptible, infectious and immune animals within and between the breeding, nursery and fattening units. The risk analysis has acknowledged that introduction of PRRS virus into a herd may be followed by epidemics of disease (section 4.3.1.3). Transmission of the virus within a herd as suggested by this submission would have no effect on the consequence assessment of the risk analysis.

4.23.6 Mallard ducks were shown to excrete PRRS virus for 3 weeks after drinking contaminated drinking water ... The Canterbury plains have a high incidence of outdoor sow herds that are frequented by large numbers of ducks at certain times of the year.

**MAF response:** Please refer to Key Statement 10 in section 3 of this document.

4.23.7 “The likelihood of raw pig meat scraps being generated by restaurants, retail outlets, processors and manufacturers is considered to be higher than for households” (page 41) ...they are the very ones who are more likely to use the higher value imported unprocessed cuts. In addition they are the ones who would be the hardest to police with regard to garbage disposal given their numerical number.

**MAF response:** Please refer to Key Statement 2 in section 3 of this document.

4.23.8 While it is accepted that MAF have different resourcing for the different departments, it goes without saying that resourcing is stretched at times and so low priority cases involving garbage feeding of a few pigs could go uninvestigated.

**MAF response:** Please refer to Key Statement 5 in section 3 of this document.
4.23.9 “…no major pork producing country in the Northern Hemisphere considers that PRRS can be transmitted by pork, as evidenced by the lack of regulations for intercommunity trade in pig meat among EU member states” (p50)… Given the vivid reminders of FMD and BSE in Europe, the attitude of authorities and the community are likely to be more diligent in their enforcement of the law.

**MAF response:** Please refer to Key Statement 5 in section 3 of this document. Furthermore, MAF is unaware of any robust data that would indicate that compliance with similar garbage-feeding legislation in EU countries is significantly different from compliance in New Zealand.

4.23.10 “When the disease (PRRS) was recognised in the United States, countries…banned the importation of pork from the United States, or required certification that the swine originated from premises where, within the 30 days prior to the issuance of the health certificate, no swine were introduced from a municipality in which a premises infected with the virus is located” (Stan Done, pers. comm.). It is therefore incorrect to downgrade the international attitude toward the perceived risk of PRRS being spread in traded meat.

**MAF response:** MAF contacted Professor Done regarding this, and he advised that this comment related to a time when PRRS was a little-understood emerging disease in the USA. Professor Done also commented that there was likely to have been political motives behind a number of countries blocking American pork exports at this time.

No country outside Australasia considers it credible or justified to have any risk management measures in place for PRRS in pig meat. Section 4.3.1.3 of the risk analysis states that “the introduction of PRRS virus into pig herds in New Zealand would be unlikely to result in significant indirect costs in terms of domestic or international market reactions”.

The domestic market is unlikely to be affected as there are no zoonotic or food safety issues surrounding PRRS. Internationally, no major pork producing country in the Northern Hemisphere considers that PRRS can be transmitted by pork, as evidenced by the lack of regulations for intracommunity trade in pig meat among EU Member States, regardless of the fact that at least two of them (Sweden and Finland) are free from PRRS. Moreover, exports of pork from New Zealand are limited to a few hundred kilograms annually to the Pacific Islands and Singapore.

---

11 Done S, (S)VIO, VLA Thirsk, UK. E-mail to Stephen Cobb, 7 December 2006
4.24 LUCY CADDICK

4.24.1 ...the authors seem to have little understanding of what goes on in the normal kitchen or the dodgy underworld of backyard pig keepers.

MAF response: Please refer to Key Statement 7 in section 3 of this document.

4.24.2 I am also aware that there are literally thousands of pigs kept in backyards in and around the South Auckland area where I live and work.

MAF response: Section 2.1.2 of the risk analysis acknowledges this where it states “the backyard pig herds in Auckland and South Auckland are not included in the above figures. There are thought to be a large number of pigs in that region, particularly as a source of pig meat supply to the Polynesian community. It is estimated that up to 70,000 pigs per year may be slaughtered in this area, comprising approximately 10 percent of the national annual kill.”

4.24.3 To suggest that scraps will not be generated from high value cuts such as steaks and roasts is nonsense, although I accept that the amount of scraps from these cuts are likely to be less than from some other parts of the carcass.

MAF response: Please refer to Key Statement 2 in section 3 of this document.

4.24.4 …when I shop I generally buy small ready to eat portions of a variety of meats…one or more of these portions is often not eaten before it passes its “best by” date … in this situation I simply throw the whole portion away…If I had backyard pigs and if I was irresponsible enough to feed these my uncooked household scraps, my pigs may frequently get more than 500g of pork at a time.

MAF response: Please refer to Key Statement 2 in section 3 of this document.

4.24.5 As far as their understanding of backyard pig keepers is concerned, the authors show their ignorance by suggesting that these people don’t breed their pigs and that they are unlikely to spread disease to other farms

MAF response: Section 2.1.2 of the risk analysis acknowledges that the backyard pig population of New Zealand is a relatively little-understood sector and goes on to suggest that it is generally assumed that herds with less than 20 pigs are unlikely to be breeding units. However, section 4.3.1.2 also acknowledges that there may be backyard breeder units comprising tens of sows and also that some spread of PRRS to other backyard herds would be likely, particularly to herds that introduced live animals (including travelling boars) or used semen from the index herd, but possibly also to other herds that shared implements such as vehicles or other equipment. Please also refer to Key Statement 7 in section 3 of this document.
4.24.6 Given that there are so many unsubstantiated assumptions in the report, that many of these tend to suggest the authors know little of the pig industry or the activities they have analysed, and that the recommendations made in the report are inconsistent with respect to much of the material presented in the report, I am left to ask “how objective have the authors been and if they have some predetermined agenda?”…I cannot help but question if MAF has a problem with the pig industry, or if it is simply prepared to sacrifice the industry for some other motive that I don’t understand.

MAF response: As indicated in Key Statement 11, as a signatory of the SPS agreement, sanitary or phytosanitary measures applied to imported commodities can only be based on scientific principles and not maintained without sufficient scientific evidence, furthermore these measures must not be more trade-restrictive than required to achieve our appropriate level of sanitary or phytosanitary protection.

Under Section 22 (5) of the Biosecurity Act (1993), recommendations from the chief technical officer to the Director-General relating to the issue of an import health standard must have regard to:

a) the likelihood that goods of the kind or description to be specified in the import health standard may bring organisms into New Zealand;

b) the nature and possible effect on people, the New Zealand environment, and the New Zealand economy of any organisms that goods of the kind or description specified in the import health standard may bring into New Zealand;

c) New Zealand’s international obligations;

d) such other matters as the chief technical officer considers relevant to the purpose of this Part.

4.24.7 …if PRRS gets into NZ…it will have a devastating impact on both breeding and grower herd performance

MAF response: Please refer to Key Statement 8 in section 3 of this document.
4.25 COLIN & KAREN BATTERSBY

4.25.1 We support the matters raised by the New Zealand Pork Industry Board

*MAF response:* Noted.

4.25.2 MAF seems to rely on post border measures to control it (PRRS-infected meat) but there appears to be no consideration of how waste will be generated via food outlets, retail outlets and, indeed, consumers.

*MAF response:* Please refer to *Key Statement 2* in section 3 of this document.

4.25.3 There is also no definition of what is to occur when the product has passed its “use by date”. There will be wastage and therefore danger of infection. This wastage needs to be properly defined.

*MAF response:* Please refer to *Key Statement 2* in section 3 of this document.

4.25.4 There is no definition of “consumer ready – high value cuts”

*MAF response:* Please refer to *Key Statement 3* in section 3 of this document.

4.25.5 Why should MAF come to the conclusion that such imports (consumer ready – high value cuts) are necessary?

*MAF response:* Please refer to *Key Statement 1* in section 3 of this document and to our international obligations as outlined in *Key Statement 11*.

4.25.6 If MAF have approved a pork industry quality benchmark developed by NZPIB requiring very high standards, why is MAF about to punish those who produce very high quality cuts?

*MAF response:* MAF is not seeking to punish producers of high quality pork cuts. As signatories of the SPS agreement we are obliged to revise any current risk management measures which cannot be scientifically justified. As stated in section 2.1 of the risk analysis, the sanitary measures applied to imported pork in September 2001 were a provisional measure and a risk analysis was required to finalise MAF’s position on this issue. This risk analysis has concluded that there is a non-negligible risk of PRRS in imported pig meat and revised sanitary measures have been recommended to ensure the appropriate level of protection against this risk. Please also refer to *Key Statement 11* in section 3 of this document.
4.26  GD & H HARVIE

4.26.1  In Hawera a town of 8000 pop. None of the food waste goes to commercial
Piggeries. Most is collected and fed by Backyard operators who have no facilities
for cooking.

*MAF response:* Please refer to *Key Statements 2 and 5* in section 3 of this document.

4.26.2  We consider that if this was the same risk of the chance of Foot and Mouth
getting into New Zealand a review such as this would not even be contemplated.

*MAF response:* Please see *Key Statement 9* in section 3 of this document.
4.27 NATALIE GERBER

4.27.1 Comprehensive, detailed and transparent procedures must be in place prior to any consignments of potentially infected (i.e. from a country not free from PRRS) imported pig meat being treated on New Zealand shores.

MAF response: Any transitional facility which wishes to process imported pig meat undergoes a preliminary inspection by a MAF Biosecurity Officer to assess compliance with the operational standard and the appropriate import health standard prior to approval by the Biosecurity New Zealand Operational Standards Group. Transitional facilities which process animal products such as pork must comply with MAF’s 154.02.18 operational standard. See: www.biosecurity.govt.nz/files//border/transitional-facilities/animals/154-02-18.pdf

4.27.2 The NZFMA is concerned that the two alternative options for risk management detailed in the draft IRA, potentially allow for the release of PRRS infected meat into New Zealand and the subsequent infection of both the non-commercial and the commercial pig herd. The two alternative options of concern to the NZFMA are:
- “in the form of consumer-ready, high value cuts”;
- “further processed on arrival, in an officially approved facility, into consumer-ready high value cuts”.

MAF response: Please refer to Key Statements 1 and 3 in section 3 of this document.

4.27.3 Whilst the NZFMA supports the current Biosecurity (Meat and Food Waste for Pigs) Regulations 2005 and believes that the implementation of these regulations are justified, the NZFMA would question whether…the current MAF budget would allow for the enforcement of the current Biosecurity (Meat and Food Waste for Pigs) Regulations 2005, particularly as the majority of the 7132 herd identified by AgriBase are not commercial producers.

MAF response: Please refer to Key Statement 5 in section 3 of this document.

4.27.4 …the NZFMA does not believe that it is realistic to assume that because an activity is prohibited it does not occur, especially when there are no apparent measures in place to police this.

MAF response: Please refer to Key Statement 5 in section 3 of this document.

4.27.5 Much of the research conducted on PRRS transmissions had been conducted in Canada and the United States…As the New Zealand pig herd has a unique Biosecurity status, the standard biosecurity measures in place on the majority of farms are likely to be considerably less than the strict biosecurity measures in place on farms such as Canada and the USA …It is therefore essential that Biosecurity New Zealand define what they consider to be standard biosecurity
procedures necessary to prevent commercial herds becoming infected with PRRS and to compare these to current practices in place in New Zealand.

**MAF response:** Please refer to Key Statement 6 in section 3 of this document.

4.27.6 “although Biosecurity measures can substantially reduce the risk of introduction…breakdowns are common…”. This statement clearly indicates that biosecurity measures on-farm are not fail-safe.

**MAF response:** Please refer to Key Statements 6 and 7 in section 3 of this document.

4.27.7 ...the increasing number of outdoor producers must be taken into account when considering the potential to implement high levels of biosecurity on farm… the NZFMA believes that given the unique health status of New Zealand’s pig herd, unless specific evidence to the contrary is available the potential risk of spread to outdoor commercial herds and subsequently to commercial pig population as a whole cannot be discounted.

**MAF response:** Please refer to Key Statements 6 and 10 in section 3 of this document.

4.27.8 …no description of consumer ready cuts is provided and it is unclear what Biosecurity New Zealand would accept as consumer ready.

**MAF response:** Please refer to Key Statement 3 in section 3 of this document.

4.27.9 Biosecurity New Zealand does not appear to have given any consideration to the potential disposal of consumer ready cuts that are either past their use by date, or disposed of by the consumer for whatever reason.

**MAF response:** Please refer to Key Statement 2 in section 3 of this document.

4.27.10 Biosecurity New Zealand states … “it is improbable that the volume of scraps generated from a single household at anyone time will approach the relatively large quantities (500-900g) that were used in feeding trials”. However, no consideration is given in this section to restaurants, retail outlets, processors and manufacturers, which Biosecurity New Zealand consider…to have a higher likelihood of generating raw pig meat scraps.

**MAF response:** Please refer to Key Statement 2 in section 3 of this document.

4.27.11 neither of these studies (Van der Linden et al (2003) and Magar and Larochelle (2004)) demonstrated that 500g of infective pig meat is the minimum volume required for infection to occur.

**MAF response:** Please refer to Key Statement 4 in section 3 of this document.
4.27.12  …it must be noted that producers in the importing country should not be prejudiced as a result of being required to meet higher standards of biosecurity than are currently in place simply to ensure the continued survival of their businesses as well as the health and welfare of their herds.

*MAF response:* Please refer to *Key Statement 6* in section 3 of this document.

4.27.13  The NZFMA strongly believes that the maintenance of New Zealand’s unique biosecurity status and exclusion of exotic disease can only occur if Biosecurity New Zealand maintains its current stance of ensuring that risks associated with the importation of animal and plant products are addressed off-shore.

*MAF response:* Please refer to *Key Statement 1* in section 3 of this document.
4.28 RR FOX

4.28.1 The food waste regulations have only very minimal policing and at this point in time are very limited in their effectiveness for biosecurity.

*MAF response:* Please refer to Key Statement 5 in section 3 of this document.

4.28.2 The current measure, that is, that all meat from countries where PRRS is endemic is treated by cooking or curing is the absolute minimum standard required for the maintenance of the health and welfare of our animals.

*MAF response:* Please refer to Key Statement 1 in section 3 of this document.

4.28.3 Treatment of meat on arrival in the country is the only practical point to prevent another incursion.

*MAF response:* Please refer to Key Statement 1 in section 3 of this document.
4.29  COLIN KAY

4.29.1 I would strongly agree with your statement that “if PRRS virus was introduced into New Zealand, the consequences would be significant on affected farms, particularly in breeding units.”

**MAF response:** Please refer to *Key Statement 8* in section 3 of this document.

4.29.2 New Zealand is entitled to set measures which protect it from exotic diseases infecting its animal populations, and the consequent impact on its citizens.

**MAF response:** Please refer to *Key Statements 1 and 11* in section 3 of this document. Article 2.2 of the SPS agreement states that “Members shall ensure that any sanitary or phytosanitary measure is applied only to the extent necessary to protect human, animal or plant life or health, is based on scientific principles and is not maintained without sufficient scientific evidence…”

Article 5.6 of the SPS agreement also states that “…when establishing or maintaining sanitary or phytosanitary measures to achieve the appropriate level of sanitary or phytosanitary protection, Members shall ensure that such measures are not more trade-restrictive than required to achieve their appropriate level of sanitary or phytosanitary protection, taking into account technical and economic feasibility.”

The sanitary measures have been recommended in the risk analysis because they provide a level of protection against an incursion of PRRS that is considered to be appropriate without being overly trade-restrictive.

4.29.3 I have been closely involved in reports from pork producers of suspected non-compliance with the Biosecurity (Meat and Food Waste) Regulations. Our experience is that there has been very little attention to ensuring compliance. Until NZPIB became involved there was no attention at all.

**MAF response:** Please refer to *Key Statement 5* in section 3 of this document.

4.29.4 …some pork from high value cuts will be sold as lower value product or discarded as waste, and this can occur at the processing plant, butcher shop, restaurant or in the home…which has the potential to generate considerable quantities of PRRS infected meat. The risk of this pig meat being fed as garbage feed to pigs is no different to low value product.

**MAF response:** Please refer to *Key Statement 2* in section 3 of this document.

4.29.5 New Zealand is entitled to set sanitary measures to manage the risk of the introduction of unwanted diseases such as PRRS. The transition stations involves a relatively simple process for treating pig meat from PRRS infected countries and based on the volumes of pig meat imported from these countries it has not hindered the flow of imports.
**MAF response:** Please refer to the response to 4.29.2 above.
The structure of this submission from the NZPIB included a number of summaries including both “executive summaries” and “key points”. Therefore, many individual issues were repeated several times in the submission. These points have not been addressed each time they appeared although all points raised in the submission have been addressed below.

A number of points raised in this submission indicated disagreement with aspects of the interpretation of scientific data used in this risk analysis. It must be noted that in order to ensure transparency and openness, MAF sought the opinions of a number of internationally recognised experts in this field on the technical issues that were highlighted in this submission. The contributions of these experts are included as appendix 2 of this document. This extra round of external technical review is not part of the standard risk analysis process, and it was carried out in this case to ensure that the technical issues raised in this submission were considered as thoroughly as possible.

4.30.1 NZPIB emphasises that it is fully supportive of the application of carefully evaluated science, considered within the context of the New Zealand environment, as a basis for management of biosecurity risks, including the setting of Import Health Standards.

MAF response: Noted.

4.30.2 We also are concerned in regard to the potential precedent set by this IRA for the setting of sanitary measures generally

*MAF response:* Each risk analysis by Biosecurity New Zealand must be carried out in accordance with all available relevant scientific information. The sanitary measures recommended in the risk analysis are suggested to specifically manage the risk associated with PRRS virus in imported pig meat.

Under section 22 (5) of the Biosecurity Act 1993, when making a recommendation to the Director-General (including risk management measures of an import health standard), the chief technical officer must have regard to the following matters:

a) the likelihood that goods of the kind or description to be specified in the import health standard may bring organisms into New Zealand;

b) the nature and possible effect on people, the New Zealand environment, and the New Zealand economy of any organisms that goods of the kind or description specified in the import health standard may bring into New Zealand;

c) New Zealand’s international obligations;

d) Such other matters as the chief technical officer considers relevant to the purpose of this Part.

It should be noted that the risk analysis recommends sanitary measures relating to the commodity defined within that risk analysis, in consideration of parts (a), (b) and (c) of section 22(5) of the Biosecurity Act 1993. Following part (d) of section 22(5) above, the setting of the sanitary measures in an import health standard takes into account these recommendations together with other matters that the CTO considers relevant to the purpose of Part 3 of the Act i.e. “… the effective management of risks associated with the importation of …risk goods.”
4.30.3 …the New Zealand pork industry has a high health status and this provides significant productivity benefits.

*MAF response:* Noted.

4.30.4 NZPIB has strongly supported compliance (with the Biosecurity (Meat and Food Waste for Pigs) Regulations) and encouraged pork producers to report suspected cases of non-compliance…The extent of compliance is unknown…NZPIB is very concerned about this situation as this pathway provides a feasible vector for incursion of diseases – not only PRRS but also foot and mouth disease (FMD) and other major diseases.

*MAF response:* Please refer to *Key Statement 5* in section 3 of this document.

4.30.5 The IRA does not recognise the limitations of these regulations (the Biosecurity (Meat and Food Waste for Pigs) Regulations) in controlling the exposure of the New Zealand pig herd to sources of exotic infection via waste feeding. Critical limitations are very limited attention to education to date and BNZ’s lack of resources for compliance activities.

*MAF response:* Please refer to *Key Statement 5* in section 3 of this document. Please also see the response to 4.7.1 above.

4.30.6 The New Zealand pork producing industry views this surveillance (a proposal made in conjunction with Dr Eric Neumann of Massey University’s EpiCentre) as complementary to maintaining very strong border controls to control the risk of PRRS incursion in the New Zealand pig herd. This commitment to surveillance, plus the thoroughness of this submission are clear indicators of the industry’s concern to protect itself from PRRS.

*MAF response:* *Key Statement 14* acknowledges that MAF is developing a joint PRRS surveillance programme with NZPIB.

4.30.7 There is no definition for the terms used to describe the risk including “low” and “non-negligible”; and the term “consumer-ready high value cuts” in relation to the recommended sanitary measures.

*MAF response:* Please refer to *Key Statement 3* in section 3 of this document. Also please see our responses to 4.30.11 and 4.30.79 below.
4.30.8 The statement that “there is a low likelihood that chilled or frozen pig meat from a country with endemic PRRS will harbour the virus when imported into New Zealand” does not reflect the full text of the report nor the body of scientific evidence from peer-reviewed research.

**MAF response:** The release assessment concludes (section 4.1.4) that the likelihood of infectious PRRS virus being present in meat at the time of slaughter is less than 2 percent. MAF believes that it is reasonable to describe a likelihood of less than 2 percent as “low”.

4.30.9 The IRA presumes that the Biosecurity (Meat and Food Waste) Regulations 2005 manage the risk of exposure...Knowledge of, let alone compliance with, these regulations among all these relevant target groups is unknown...the extent to which these regulations manage the risk of exposure must be acknowledged as a critical ‘unknown’.

**MAF response:** Please refer to Key Statement 5 in section 3 of this document.

4.30.10 The statement that likelihood of spread of PRRS virus from an infected farm to other farms would be low as long as standard biosecurity practices were observed is inconsistent with international experience of spread of PRRS infection, and does not recognise the complexity of interactions within the New Zealand pig herd, including between the commercial through to ‘backyard’ sector of the industry.

**MAF response:** Please refer to Key Statement 7 in section 3 of this document.

4.30.11 Non-negligible’ is undefined and its use substantially downplays the true size of the risk.

**MAF Response:** As described in section 2.3, the risk analysis was written using the framework described in Import Risk Analysis Animals and Animal Products (Murray 2002). The Concise Oxford Dictionary definition of “negligible” is “not worth considering; insignificant”. MAF therefore believes that the term “non-negligible” indicates a risk that is not-insignificant and worth considering and that this terminology does not downplay the size of the risk under consideration.

4.30.12 The absolute volume of imports from PRRS infected countries, the likely increase in such volumes, and also the likely volume provided in chilled form should there be a relaxation in treatment requirements to inactivate PRRSv in pig meat, are highly relevant factors in determining the risk of PRRS incursion.

**MAF response:** It is not possible to accurately predict future market trends following any change in the treatment requirements for imported pig meat. However, as described in Section 4.2.3, an evaluation of historical imports of pig meat during the period 1998 to mid-2001 (when pig meat was imported into New Zealand from PRRS-infected countries with no requirements for cooking or restrictions on garbage feeding)
indicated that about 30,000 tonnes of pig meat was imported from PRRS-infected countries with no introduction of infection into New Zealand pigs.

4.30.13 …we note a correction. In section 2.1.2 (page 6), the first sentence below Table 5 states that “Although groups of pigs numbering less than 20 animals are not considered by the New Zealand Pork Industry Board to be ‘herds’, such units comprise more than 95 percent of the total pig population of New Zealand.” This should read …more than 95 percent of the total pig herds of New Zealand.

*MAF response:* MAF accepts this correction and agrees that more than 95 percent of the pig herds in New Zealand have populations of less than 20 animals.

4.30.14 In fact the true number of ‘herds’ which have pigs over the course of a calendar year will be considerably higher again because the number of people owning pigs on any given date is likely to be a very fluctuating number.

*MAF response:* This is acknowledged in the risk analysis. Section 2.1.2 of the risk analysis states that “This relatively little-understood sector of the pig industry (i.e. small herds of less than 20 animals) is thought to be characterised by short term fluctuations both in the number of herds and the number of animals”.

4.30.15 There is not a single category of non-breeding pig raisers among the 7,000+ para-commercial and backyard pig keepers, but rather multiple layers of interacting networks of small and medium scale pig owners who trade extensively with each other and with the lower end of the commercial pig industry.

*MAF response:* The risk analysis acknowledges that there is likely to be a degree of interaction between backyard herds. Please refer to *Key Statement 7* in section 3 of this document.

4.30.16 Many smaller herds are known to breed their own pigs, a practice which could involve contact with other pig herds. If these herds are not breeding units then they will be sourcing pigs from another herd. In both cases, pig movement and/or contact between properties is highly likely.

*MAF response:* Please refer to the response to 4.30.15 above.

4.30.17 The IRA concludes its Hazard Identification section by recognising that PRRS virus is a potential hazard in pig meat. NZPIB fully agrees.

*MAF response:* Noted.
4.30.18 The IRA does not refer to the EFSA (European Food Safety Authority) Scientific Opinion on PRRS transmission in fresh meat (EFSA-Q-2004-100) which was published a year before this IRA, covers many of the same issues in great depth, but interprets the outcome characterised by many ‘unknowns’ in a different way.

**MAF response:** The working group that compiled the EFSA report consisted of ten individuals. It should be noted that two of these (Dr. Lis Alban and Prof. Jeff Zimmerman) provided external scientific review of the entire risk analysis whilst a third member of this group (Prof. Michael Murtaugh) reviewed the release assessment component of the risk analysis. The 2001 draft of this MAF import risk analysis (Murray 2001) is included as a reference in the EFSA report and cited three times in the body of the report (on pages 43, 46 and 50). MAF considers that the import risk analysis was subject to a similar level of scientific scrutiny as the EFSA report cited.

The EFSA report is a review of much the same information as was considered by MAF and the conclusions of this report are not significantly different from the MAF risk analysis. The risk estimation of the EFSA report did not come to a conclusion as to the level of risk in meat and did not contain a section on risk management.

Of particular note, the EFSA report states that their modelling indicated a prevalence of viraemia at slaughter of 1.9 percent. Three different observational studies found that the prevalence of PRRSv in pig meat at slaughter varies from 0.0 percent to 1.2 percent (1.9 percent when evaluated by use of PCR). Taking into account that the viral load in meat is two orders of magnitude lower than in blood, EFSA suggested that this may easily explain the differences between results obtained on serum and muscle. The MAF risk analysis concluded (section 4.1.4ii) that there is a low likelihood (0.0118 or about 1.2 percent) of infectious PRRS virus being present in meat at the time of slaughter – this is consistent with the EFSA conclusion.

Furthermore, the EFSA report was published on 12th August 2005, by which time the MAF risk analysis on PRRSv in pig meat was almost complete. Nevertheless, MAF noted the conclusions of the EFSA report, and they were considered to be consistent with the MAF risk analysis.

4.30.19 Of key importance is a clear understanding of PRRSv persistence in blood…A partial list of studies that describe the extent of virus persistence that have particular relevance to this IRA are listed below. While this IRA does cite information from some of these studies, data generated from the use of PCR techniques has been disregarded in the IRA, without justification …Collectively, these studies suggest that the vast majority of pigs remain infected for at least 60 dpi with multiple studies demonstrating PRRSv in pigs well beyond the maximum 157 days stated in the IRA.

**MAF response:** This submission included a table (see the full submission in appendix 1) containing details of a number of papers in support of the claim that the risk analysis had under-estimated the period of viral persistence in infected individuals.
The papers by Wang (1999)\(^\text{12}\) and Allende et al (2000)\(^\text{13}\) will not be examined again here as these were considered in the risk analysis.

Section 3.4.3 of the risk analysis states, “the virus has been shown by virus isolation techniques to **persist for 35-40 days in young pigs** … and for **up to 16 weeks by PCR** in piglets that are viraemic at birth as a result of in-utero infection... 
**Persistence of PRRS virus in lymphoid tissues has been demonstrated for up to 135 days in gilts.**” MAF considers that inclusion of this data in this paragraph indicates that PCR data was not disregarded in the risk analysis.

The paper cited in this submission by Benfield et al (2000)\(^\text{14}\) examined persistently infected pigs following in utero exposure to PRRSv. No PRRSv was detected in serum by virus isolation beyond 48 days after farrowing and no PRRSv was detected in non-lymphoid tissue by virus isolation following euthanasia at 63 days. Virus was detected in lymphoid tissue at 132 days (using PCR) and infected pigs were shown to be able to transmit infection to sentinel pigs at 112 days. As stated above, the risk analysis states that pigs born following in utero infection have been shown to be viraemic (by PCR) until 16 weeks (112 days) and lymphoid tissue has been demonstrated to be positive for PRRSv for up to 135 days (by PCR). The findings of this paper are therefore consistent with section 3.4.3 of the risk analysis.

The paper cited in this submission by Rowland et al (2003)\(^\text{15}\) examined the presence of virus in pigs infected in utero. This study detected PRRSv in serum until 48 days post-farrowing by virus isolation and until 78 days post-farrowing by PCR. Sporadic PCR positive results were seen in serum samples until day 228 post-farrowing although previous and subsequent samples from the same animal were negative by PCR. It is suggested in this paper that these sporadic positive results are likely to be due to the presence of a small amount of viral RNA, but at or near the lower detection limits of the PCR assay. This study also demonstrated PCR positive lymphoid tissue in pigs until 132 days post-farrowing and transmission of PRRSv to sentinel pigs from infected pigs until 112 days post-farrowing. MAF therefore considers that the results of this paper are consistent with section 3.4.3 of the risk analysis.

The paper cited by Wills et al (2003)\(^\text{16}\) detected no virus in the serum of infected young pigs after 28 days post-inoculation (virus isolation) or after 56 days post-inoculation (PCR). Lymphoid tissue was positive to PRRSv by PCR until 84 days post-inoculation (20/28 animals) and sporadic PCR positive results were obtained from PCR tests on lymphoid tissues until 251 days post-inoculation. In this paper, the authors state that “It should be noted that positive RT-PCR results do not necessarily indicate the presence of viable virus, only the presence of viral RNA”. Given the


sporadic results reported from lymphoid tissue beyond 84 days post-inoculation, together with the comments from the authors of this paper (and the paper cited in the preceding paragraph), MAF considers that the results of this paper are consistent with section 3.4.3 of the risk analysis.

The citation by Zimmerman et al (2000)\(^ {17} \) is a non-refereed abstract from the third International Symposium on PRRS and Aujeszky's Disease, which includes comments that they were able to isolate virus from chronically infected carrier animals until 77 days post-inoculation. This abstract did not specify the method of virus detection or the exposure model used to produce infected pigs. MAF contacted the author for clarification regarding these issues and Professor Zimmerman commented\(^ {18} \) that it was extremely rare for viraemia to last more than 28 days and is usually cleared by 21 days. The comments included in this abstract were based upon the findings of the refereed publication by Horter et al (2002) which are themselves discussed below. Professor Zimmerman went on to comment that there is good reason to believe that some currently available PCRs for the detection of PRRSv are not detecting infectious virus and that Dr. Michael Murtaugh had speculated that these assays may be detecting viral fragments stored in long-lived cells (macrophages), which would explain PCR positive results in the absence of any tangible evidence of infectious virus. Further comments from Professor Zimmerman concerning the use of PCR tests to detect PRRS virus can be found in appendix 2 of this document.

The paper cited by Horter et al (2002)\(^ {19} \) detected no PRRSv in the serum of infected pigs beyond 35 days post-inoculation (virus isolation) or after 91 days post-inoculation (PCR). PRRSv was detected in peripheral blood leucocytes by PCR until 105 days post-inoculation. The authors of this paper suggested that PCR positive results in individuals giving a negative result by virus isolation indicated the detection of inactivated virus in previously infected animals. MAF therefore considers that the results of this paper are consistent with section 3.4.3 of the risk analysis.

A recent study of the role of prairie dogs in transmission of PRRS in the United States\(^ {20} \) concluded that “tissue samples, in particular, are subject to high backgrounds and spurious false-positive results, and that RT-PCR should not be relied on exclusively to provide evidence of PRRS infection, especially when additional test methods, such as serology, are available, or when the PCR results are near the limit of assay sensitivity.” MAF believes that it is appropriate to note comments such as this, in peer-reviewed publications, when considering PCR-based results.

The only section of the published risk assessment where assumptions about viral persistence have a critical effect is the quantitative release assessment model which was written in 2001. This estimated the likelihood of release to be 0.3 percent. However, as discussed in section 4.2.1.5 of the risk analysis and in Key Statement 12 in section 3 of this document, by the time the full risk analysis had been written in 2005, more published data was available. Based on these later transmission studies,


\(^{18}\) Zimmerman J, Iowa State University. E-mail to Stephen Cobb, 17 December 2006

\(^{19}\) Horter DC, Pogranichniy RM, Chang CC, Evans RB, Yoon KJ and Zimmerman JJ (2002) Characterisation of the carrier state in porcine reproductive and respiratory syndrome virus infection. *Veterinary Microbiology* 86, pp213-28

the risk analysis concluded that 1.2 percent of pigs at slaughter could be reasonably expected to contain infectious virus in their meat.

For further discussion concerning the interpretation of PCR data generated by the studies discussed above, please see appendix 2 of this document.

In conclusion, MAF does not consider that the additional evidence presented in the papers cited by this submission have any significant impact on the conclusions stated in section 3.4.3 of the risk analysis.

4.30.20 …there is no assessment about the extent to which New Zealand herds are in the stable state which would allow infection to become truly endemic…Commercial pig farms in New Zealand average an annual replacement rate of breeding animals greater than 40 percent…A very high proportion of new breeding stock now comes from very high health status breeding herds, and these pigs are added to commercial herds at an age where they are immunologically naïve.…Therefore the IRA comment about less dramatic impacts of PRRS is not applicable in New Zealand.

**MAF response:** Section 3.4.4 of the risk analysis that this comment refers to describes the clinical signs that have been reported in herds following PRRS infection, this section is not intended to predict the consequences of a PRRS incursion into a New Zealand herd. However, it is reasonable to expect that infection of a commercial unit overseas would result in similar consequences as an infection of a New Zealand commercial herd with broadly similar management practices.

The consequence assessment of the risk analysis (section 4.3) examines the consequences on the people, the environment and the economy of New Zealand of entry, establishment or spread of PRRS, as stated in the first paragraph of this section. The risk estimation (section 4.4), which draws upon the conclusions of the consequence assessment, clearly states that “the consequences of PRRS infection would be significant in the breeding herds that became infected”.

4.30.21 PRRSv is a typical highly mutable RNA virus and exists as multiple quasispecies within herds and within individually infected animals…This leaves the potential for entire breeding populations that could be considered immunologically naïve to particular strains of PRRS under the right circumstances, and new strains are regularly emerging which show differences in epidemiology.

**MAF response:** The risk analysis states in section 3.4.2 that “Arteriviruses have a high mutation rate due to their mechanism of RNA replication. Thus, PRRS virus is genetically highly unstable, and isolates vary considerably in both nucleic acid sequence and pathogenicity”. Furthermore, the entire New Zealand pig population is currently assumed to be serologically naïve to *any* strain of PRRSv.
4.30.22 The single reference used to support the claim that only 20 percent of seropositive herds show clinical signs and that the impact of disease “in many herds even the epidemic period does not have dramatic consequences” ...does not accurately represent the international picture...despite PRRS recognition as an important disease worldwide since emergence in the late 1980s, it still commands significant attention from veterinarians and pig scientists.

**MAF response:** The risk analysis actually states that “in one study, only 20 percent of seropositive herds actually experienced obvious clinical signs”. As stated in the response to 4.30.20, the consequence assessment of the risk analysis (section 4.3) examines the consequences on the people, the environment and the economy of New Zealand of entry, establishment or spread of PRRS, as stated in the first paragraph of this section. The risk estimation (section 4.4), which draws upon the conclusions of the consequence assessment, clearly states that “the consequences of PRRS infection would be significant in the breeding herds that became infected”.

MAF acknowledges that PRRS still commands significant attention from veterinarians and pig scientists as this risk analysis was completed following the results of studies published in 2003 and 2004. Furthermore, of the 158 references cited in the risk analysis, over 40 percent of these were published since 2000.

4.30.23 Prolonged effects on overall herd productivity including effects on reproduction, growth, and mortality on these herds has resulted in an annual cost to the US industry of $560 million USD, or about $5.60 per pig sold (Neumann et al 2005) ...We cannot assume that a PRRS incursion into New Zealand will be a strain of lower virulence. The New Zealand pig industry should expect any incursion of PRRS virus to result in significant clinical disease in both breeding and growing pig herds.

**MAF response:** The Neumann et al paper cited in this submission examined the economic effects of PRRSv in a sample of only ten farms with a range of production systems. Furthermore, this study only examined epidemically-infected herds and excluded those which were in a stable endemic phase. This paper went on to use mean values which disguised considerable variation in individual farm performance and extrapolated from these figures to estimate the overall cost to the US industry quoted. MAF has reservations with extrapolating the findings from a small and highly varied sample such as this to estimate the overall economic impact on a national population of swine which annually produces approximately 12 million litters. MAF also notes that the above study identified an unknown number of farms infected with PRRSv where ‘the detection of PRRS virus was judged by the herd veterinarian to be incidental or of negligible consequence to the productivity of the operation’.

Dr. Jim Kliebenstein, one of the economists responsible for the above economic study, has subsequently commented to MAF, “We do not intend that the projection will be utilised as a, or even considered as a, precise projection. The important point is that

---


22 Kliebenstein J, E-mail to Howard Pharo, 3 March 2007
even if the “precise” projection was 30 percent higher or 30 percent lower PRRS is an economically important pig health problem”.

As indicated in Key Statement 8, section 4.3.1.3 of the published risk analysis does acknowledge that infection of individual breeding herds can result in significant initial health problems (late-term abortions, stillbirths, weak pigs, lowered farrowing rates, mortality amongst weaned pigs and impaired sow fertility) leading to chronic production losses. The risk estimation (section 4.4) goes on to conclude that, if PRRS did become established in a sector of the pig industry through non-compliance with the garbage feeding regulations, the consequences of PRRS infection would be significant in the breeding herds that became infected.

The risk analysis does not assume that an incursion of PRRSv into New Zealand will be associated with a low virulence strain of this virus. On the contrary, section 4.3.1.3 of the risk analysis acknowledges that the clinical signs of PRRS infection are extremely variable and would depend on, amongst other things, the strain of the virus.

4.30.24 In the case of PRRS, as in FMD, it is likely that there is a very strong influence of strain variation in determining whether airborne spread occurs, and experimental models are very questionable as a basis for drawing conclusions on the issue.

**MAF response:** The available evidence regarding the issue of airborne spread of PRRSv has been evaluated in section 3.4.5.5 of the risk analysis. The only credible study that has demonstrated airborne spread (under highly artificial experimental conditions) concluded that, in the field, the transmission of PRRSv by aerosols is probably a rare event, if it occurs at all. Please also see Key Statement 10 in section 3 of this document and discussions included in appendix 2.

4.30.25 …transmission has undoubtedly occurred by means which circumvent on-farm biosecurity.

**MAF response:** The risk analysis does acknowledge that breakdowns in biosecurity occur and that transmission routes between herds can frequently not be traced in the field. Section 3.4.5 of the risk analysis describes a French study where 21 percent of new herd infections were due to “fomites” and a further 3 percent due to “unidentified other sources”. Please also see Key Statement 10 in section 3 of this document.

4.30.26 Among the 35 PRRS-negative herds that experienced acute PRRS outbreaks after a prior successful elimination programme, 83 percent were thought to be a result of lateral introductions of the virus with only 17 percent attributed to semen or infected animals (Torremorell et al 2004). These experiences come from a major genetic supply system with biosecurity procedures in place that at the time were state-of-the-art.

**MAF response:** The reference cited here refers to a study which examined the epidemiology of outbreaks of PRRSv in negative systems “where the source of

---

replacement animals and semen is negative”. In other words, the farms studied were those where replacement animals and semen had been already ruled out as the source of infection. The major route of spread of PRRS between farms is widely agreed to be the movement of pigs, with the second most important route of spread being via infected semen.

There is clearly still some debate concerning the possible mechanisms of indirect spread of PRRSv between herds and this is reflected in discussions in appendix 2 of this document. Whilst field observations have sometimes been interpreted to support mechanisms such as aerosol spread, the results of published, peer-reviewed experimental studies question whether such methods are likely to be significant. Please also refer to Key Statement 10 in section 3 of this document.

4.30.27 Since it has proved very difficult to keep infection out of the most biosecure segment of the US pig industry, the claim in the IRA that infection would not spread within the industry observing standard biosecurity measures is unrealistic.

MAF response: Please refer to Key Statements 7 and 10 in section 3 of this document.

4.30.28 The discussion of control and eradication … provides a very optimistic view of the feasibility of effective control and eradication…The global experience which demonstrates the difficulty in achieving control and eradication of PRRS needs to be given adequate weight in assessing the likely impact of an incursion of PRRS into New Zealand (Dee 2002).

MAF response: Section 3.4.6 of the risk analysis discusses the problems that have been seen in association with the use of modified live PRRSv vaccines and the factors which might explain these problems.

Methods of eradication discussed in section 3.4.7 of the risk analysis include “whole herd depopulation and repopulation with virus-free replacement stock, segregated early weaning, test and removal, mass vaccination with unidirectional pig flow, and herd closure”. MAF does not consider these measures as being “optimistic.”

4.30.29 The figures provided within the IRA show that on average there will be 3 Kg of infected meat per tonne of pig meat from PRRS infected countries…Therefore it is certain that if the level of imports from PRRS infected countries is greater than 10 tonnes of untreated meat in any one year, that inactivated PRRS virus will enter New Zealand.

MAF response: MAF assumes that this stakeholder is referring to infectious PRRS virus, not inactivated PRRS virus in this statement. The risk analysis clearly concludes that there is a non-negligible likelihood of release of PRRS virus in imported pig meat. The final risk estimation for PRRS virus in imported pig meat (considering the release, exposure and consequence assessments) is that there is a non-negligible risk for small, non-commercial or marginally commercial breeding herds that are not complying with the garbage feeding regulations and for herds with inadequate biosecurity practices.
4.30.30 The IRA needs to re-evaluate the technique to determine the likelihood that pigs are harbouring PRRSv to place more emphasis on the inevitably infected older pigs.

*MAF response:* The complete risk analysis (rather then the 2001 quantitative release assessment model) used the results of transmission studies by Van der Linden et al, and Magar and Larochelle rather than the earlier virus isolation or PCR studies.

4.30.31 A comprehensive review needs to be done on the currently available literature on PRRSv persistence in tissues (with inclusion of PCR-based results), and the likelihood estimates for pigs harbouring PRRSv at different ages be re-assessed, taking into account all of the published evidence. The persistence of the virus and the age of infection are both greater than the IRA recognises. Correcting the IRA for these factors will demonstrate a greater risk.

*MAF response:* This is addressed in the responses to 4.30.19 and 4.30.30 above, and this issue is also discussed in further detail in appendix 2 of this document.

4.30.32 It is more appropriate to suggest that pigs will be expected to be viraemic for at least 6 to 9 weeks after becoming infected, not necessarily from 6 to 9 weeks of age.

*MAF response:* Please see the response to 4.30.30 above.

4.30.33 Earlier references support the fact that viraemia can be expected to last considerably longer than 4 weeks, in many instances with tissue positivity lasting for many months.

*MAF response:* This is addressed in the responses to 4.30.19 and 4.30.30 above.

4.30.34 …virus can be demonstrated in 1.2 percent of meat of pigs randomly sampled at slaughter…We believe a more accurate number is 1.9 percent as stated in Magar’s publication (19 of 1027 samples positive by PCR).

*MAF response:* Interpretation of PCR results is difficult as highlighted by a number of comments included in the response to 4.30.19 above and as discussed in appendix 2. Nevertheless, the likelihood of meat from slaughtered pigs containing infectious PRRS is between 1 percent and 2 percent which, for the purposes of the risk analysis, is considered non-negligible.

4.30.35 …the term “low” is not defined. However, it does carry the inference that the risk is insignificant or not substantive. But a risk of 1.2 percent is significant and substantive. “Low” is therefore not an appropriate term.

*MAF response:* If the risk was considered to be insignificant or not substantive, it would have been described in the risk assessment as negligible. Instead, the risk
analysis has considered a 1.2 percent likelihood as non-negligible. Please see the response to 4.30.79 below regarding the definition of ‘low’.

4.30.36 It will take a very small amount of that volume (of imported pig meat), or an increase in volume, to be imported in a form permitted by the proposed sanitary measures, for it to be certain that PRRSv infected meat will arise. It is therefore incorrect and misleading to state that the likelihood that it will arrive as “non-negligible”.

MAF response: Please see the response to 4.30.11 above.

4.30.37 It is apparent that pigs can be readily infected by consuming meat known to contain PRRSv. In terms of specific cuts, or forms of meat, these studies used muscle from ham cut into 250g pieces, and shoulder cut into 263-450g pieces and found them to be capable of infecting 70 to 100 percent of the pigs that were exposed.

MAF response: As indicated in Key Statement 4 the risk analysis was careful not to estimate the minimum infectious scrap size and recognises the inadequacy of the data in this regard. As stated in section 4.2.2.4 of the risk analysis, “there has been no attempt to explore the effect of size of scraps and infectivity. Indeed, the infectious dose approach explored by Hermann et al (2005) supports the notion that scraps of any size have the potential to infect an animal orally, and that the likelihood of infection occurring is directly related to the amount of meat fed.”

The risk analysis goes on to state, “it is not possible to accurately estimate the likelihood that scraps of a critical size will be generated prior to further processing (cooking) of imported pig meat, so the likelihood of generating infectious scraps prior to cooking must be considered non-negligible” (emphasis added).

4.30.38 While freezing and thawing of meat has an effect on virus concentration in pig meat, the evidence does not support the view that freezing and thawing would reliably eliminate PRRS virus from imported product. In any case, the recommended sanitary measures of the IRA that (undefined) high value consumer-ready cuts could be imported means that it is very likely that the product would be imported in chilled form not frozen form. This means that the freeze-thaw effects are not relevant to the overall decision on the adequacy of risk management measures.

MAF response: The risk analysis does not suggest that freezing meat will eliminate PRRS virus and this is not recommended as a sanitary measure. The release assessment conclusion (section 4.1.4) states that it is likely that significant levels of PRRS virus infectivity will survive the chilling and freezing temperatures for the length of time that pig meat is held at during storage and transport to New Zealand.

Notwithstanding the above, the risk analysis (section 4.2.2.2) does describe studies which show that a freeze/thaw cycle is likely to reduce the titre of virus by 75 percent and that storage of meat for 1 week at 4°C will reduce the infectivity of PRRS virus present in meat by approximately 90 percent.
4.30.39 While the IRA presents a diagram illustrating the biological pathways leading from the disposal of scraps contaminated with infectious PRRS to exposure of pigs via swill feeding (Figure 6, page 38) it does not provide data, quantitatively or qualitatively, to assess the risk of exposure. Even a New Zealand reviewer for the IRA questioned [the likelihood that scraps would be generated during preparation of food for human consumption] purely based on his own behaviour.

**MAF response:** Figure 6 illustrates the biological pathways leading from the disposal of scraps contaminated with infectious PRRS virus to exposure of pigs via swill feeding. The exposure assessment goes on to subsequently discuss the likelihood of scrap generation (section 4.2.2.3), the evaluation of the effect of recent changes to regulation of garbage feeding in New Zealand (section 4.2.4), and the likelihood of exposure to uncooked scraps by feral pigs (section 4.2.5.1), backyard pigs (section 4.2.5.2), and commercial piggeries (section 4.2.5.3). For each of these steps, reliable quantitative data is not available and the risks have been discussed in a qualitative manner.

The internal peer review referred to in the submission was carried out on an early draft of the analysis in March 2006. The comments of the reviewer were noted, and the assessment of the likelihood of raw scraps being generated from chops steaks and roasts (section 4.2.2.3) was changed from *negligible* in the draft to *very low* in the final risk analysis that was released for public consultation in July 2006.

4.30.40 The conclusion in section 4.2.2.4 of the IRA is a key basis...for the proposal to not require heat or pH treatment for high value consumer ready cuts. Yet the conclusion is based entirely on supposition and absence of data.

**MAF response:** Section 4.2.2.4 of the risk analysis is the conclusion to section 4.2.2 “Likelihood of generation of infectious scraps prior to cooking”. The results from a number of papers are considered in section 4.2.2.1 concerning the infectious dose of PRRS by the oral route and section 4.2.2.2 concerning the titre of virus in meat of slaughter age pigs. Section 4.2.2.3 is a reasoned discussion on the likelihood of raw scraps being generated from pig meat during its preparation for human consumption. The conclusion in section 4.2.2.4 is that in view of uncertainties in a number of areas, the likelihood of generating infectious scraps from pig meat prior to cooking must be considered non-negligible. Regarding the recommendation later in the risk analysis that consumer-ready, high value cuts would be associated with a negligible likelihood of generating fresh raw meat scraps prior to cooking, please refer to Key Statements 1, 2 and 3.

4.30.41 The IRA points out that the countries within the EU that have remained free of PRRS have benefited from strict controls over the importation of live pigs and porcine genetic material. While they have imported pig meat from countries where PRRS is endemic they have legislation to impose and enforce a prohibition on feeding any vertebrate protein to farmed animals.

**MAF response:** The Biosecurity (Ruminant Protein) Regulations 1999 prohibit the feeding of ruminant protein (except dairy produce) in any form to ruminant animals in New Zealand. In addition, the Biosecurity (Meat & Food Waste for Pigs) Regulations...
2005 prohibit the feeding of untreated meat or untreated food waste to pigs. MAF is unaware of any robust data that would indicate that compliance with similar legislation in EU countries is significantly different from compliance in New Zealand, particularly for backyard and semi-commercial units.

4.30.42 The IRA notes that New Zealand had no controls over meat from PRRS infected countries during the earlier period 1998 to mid-2001, and significant volumes of pig meat from PRRS infected countries was imported. At that time the level of infectious PRRS was not as high as in these countries as currently, nor are the volumes of imports near the same level as currently.

**MAF response:** From examination of country PRRS status according to the OIE (www.oie.int/hs2/report.asp), since mid-2001 there does not appear to have been any change in the PRRS status of countries which have historically imported significant amounts of pig meat into New Zealand. MAF is unaware of any robust data which would suggest that the level of infectious PRRS in these countries has risen significantly over this period.

As stated in the response to 4.30.12 above, it is not possible to accurately predict future market trends following any change in the treatment requirements for imported pig meat.

4.30.43 …there has been very minimal regulatory attention to compliance with a very low level of reactive follow up to reported suspected cases of non compliance. It is realistic to assume that compliance is likely to be low, at least in some sectors.

**MAF response:** Please refer to Key Statement 5 in section 3 of this document.

4.30.44 If commercial piggeries are compliant we agree the risk is zero. However, while we agree that non-compliance in the commercial sector is probably less likely than the backyard sector, regrettably we are aware that it is not zero.

**MAF response:** MAF recognises that there is likely to be an unknown degree of non-compliance with garbage feeding regulations, and this can be expected to be similar in other countries that have similar bans in place. Please see Key Statement 5 in section 3 of this document.

4.30.45 …the point that meat scraps probably have to be large enough so as to require chewing is based entirely on supposition…no one knows the effect of meat scrap size on virus transmission.

**MAF response:** MAF accepts that the role of chewing in oral transmission of PRRS virus is unproven. However, it is not unreasonable to suggest that if meat were swallowed without chewing, any PRRS virus would be quickly inactivated at the low pH in the stomach.
4.30.46 ...a similar lack of data is available to support any assumptions regarding the nature, composition, or magnitude of waste meat scraps coming from NZ household kitchens.

**MAF response:** Please refer to Key Statement 2 in section 3 of this document.

4.30.47 The experimental evidence proves conclusively that high value, consumer ready cuts when harvested from infected pigs are very likely to have infectious PRRS virus in a concentration high enough to infect other pigs.

**MAF response:** MAF does not disagree with this. However, it is considered that such cuts would be associated with a negligible likelihood of generating raw scraps prior to cooking.

4.30.48 We agree that for piggeries that comply with the regulations, the risk of exposure to infectious PRRSv in meat is essentially zero.

**MAF response:** Noted.

4.30.49 No attempt has been made in the Consequence Assessment of the IRA to assess the economic impact of PRRS infection within the New Zealand pig herd nor the economic and social flow on effect.

**MAF response:** Please refer to Key Statement 8 in section 3 of this document.

4.30.50 Based on a 1990 study the IRA incorrectly states that the major losses are associated with the breeding herd whereas a recent study has shown that the grower herd from nursery to finish accounts for greater than 65 percent of the costs over time associated with PRRSv infection (Neumann et al, JAVMA 2005)\(^{24}\).

**MAF response:** Please refer to Key Statement 8 in section 3 of this document and the response to 4.30.23 above.

As indicated in the response to 4.30.23 above, MAF has reservations regarding the small and highly varied sample of farms the Neumann et al (2005) study examined. Furthermore, given the geographical, management and other differences (such as density of pig populations) between swine production in major swine producing countries and New Zealand, the validity of extrapolating the findings of overseas economic analyses in this way is questionable.

---

4.30.51 It is not correct to state that small herds have fewer clinical signs (section 4.3.1.2 of the IRA). All pigs are equally susceptible to the effects of a particular strain. While it is true that the number of susceptible animals will quickly decline in a small herd, the clinical impact to the owner on a per animal basis remains the same.

_MAF response:_ Section 4.3.1.2 states “in very small herds comprising a few fattener pigs for home consumption there would probably be few clinical signs, whereas in backyard breeder units comprising tens of sows the clinical signs could include reproductive losses in sows, mortality in very young piglets and disease in older pigs”. Clinical signs associated with reproduction would be unlikely to be prominent in fattener herds whereas they would be much more likely to be apparent in a breeder unit.

Published survey data from the United States\(^\text{25}\) indicates that, in breeding females, disease problems due to PRRS were seen in 15.1 percent of small herds surveyed (defined as less than 250 sows and gilts) whereas disease due to PRRS was seen in 58.3 percent of large herds (defined as 500 or more sows and gilts). Similarly, disease due to PRRS was seen in 8.2 percent of suckling pigs from small herds whereas disease due to PRRS was seen in 22.2 percent of suckling pigs in large herds. MAF considers that this USDA data is consistent with the above statement from section 4.3.1.2 of the risk analysis.

4.30.52 …we are very concerned about the potential for PRRS to become established and transmitted before its identification.

_MAF response:_ Please refer to _Key Statement 14_ in section 3 of this document.

4.30.53 Even on well-managed pig farms with an explicit need for good biosecurity, the cause of a large majority of PRRS outbreaks was considered to be a result of “lateral introduction” which included the possibility of airborne spread (Torremorell et al 2004).

_MAF response:_ As indicated in section 3.4.5 of the risk analysis, it is widely accepted that movement of pigs and semen is the major route of spread of PRRSv between herds. Please refer to _Key Statement 10_ in section 3 of this document and the response to 4.30.26 above.

4.30.54 …Morrison et al recently reported a significant negative correlation between the geographic distance between PRRS infected farms and the genetic similarity of PRRS viruses recovered from those farms. This suggests that between-farm spread of the virus may have been responsible for the similarity of isolates and reinforces the notion that PRRSv can be transmitted between farms (through mechanisms other than pigs or semen) (Mondaca-Fernandez et al 2006).

MAF response: MAF was unable to identify the Morrison et al paper cited here although the publication cited by Mondaca-Fernandez et al\(^{26}\) is a short communication which showed, statistically, that the further apart farms were from each other, the lower the genetic similarity of their PRRSv isolates. The results of this short communication are at odds to those published in a paper by Goldberg et al\(^{27}\) who, using comparable statistical methods concluded that the movement of PRRSv onto farms does not generally occur via distance-limited processes such as wind or wildlife vectors, but more typically occurs via the long-distance transport of animals or semen.

Section 3.4.5.5 of the risk analysis states that ‘among the circumstantial evidence used in support of claims for airborne spread was the finding of virtually identical viruses (96-100 percent nucleotide homology of the ORF5 gene) on farms up to 20 miles apart’. However, this section of the risk analysis goes on to discuss more recent investigations which suggest that airborne spread of PRRSv, in field conditions, is highly unlikely. Please refer to Key Statement 10 in section 3 of this document.

4.30.55 The AD (Aujeszky’s Disease) example demonstrated that despite MAF’s starting assumption when AD was first identified in New Zealand in the mid-1970s, that it would not spread substantially or move into the commercial sector, the reality was that it spread throughout the North Island and affected a number of the largest commercial herds of the day. Because MAF had not taken action given its assumption that it would not spread, the New Zealand pork producing industry subsequently funded a successful eradication programme, with technical guidance but no financial contribution from MAF.

MAF response: This issue is beyond the scope of this risk analysis.

4.30.56 The heavy reliance of the IRA on farm biosecurity to protect commercial piggeries from PRRS infection is inappropriate…Farm biosecurity is good practice and strongly encouraged by NZPIB, but it is voluntary not regulated.

MAF response: MAF recognises that NZPIB encourages pork producers to institute on-farm biosecurity procedures as outlined in Key Statement 6 in section 3 of this document.

4.30.57 For the sake of risk assessment, we believe any incursion of PRRS virus should be assumed to result in clinical disease and have the potential to spread within and between farms.

MAF response: The risk analysis has not assumed that an incursion of PRRSv into an index property would not result in clinical disease although the consequences of a herd becoming infected would clearly depend upon the strain of the virus introduced and the nature of the herd. The likelihood of spread from that index property to another property adhering to standard biosecurity measures is considered to be low.


4.30.58 The degree of interaction among para-commercial farms or between para-commercial farms and commercial farms is currently unknown but it can safely be assumed that there is some degree of interaction between the two industries and that if PRRS were to become established in either, it would likely be transmitted to the other.

*MAF response:* Please refer to Key Statement 7 in section 3 of this document.

4.30.59 Even based on the IRA figures this demonstrates that on average there will be 3kg per tonne of infected pig meat from countries where PRRS is endemic. While this figure reflects pre-transportation, significant levels of PRRS infectivity are recognised to survive the likely storage and transportation regimes...Accordingly it is inevitable that PRRSv will be released into New Zealand if treatment to inactivate it is not required.

*MAF response:* MAF acknowledges that there is a non-negligible likelihood of release of PRRS virus in imported pig meat (section 4.4), and the risk assessment has recommended sanitary measures to manage this risk. It is recommended that any imported pig meat from countries with PRRSv, which is not associated with a negligible likelihood of generating raw meat scraps prior to cooking, should be treated by approved cooking or pH change or further processed into consumer-ready high value cuts in an officially approved facility. Please also refer to the “cascade of risk reduction” described in Key Statement 1.

4.30.60 We agree that the likelihood of exposure for farms not complying with the regulations is not known. However for the reasons already covered in our discussion of the Exposure Assessment, the IRA’s conclusion (in the Exposure Assessment Conclusion) that it is ‘very low’ is unrealistically optimistic.

*MAF response:* PRRS virus is inactivated by normal cooking so the only exposure pathway of relevance is the feeding of raw pork. There is a low likelihood that quantities of fresh raw pork generated in kitchen waste will be similar to those used in transmission studies. The form of pig meat likely to be imported into New Zealand and the likely processing it will be submitted to means that this meat is very unlikely to contain infectious PRRS virus. It is illegal to feed raw meat scraps to pigs in New Zealand although the level of compliance with this legislation is unknown. Given these factors, MAF is of the opinion that it is reasonable to state that there is a very low likelihood of exposure in piggeries that do not comply with garbage feeding regulations. Please also refer to the “cascade of risk reduction” described in Key Statement 1.

4.30.61 We agree that if PRRS did become established the consequences for the New Zealand pork producing industry would be serious. However the IRA has overlooked the follow on consequences for rural supply services and communities demonstrated by our analysis.

*MAF response:* Please refer to Key Statement 8 in section 3 of this document.
4.30.62 The statement of purposes of risk management measures is incomplete. Subparagraph 1 should refer to the risk that there is non-compliance with the regulations in the commercial sector. Subparagraph 2 should also state that protection is required for all farms, given the risk of secondary exposure even where standard biosecurity measures are in place.

MAF response: Subparagraph 1, “to protect a sector of the pig industry (most likely small, non-commercial or semi-commercial breeding herds that are not complying with the swill feeding regulations) from a risk that they would not be facing if they were complying with the regulation”, does not exclude the possibility of non-compliance within the commercial sector although MAF believes that it is reasonable to suggest that non-compliance would be more likely in other sectors of the pig industry.

Subparagraph 2 states, “to protect other farms from secondary exposure to PRRS virus through contacts with farms that are not complying with the swill feeding regulations, on the basis that even for farms that do practice standard biosecurity measures, breaches in biosecurity can occur that may result in PRRS virus being introduced from farms that are infected by illegally feeding garbage”. MAF considers that this statement is consistent with that suggested by this submission.

4.30.63 The sanitary measures proposed in sections 5.2.2.2 and 5.2.3 raise several concerns specifically regarding ‘consumer-ready high value’ cuts…No definition is provided for this term…it is not a term that is clearly defined in SPS or WTO documentation and as such creates a significant difficulty in managing what product would qualify for importation and also for release without treatment from transitional facilities.

MAF response: Please refer to Key Statement 3 in section 3 of this document.

4.30.64 The evidence is clear that PRRS has a proclivity for residing in monocytes/macrophage lineage cells, and these cells (and often the associated lymph structures) are found throughout every tissue in the body. The degree to which risk can be mitigated through separation of carcass pieces into high-value versus low-value cuts is unknown and at this point should not be considered as a reasonable strategy to pursue.

MAF response: High value, consumer-ready cuts would be much less likely to generate scraps of raw pig meat than whole carcasses or other cuts which require further processing in preparation for human consumption. The volume of raw scraps generated from the imported commodity is likely to be much more significant with regard to the risk of introduction of PRRS than the amount of virus present in the cut itself.

4.30.65 One of the external reviewers for this IRA points this out through inclusion of his Veterinary Record publication (accepted May 2006) entitled “An exploratory study to evaluate the survival of porcine reproductive and respiratory syndrome virus in non-processed meat”. In this study, he conclusively proved the potential for meat juice as a contaminant on a person’s hand (collected from meat that
could be considered a high-value cut) contained sufficient PRRS virus to infect a pig through oronasal contact. Unprocessed skeletal muscle harvested from infected pigs has repeatedly been shown to contain adequate virus to infect pigs. To dismiss this scientific evidence by attempting to distinguish the riskiness of high-value versus low-value cuts is without basis.

**MAF response:** MAF agrees that unprocessed muscle tissue from pigs has been shown to contain sufficient PRRS virus to infect pigs and this is discussed in Section 4.1.2.2 of the risk analysis. The conclusion of the release assessment (Section 4.1.4) states that “it is considered that there is a non-negligible likelihood that chilled or frozen pig meat from a country with endemic PRRS will harbour infectious PRRS virus when imported into New Zealand.

The author of the “meat juice” study mentioned above (Professor Dee) does not agree with the conclusion that NZPIB has drawn from his paper on meat juices – see Professor Dee’s full comments in appendix 2 of this document.

4.30.66 Research cited in this IRA was gathered from the few available studies that have partially examined the issues. However, to date no one has undertaken the prospective research necessary to definitively determine the individual or combined effects of time, temperature, and pH on PRRS virus survival in pig meat. These variables should be expected to have a different effect on the virus in naturally infected pig meat when compared to in vitro work.

**MAF response:** The recommended sanitary measures do not suggest using a combination of temperature and pH for treatment of imported meat but rather indicate that approved cooking or pH change would be appropriate.

MAF agrees that there is an absence of *in vivo* studies as suggested by this submission, although the published *in vitro* studies are sufficient to suggest that any PRRS virus in pig meat would be susceptible to cooking or pH change as recommended.

4.30.67 The practical problems in administering a new and undefined category of cuts at or behind the border are also significant.

**MAF response:** The definition of consumer-ready, high value cut will further developed in the of the import health standard. The issue raised here will be addressed within the context of import health standard development. Please also refer to Key Statement 3 in section 3 of this document.

4.30.68 On the basis of IRA’s own data, it is inevitable that PRRSv will exist in each ten tonnes of pig meat sent to New Zealand from PRRS infected countries without treatment. The effect of the recommended measure is therefore to allow a risk good to be imported into New Zealand. However, there is no objective basis for concluding that the relaxation will maintain the existing level of protection against the risk good.

**MAF response:** Please refer to Key Statement 1 in section 3 of this document.
4.30.69 It will simply be a matter of time before the virus infects pigs in New Zealand, most likely in a para-commercial herd, and then spread to other herds, either as a result of poor biosecurity or through other transmission pathways which operate despite good biosecurity.

*MAF response:* Please refer to Key Statements 6 and 10 in section 3 of this document.

4.30.70 The proposed relaxation will therefore not provide effective management of the risk good. It is therefore contrary to the purposes of the import health standard provisions in the Biosecurity Act.

*MAF response:* Please refer to Key Statement 1 in section 3 of this document.

4.30.71 The IRA considers only the risk associated with PRRS. Removal of the cooking requirement may expose New Zealand to increased risk from other exotic pathogens, such as Salmonella typhimurium DT104 ... The Biosecurity Act requires that such issues be examined in setting import health standards and the IRA gives no consideration to other pathogens.

*MAF response:* The risk analysis was limited to consideration of the risk of introducing PRRS virus in imported pig meat. As stated in section 2.1 of the risk analysis, measures introduced for PRRS in pig meat in September 2001 were provisional, requiring the completion of a risk analysis to finalise MAF’s position on this issue. Other hazards were outside the scope of this risk analysis.

Any import health standard developed using the MAF risk analysis on PRRS virus in pig meat will also cover other potential hazards which may be present in imported pig meat based on the recommendations of MAF’s earlier publication *The importation into New Zealand of meat and meat products – a review of the risks to animal health* (see: http://www.biosecurity.govt.nz/files/pests-diseases/animals/risk/meat-meat-products-ra.pdf). As with other imports of food for human consumption, imported meat must comply with New Zealand food safety standards.

4.30.72 The exposure assessment, consequence assessment and recommendations on risk management options all consist predominantly of subjective opinions, and do not comply with internationally accepted procedures for conducting risk analyses.

*MAF comment:* As stated in section 2.3, MAF’s risk analysis methodology follows the guidelines in section 1.3 of the Terrestrial Animal Health Code of the World Organisation for Animal Health. The risk analysis framework was applied as described in ‘Import Risk Analysis Animals and Animal Products’ (Murray 2002), which formed the basis of the OIE handbook on this subject. It should also be noted that Noel Murray was also one of the primary authors of this risk analysis document. Please also see comment 4.38.1 from the Finland FSA.
4.30.73 The animal welfare implications of a PRRS incursion need to be addressed not only for the impact on welfare and health and New Zealand’s animal health status but also for the impact on the well-being of owners and carers.

**MAF response:** The consequence assessment (section 4.3.1.3) does recognise the possible animal welfare implications associated with PRRS and describes the probable clinical impact of the introduction of PRRS in a commercial piggery, including epidemics of abortion, stillbirths and weak pigs, high death rates amongst weaned pigs and impaired sow fertility.

While it is recognised that incursions of animal diseases can be stressful for individual farmers, consideration of possible psychological effects of such incursions on any individual livestock farmer is beyond the scope of this risk analysis.

4.30.74 The risk of exposure from PRRSv in pig meat in the EU is more rigidly controlled compared to New Zealand because the feeding ban is a prohibition on feeding mammalian protein to farm animals and is well established and enforced. Yet this did not prevent the 2001 FMD epidemic originating from infected pig meat. In part this is because the ban is seen as only applying to processed material, not to feeding of food waste.

**MAF response:** Please refer to Key Statement 9 in section 3 of this document. Please also refer to the response to 4.30.41 above.

4.30.75 The IRA was reviewed at different stages by a number of overseas individuals … None of those who conducted the reviews were risk analysts…their views and recommendations do not all appear to have been taken into account before the document was released for consultation.

**MAF response:** Peer reviewers are chosen on the basis of their status as acknowledged authorities in their fields. Where comments from reviewers are appropriate, they will be incorporated into the risk analysis.

4.30.76 …the reviewers are expert scientists and so their focus was on the scientific aspects of the IRA. They have no knowledge of the New Zealand environment with respect to the adequacy of the waste feeding regulations … or the waste generating patterns of New Zealand processors, retailers, restaurants and households.

**MAF response:** As indicated in several places in the risk analysis document, the degree of compliance with waste feeding regulations is unknown. MAF has not assumed that there will be full compliance with these regulations; if this were the case then no sanitary measures would have been recommended for imported pig meat to manage the risks associated with PRRS.
4.30.77 PIB is making this submission as required under statute because it believes that the recommended range of sanitary measures, if implemented, will impact negatively on on-going returns to New Zealand pork producers, including the encouragement of further investment. Thus the recommended measures will impact on the ability of the New Zealand pork industry to make the best on-going contribution to the New Zealand economy.

MAF response: Under the SPS agreement, sanitary measures applied to an imported commodity cannot be more trade-restrictive than required to achieve the appropriate level of sanitary or phytosanitary protection. If measures were introduced for the protection of local industries, it is highly likely that New Zealand would become subject to legal action before the WTO, possibly with detrimental effects on our access to export markets.

4.30.78 The statutory purpose for the issue of import health standards under the Biosecurity Act is the effective management of risk goods. In having regard to the relevant criteria in section 22 of the Act, the Director General must exercise his powers to achieve this purpose ... However, the recommendation to relax the current standards by permitting the import of untreated “high value consumer ready” cuts is inconsistent with the statutory purpose.

MAF response: As indicated in the response to 4.30.2, under section 22 (5) of the Biosecurity Act 1993, when making a recommendation to the Director-General (regarding an import health standard), the chief technical officer must have regard to the following matters:

a) the likelihood that goods of the kind or description to be specified in the import health standard may bring organisms into New Zealand;

b) the nature and possible effect on people, the New Zealand environment, and the New Zealand economy of any organisms that goods of the kind or description specified in the import health standard may bring into New Zealand;

c) New Zealand’s international obligations;

d) such other matters as the chief technical officer considers relevant to the purpose of this Part.

The sanitary measures outlined in the risk analysis are recommendations in respect of points a and b above, and the chief technical officer must have regard to other issues as outlined, before making a recommendation to the Director-General regarding an import health standard.

4.30.79 …the meaning given to terminology used to describe the likelihood of an event or the pathway is not stated. For example, what constitutes ‘low’ risk?

MAF response: As indicated in Import Risk Analysis Animals and Animal Products (Murray 2002), “Low” has the Concise Oxford Dictionary definition of “Less than average, coming below the normal level”.

Please note that appendix 1 of the NZPIB submission, which raised a number of questions concerning the quantitative model in the risk analysis, was sent to the author
of this model (Noel Murray) for further comment. Dr. Murray’s response to these points is included in this review of submissions document as appendix 3.

4.30.80 …the unrestricted risk has not been estimated and so it is not possible to estimate the degree to which control strategies reduce the risk, or the extent to which risk management procedures need to be monitored to ensure compliance

**MAF response:** The risk analysis has concluded that there is a non-negligible likelihood of release of PRRS virus in imported pig meat (section 4.4). The sanitary measures described in section 5.2.3 have been recommended to provide the appropriate level of protection against this risk.

Please note that appendix 1 of the NZPIB submission, which raised a number of questions concerning the quantitative model in the risk analysis, was sent to the author of this model (Noel Murray) for further comment. Dr. Murray’s response to these points is included in this review of submissions document as appendix 3.

4.30.81 …the unit of interest is not defined (e.g. pig, kilogram of meat or tonne), and hence the analysis does not give any consideration to volume of trade and the way in which that influences risk

**MAF response:** As indicated in our response to 4.30.12 above, it is not possible to accurately predict future market trends following any change in the treatment requirements for imported pig meat.

Please note that appendix 1 of the NZPIB submission, which raised a number of questions concerning the quantitative model in the risk analysis, was sent to the author of this model (Noel Murray) for further comment. Dr. Murray’s response to these points is included in this review of submissions document as appendix 3.

4.30.82 …no information is provided to describe how steps in the pathway were combined to estimate the likelihood of entry and likelihood of entry and exposure

**MAF response:** As described in section 2.3 of the risk analysis, the risk assessment has followed the guidelines in section 1.3 of the Terrestrial Animal Health Code of the World Organization for Animal Health (“the OIE”). Under this methodology, the risk assessment comprises the release, exposure and consequence assessments to arrive at a risk estimation. Using a qualitative methodology, as the release, exposure, and consequence assessments were all concluded to be non-negligible, the only possible conclusion can be a non-negligible risk estimation.

Please note that appendix 1 of the NZPIB submission, which raised a number of questions concerning the quantitative model in the risk analysis, was sent to the author of this model (Noel Murray) for further comment. Dr. Murray’s response to these points is included in this review of submissions document as appendix 3.
4.30.83 …no matrix is provided to indicate how the consequence, and the likelihood of entry and exposure were combined to estimate the risk. In fact, it appears that only the release assessment was conducted according to standard procedures (although with the deficiencies noted above), and the other components of the assessment are subjective opinions, unsupported by standard analytical procedures. These are the exposure assessment, the consequence assessment and the unit risk (per unit of trade and per year).

**MAF comment:** The quantitative release assessment included in the risk analysis was carried out in 2001 to estimate the likelihood of pig meat harbouring infectious PRRS virus at the time of slaughter, whilst the other components of the risk analysis took a qualitative approach. Murray (2002) states:

“No single method of import risk assessment has proven applicable in all situations, and different methods may be appropriate in different circumstances. A qualitative risk assessment is essentially a reasoned and logical discussion of the relevant commodity factors and epidemiology of a hazard where the likelihood of its release and exposure and the magnitude of its consequences are expressed using non-numerical terms such as high, medium, low or negligible. It is suitable for the majority of risk assessments and is, in fact, the most common type of assessment undertaken to support routine decision-making. In some circumstances it may be desirable to undertake a quantitative risk assessment, for example, to gain further insights into a particular problem, to identify critical steps or to compare sanitary measures. Quantification involves developing a mathematical model to link various aspects of the epidemiology of a disease, which are expressed numerically. The results, which are also expressed numerically, invariably present significant challenges in interpretation and communication.”

Please note that appendix 1 of the NZPIB submission, which raised a number of questions concerning the quantitative model in the risk analysis, was sent to the author of this model (Noel Murray) for further comment. Dr. Murray’s response to these points is included in this review of submissions document as appendix 3.

4.30.84 …the assessments made of risk management methods are also subjective, and make no attempt to examine the effect on risk of either the recommended policy or alternatives which could have been adopted, and no final risk of the proposed policy is estimated.

**MAF response:** Please see the response to 4.30.83 above. Murray (2002) continues to state:

“Regardless of which method is adopted it is important to appreciate that a risk assessment inevitably includes a degree of subjectivity…Although a quantitative assessment involves numbers, it is not necessarily more objective, nor are the results necessarily more “precise” than a qualitative assessment.”

Please note that appendix 1 of the NZPIB submission, which raised a number of questions concerning the quantitative model in the risk analysis, was sent to the author

---

of this model (Noel Murray) for further comment. Dr. Murray’s response to these points is included in this review of submissions document as appendix 3.

4.30.85 …in this model, the probability of infectious PRRS virus being present in meat at the time of slaughter and the probability that the pig was infected prior to slaughter were multiplied together to determine the probability of harbouring infectious PRRS virus at slaughter. In doing this, a stochastic approach is used to calculate this step. This makes the analysis appear more comprehensive than it really was, since only the expected value (mean) is reported. The standard deviation should have been reported in order to correctly represent a stochastic modelling process – effectively the analysis has been reported as if it had been done deterministically, and makes no attempt to describe the effects of variability or uncertainty.

MAF response: Section 4.1.2.5 of the risk analysis compares the results of the model presented in appendix 1 of the risk analysis with results of later field studies. The likelihood of virus being detected in pigs at slaughter demonstrated by these field studies (1.2 percent) was accepted in the release assessment rather than the likelihood prediction of the model (0.3 percent). Changes to the assumptions made in the model would therefore have no significant effect on the overall findings of the published risk analysis.

Please note that appendix 1 of the NZPIB submission, which raised a number of questions concerning the quantitative model in the risk analysis, was sent to the author of this model (Noel Murray) for further comment. Dr. Murray’s response to these points is included in this review of submissions document as appendix 3.

4.30.86 …the model did not include variability in the prevalence of PRRS infected in each age group, the duration of viraemia and the persistence of viraemia. Failure to include variability is likely decrease the estimated number of infected animals at the time of slaughter.

MAF response: Please see the response to 4.30.85 above.

4.30.87 …in estimating the prevalence of viraemia in pigs within each age group, a weighted average was used that appears to include data from non-infected farms. It could be argued that the input values should have been a weighted average of farms with PRRS infection because the model is trying to estimate the age of infection, given the animal is infected. Therefore, only data from farms with one or more infected animals should have been used.

MAF response: Please see the response to 4.30.85 above.
Our estimates of all known costs (indirect) based on assumptions as stated in appendix 1 is around $12.7 million in an epidemic event. In conclusion we estimate total costs (direct and indirect) to be substantial if the opportunity to maintain the current health status is compromised.

**MAF response:** This estimate of indirect costs appears to be based on a list of assumptions that are included in a table in Appendix 2 of the submission. The list helps provide an indication of the range of indirect effects that might arise from a PRRS outbreak. However, the approach taken to calculating the magnitude of these indirect effects can not be easily verified due to lack of references and is considered likely to overstate the indirect costs for a number of reasons. First, the calculation appears to rest on an assumption of 10 percent of the national sow herd being affected in an outbreak. As discussed in the risk analysis, it is considered that transmission from an index herd would be negligible for herds observing standard biosecurity practices, so this assumption is somewhat questionable. The estimated drop in consumer prices nationwide due to negative consumer preferences of PRRS appears rather high, and it does not account for the benefits to consumers (those still buying meat) that such a drop in retail prices would deliver. The estimate does not take into account off-setting price effects whereby a lower supply would lead to higher prices for non-affected farmers. The estimate does not appear to account for the ability of resources being able to be put to alternative purposes. The estimate uses changes in sales values at different stages of the production chain (retail, farm gate), and using sales value rather than economic value added is likely to lead to double counting. The estimate appears to over-estimate the scale of dependence between the pig industry and other industries. MAF notes, however, that the loss estimates do not include a number of other costs that are not quantified.

Please also refer to Key statement 8 in section 3 of this document.
4.31 CARLY SLUYS

4.31.1 While the New Zealand pork producing industry has maintained a predominantly domestic focus because internationally it is a relatively high cost producer due to feed costs in particular, it has a significant productivity advantage associated with its favourable disease status.

*MAF response:* Noted.

4.31.2 The reliance on post border measures is unacceptable, due to the unknown practices in regard to the quantity of waste generated from potentially PRRS infected consumer-ready high value cuts and the unknown levels of compliance with the Biosecurity (Meat and Food Waste) Regulations 2005.

*MAF response:* Please refer to Key Statements 2 and 5 section 3 of this document.

4.31.3 … the current import standards must remain in place unless and until the risk analysis can establish that the risk of PRRS infection of the New Zealand pig herd can be effectively controlled in other ways. This would require at the least:

No assumptions made or “unknowns” in regard to the level of control established by post border measures

An investigation into the pathways by which waste meat may be generated and distributed, including the level of compliance with the Biosecurity (Meat and Food Waste) Regulations 2005

The term “consumer-ready high value cuts” is clearly defined.

*MAF response:* As indicated in Key Statement 11 in section 3 of this document, as a signatory of the SPS agreement, sanitary or phytosanitary measures applied to imported commodities can only be based on scientific principles and not maintained without sufficient scientific evidence, furthermore these measures must not be more trade-restrictive than required to achieve our appropriate level of sanitary or phytosanitary protection.

The current requirement for treatment of pig meat from countries with endemic PRRS was imposed in September 2001 pending the results of further scientific studies (published in 2003 and 2004) and completion of a risk analysis of PRRS virus in imported pig meat. The results of these further studies and the completed risk analysis indicate that continued imposition of sanitary measures for high value, consumer-ready cuts of pork cannot be scientifically justified. Therefore, in view of our commitments under the SPS agreement, we cannot justify the continued imposition of this sanitary measure.

Please also see Key Statements 3 and 5 in section 3 of this document.
4.31.4 As a general principle, Federated Farmers strongly believes that prevention is more effective than eradication.

*MAF response:* Please refer to Key Statement 1 in section 3 of this document.

4.31.5 New Zealand pork producers with their knowledge of the dynamics of pig ownership and activities, and food waste feeding practices do not believe that the risk analysis has correctly assessed the New Zealand environment. Federated Farmers does not therefore accept that the Risk Analysis is factually based.

*MAF response:* Please refer to Key Statement 7 in section 3 of this document.

4.31.6 These post border measures rely on the assumption that every owner of a pig knows that feeding of uncooked meat including pig meat to pigs is illegal as required by the Biosecurity (Meat and Food Waste) Regulations, and complies with these requirements.

*MAF response:* The risk analysis has not assumed total compliance with the waste feeding regulations. Indeed, if such an assumption had been made, it would not have been necessary to recommend any risk management measures for imported pig meat. Rather, as discussed in Key Statement 1 in section 3 of this document, the assessment of risk does not rest solely on any single link in the overall risk pathway. The recommended measures are only one of many steps in the “cascade of risk reduction” which together are considered adequate to effectively manage the risk in the commodity. A number of overseas submissions (see 4.36.2, 4.38.14, 4.39.5, 4.42.2, 4.43.3 and 4.44.6) have suggested that because these regulations exist in New Zealand, the risk management measures recommended are unjustified and pig meat imports should be allowed without sanitary measures against PRRS. Please also refer to Key Statement 5 in section 3 of this document.

4.31.7 …the source of PRRS transmission internationally is commonly unknown and may supersede farm biosecurity measures. This is particularly relevant to the New Zealand situation where commercial pork producers co-exist alongside other farmers who own a few pigs, and where there is significant outdoor farming in areas such as Canterbury and South Canterbury. It is impossible for farmers to maintain biosecurity measures that fully protect their pigs against infection pathway such as air borne spread and birds.

*MAF response:* Please refer to Key Statement 10 in section 3 of this document.

4.31.8 …assumption have been made on human behaviour without any factual basis…On what basis, for example, has the volume of pig meat scraps generated from a single household not exceeding 500g – 900g … been assessed as ‘improbable’?

*MAF response:* Please refer to Key Statement 2 in section 3 of this document.
4.31.9 Federated Farmers have considerable difficulty with the use of the term consumer-ready, high value cuts if meat. This term is not defined and yet it is central to understanding the impact of the proposed measures.

*MAF response:* Please refer to Key Statement 3 in section 3 of this document.

4.31.10 There is no justification for the statement … in the case of consumer-ready cuts of pork, it is considered that there is negligible likelihood of meat scraps being generated prior to cooking… Does BNZ have information to support this consideration?

*MAF response:* If a cut of meat requires no further trimming or cutting prior to cooking, it is reasonable to assume a negligible likelihood of raw scraps being generated from that cut.

4.31.11 That about product that is close or past its ‘use by’ date?

*MAF response:* Please refer to Key Statement 2 in section 3 of this document.

4.31.12 The risk analysis as presented is incomplete because it has not addressed and assessed the extent to which waste meat may be generated via the range of sanitary options proposed and therefore has not fully addressed the risk.

*MAF response:* Please refer to Key Statement 2 in section 3 of this document.

4.31.13 PRRS is a pig disease with severe welfare implications…An incursion of another disease for which the on-farm impact is synergistic with PMWS, not only places the animal’s welfare under further strain, but places the industry under more pressure.

*MAF response:* Please refer to Key Statement 13 in section 3 of this document. Please also refer to the response to 4.30.73 above.

4.31.14 Federated Farmers is concerned at the precedent this may be setting for future biosecurity import health standards…We especially do not support reliance on post border measures in this case when there are so many unknowns and assumptions in regard to establishing and assessing potential pathways for infection of the national pig herd.

*MAF response:* The sanitary measures recommended in the risk analysis are suggested to specifically manage the risk associated with PRRS virus in imported pig meat. Under section 22 (5) of the Biosecurity Act 1993, when making a recommendation to the Director-General (including risk management measures of an import health standard), the chief technical officer must have regard to the following matters:

a) the likelihood that goods of the kind or description to be specified in the import health standard may bring organisms into New Zealand;
b) the nature and possible effect on people, the New Zealand environment, and the
New Zealand economy of any organisms that goods of the kind or description
specified in the import health standard may bring into New Zealand;
c) New Zealand’s international obligations;
d) such other matters as the chief technical officer considers relevant to the purpose
of this Part.

It should be noted that the risk analysis only recommends sanitary measures relating to
the commodity defined within that risk analysis, and the setting of the sanitary
measures within an import health standard will take into account these
recommendations together with those other matters listed above.

4.31.15 …this risk analysis is setting a precedent for allowing infected meat into the
country, given that regulations prohibit the feeding of uncooked meat to pigs. However, these regulations are un-policed and the extent of knowledge and compliance is unknown. Most critically, other countries would be in a position to exploit this post border risk mitigation method given that a precedent has been set.

*MAF response:* Please see the response to 4.31.6 above.

4.31.16 We are also very concerned at the implications of this precedent for the future of rural communities

*MAF response:* Please refer to Key Statement 8 in section 3 of this document.
4.32 DR EBM WELCH

4.32.1 The IRA discusses the likelihood of slaughter age pigs being viraemic and infective at the time of slaughter with limited references but pays insufficient attention to the fact that newly infected “epidemic” herds will have pigs of all ages infective.

MAF response: Please refer to Key Statement 12 in section 3 of this document.

4.32.2 The IRA appears to have overlooked work by authors such as Mateusen at al (2002) and Dewey et al (2004) amongst others, both of which illustrate the fact that in some herds exposure, seroconversion and thus infectivity of individual pigs in grower herd populations can occur at older ages often coinciding with slaughter age.

MAF response: Please refer to Key Statement 12 in section 3 of this document.

4.32.3 It is commonplace to introduce PRRS negative breeding stock into PRRS positive herds…with average breeding herd replacement rates in excess of 50 percent per annum…a significant proportion will be culled prior to mating for various reasons…and these will enter the food chain as slaughter-weight pigs at the time when they are possibly most viraemic and infective.

MAF response: Please refer to Key Statement 12 in section 3 of this document.

4.32.4 The increasing amount of food waste being generated goes into this “system” (backyard and small-scale commercial swill feeders) which remains poorly monitored and characterised to say the least.

MAF response: Please refer to Key Statement 2 in section 3 of this document.

4.32.5 …such behaviours are likely to only subside after many years of education and rigorous enforcement, neither of which has been embarked upon in New Zealand to date.

MAF response: Please refer to Key Statement 5 in section 3 of this document.

4.32.6 In backyard operations these regulations are most likely frequently disregarded and this sector still produces pigs that go into other farms in the “network” and either directly or indirectly culminate in weaners that enter sale yards for on-sale to small scale commercial operations that network with other like operations.

MAF response: Please refer to Key Statement 7 in section 3 of this document.
4.32.7 …it is very clear that the risk of introduction of any disease, including PRRS, via “garbage feeding” is substantial.

**MAF response:** Please refer to *Key Statement 5* in section 3 of this document.

4.32.8 BNZ needs to develop a far more thorough understanding of the status quo within New Zealand with regard to feeding uncooked meat to pigs before it can confidently include this step of the risk assessment process in this and other IRAs.

**MAF response:** The risk analysis has not assumed total compliance with the waste feeding regulations. Indeed, if such an assumption had been made, it would not have been necessary to recommend any risk management measures for imported pig meat. Rather, as discussed in *Key Statement 1* in section 3 of this document, the assessment of risk does not rest solely on any single link in the overall risk pathway. The recommended measures are only one of many steps in the “cascade of risk reduction” which together are considered adequate to effectively manage the risk in the commodity. A number of overseas submissions (see 4.36.2, 4.38.14, 4.39.5, 4.42.2, 4.43.3 and 4.44.6) have suggested that because these regulations exist in New Zealand, the risk management measures recommended are unjustified and pig meat imports should be allowed without sanitary measures against PRRS. Please also refer to *Key Statement 5* in section 3 of this document.

4.32.9 The industries of Europe and North America have biosecurity standards far in advance of those in the New Zealand pig industry … and yet PRRS has successfully penetrated these industries to up to 80 percent of their National herd. This is without the weaner networks and high-risk practices that are commonplace in the small-scale commercial pig sector of New Zealand, which have evolved under disease-free circumstances allowing them to do so.

**MAF response:** Please refer to *Key Statement 7* in section 3 of this document.

4.32.10 …there is evidence that insects are likely to be able to act as vectors for transmission of PRRSv (Boorman et al 2003; Otake et al 2003).

**MAF response:** Please refer to *Key Statement 10* in section 3 of this document.

4.32.11. There is a large amount of evidence available that would refute this statement (“If pig farms in this country did become infected with PRRS through the illegal feeding of uncooked imported pig meat, the likelihood of spread to other farms would be low as long as standard biosecurity practices were observed”) and I strongly suggest that this be reviewed and modelled (with the help of skilled epidemiologists familiar with the PRRS virus) and re-written with more accurate expert guidance and field information.

**MAF response:** Possible routes of transmission of PRRSv between herds have been examined in section 3.4.5 of the risk analysis. Please also refer to *Key Statement 10* in section 3 of this document.
4.32.12 PMWS has moved between farms, as in other countries “like a propagating epidemic” …PMWS and PRRS would combine most ably and synergistically on affected farms to destroy the favourable disease status that the New Zealand pig industry has enjoyed to date.

**MAF response:** Please refer to Key Statement 13 in section 3 of this document.

4.32.13 This implies that “consumer-ready high value cuts” (which are not adequately defined in the IRA) do not pose a risk of introduction of PRRS virus due to the fact that they contain less virus and that they are less likely to be fed un-cooked to pigs. While both of these are true, there is no support for the assumption that the reduction in risk is enough to justify the recommendations.

**MAF response:** Please refer to Key Statements 1 and 3 section 3 of this document.

4.32.14 The EFSA report (Have et al 2005) supports the IRA’s view that the risk is non-negligible. Indeed it is surprising and concerning that this report, which pre-dates the BNZ IRA by a year, and which is probably the most politically significant document on the subject, is not referred to in the IRA.

**MAF response:** Please see the response to 4.30.18 above.

4.32.15 …the amount of fresh uncooked meat that is required to be rejected for human consumption is greater than it has ever been, trimmed or not. Often this gets put in the “bin out back” which then gets collected by the helpful local pig farmers. BNZ should cater for this in the IRA.

**MAF response:** Please refer to Key Statement 2 in section 3 of this document.

4.32.16 On many farms on which “garbage feeding” is practiced, it is common for these pigs to consume various types of traumatic foreign bodies…These foreign bodies would lead to excoriations and ulcerations of the oral, pharyngeal and oesophageal mucosa that would be potential entry points for PRRS virus….the modern “commercial pig” is capable of extremely efficient conversion of feed to pig meat…These genetics are making their way into garbage-feeding and backyard units…When these (nutritional) demands do not get met the result is that such pigs are more prone to becoming immunocompromised than their fat, hardy predecessors …(this) should be considered when researching or interpreting research on likely infective dose, which is generally done on fat, healthy pigs under pristine research conditions.

**MAF response:** As previously indicated, the risk analysis was careful not to estimate the minimum infectious scrap size and recognises the inadequacy of the data in this regard. As stated on page 41 of the risk analysis, “the infectious dose approach explored by Hermann et al (2005) supports the notion that scraps of any size have the potential to infect an animal orally, and that the likelihood of infection occurring is directly related to the amount of meat fed.”
The risk analysis also does not consider the quantities used in feeding trials (500 – 900g) to suggest a minimal infectious scrap size. Therefore, although it is not unreasonable to suggest that oropharyngeal trauma or sub-optimal nutrition may have an effect on susceptibility to infection by PRRSv, these factors would have no effect on the overall risk estimation.

4.32.17 The suggestion that chewing is necessary for infection to occur is inaccurate.

*MAF response:* Please see the response to 4.30.45 above.

4.32.18 …the review states the fact that Sweden, Finland and New Zealand have remained PRRS-free to date despite PRRS positive importations are supportive of the fact that the risk is low. This does not consider the fact that compliance with garbage feeding regulations in Sweden and Finland are relatively high.

*MAF response:* Please refer to *Key Statement 5* in section 3 of this document. MAF is unaware of any robust data that would indicate that compliance with garbage feeding legislation in Sweden and Finland is significantly different from compliance in New Zealand, particularly in regard to backyard or non-commercial units.

4.32.19 Transitional cooking is not a trade barrier (as evidenced by the increase in imports), it is simply a Biosecurity precaution. I am puzzled and alarmed by the failure to apply it.

*MAF response:* Please refer to *Key Statement 11* in section 3 of this document.

4.32.20 …the economic consequences have been under-estimated, the risks grossly under-estimated through lack of understanding…

*MAF response:* Please refer to *Key Statement 8* in section 3 of this document.
4.33 DR DAVID LAWTON ET AL

4.33.1 …based on the assumption that infected pig meat is unlikely to be fed to pigs. We consider this assumption to be wrong and that it sets a very dangerous precedent for the management of exotic diseases in New Zealand.

_MAF response:_ Please refer to _Key Statement 1_ in section 3 of this document, in particular please refer to the “cascade of risk reduction” in that statement. Please also see the response to 4.30.2.

4.33.2 …the proposed changes do not adequately manage the risk of PRRSV entering and establishing in New Zealand. If applied, the changes are such that the introduction would only be a question of “when” rather than “if”.

_MAF response:_ Please refer to _Key Statement 1_ in section 3 of this document.

4.33.3 There is insufficient data available to support the notion that “trimmed meat from high value, consumer ready cuts” is less infective than tissue from the rest of the carcass or that such trimmed meat is less likely to be fed to pigs. In the absence of these data the contention that such meat presents a negligible risk is unsupportable.

_MAF response:_ Please refer to _Key Statement 2_ in section 3 of this document.

4.33.4 How Biosecurity New Zealand has then relied on compliance with the regulations by this ‘farming’ group (waste feeding by backyard pig keepers) as the cornerstone of its management plan to prevent the introduction of PRRSV makes no sense.

_MAF response:_ The risk analysis has not assumed total compliance with the waste feeding regulations. Indeed, if such a “cornerstone” assumption had been made, it would not have been necessary to recommend any risk management measures for imported pig meat. Rather, as discussed in _Key Statement 1_ in section 3 of this document, the assessment of risk does not rest solely on any single link in the overall risk pathway. The recommended measures are only one of many steps in the “cascade of risk reduction” which together are considered adequate to effectively manage the risk in the commodity. However, it is noteworthy that several overseas submissions (see 4.36.2, 4.38.14, 4.39.5, 4.42.2, 4.43.3 and 4.44.6) have suggested that because these regulations exist in New Zealand, the risk management measures recommended are unjustified and pig meat imports should be allowed without sanitary measures against PRRS. Please also refer to _Key Statement 5_ in section 3 of this document.

4.33.5 …in our experience, backyard pig keepers observe no biosecurity and frequently trade their pigs for other commodities, share boars, sell weaners into commercial sale yards and so on… Should PRRSV enter and establish in a group of backyard pigs, we expect that it would move rapidly through this sector, which in turn would result in the inevitable infection of commercial pig farms.
MAF response: Please refer to Key Statement 7 in section 3 of this document.

4.33.6 ...large amounts of food waste from restaurants and other food outlets in urban centres finds its way onto small scale commercial pig units. Just as with backyard pig keepers, it is our experience that these farms have limited ability or motivation to comply with existing regulations.

MAF response: Please refer to Key Statement 2 in section 3 of this document.

4.33.7 ...we don’t agree with the presumption that “high-value, consumer ready cuts” present a significantly lower risk than trim from other parts of the pig simply because such cuts are likely to yield less waste or are less likely to be discarded themselves, or because they are likely to contain less virus. The document itself acknowledges that the dose of virus required to transmit PRRSV through meat has not been adequately researched...High value cuts may themselves be discarded once they have passed their use-by date or if they are mishandled.

MAF response: Please refer to Key Statements 2 and 4 in section 3 of this document.

4.33.8 The risk analysis states that “The economic consequences of the introduction of PRRS virus would be restricted to the micro-environment effects arising from direct losses incurred at the level of individual pig farms.” We refute this and point out that confidence in New Zealand’s assurances with regard to its biosecurity systems more generally would be compromised by the introduction of PRRSV, especially as the route of entry is likely to be exactly the same as that by which FMD has entered some other countries.

MAF response: Please refer to Key Statements 8 and 9 in section 3 of this document. Please also refer to Key Statements 1 and 11 in section 3 of this document. It needs to be borne in mind that, for most countries, New Zealand’s credibility would increase if MAF were seen to be removing measures that are considered unnecessary, excessively trade restrictive and a technical barrier to trade under the WTO.

4.33.9 It appears that PMWS, apparently another viral agent, has entered New Zealand on at least two occasions despite the current porcine biosecurity measures that BNZ has in place...It would seem completely inappropriate to weaken an already flawed process until such time that the factor or factors that have led to this biosecurity failure have been fully explored.

MAF response: The cause and precise nature of the circumstances of the first detection of PMWS in New Zealand in late 2003 remain a matter of some scientific debate, and speculation about this is beyond the scope of the risk analysis and this review of submissions. Please also refer to Key Statement 13 in section 3 of this document.
4.33.10 We shudder to think what might happen to this country should the same rationale be used to justify the importation of ruminant material from a country infected with BSE on the basis that BNZ stated that it was illegal to feed such material to ruminants.

**MAF response:** There is clearly a significant difference in the consequences of a BSE incursion into New Zealand and an incursion of PRRSv. The NZPIB (see submission 4.30 from Sam McIvor) have estimated that the indirect costs associated with a PRRS epidemic in New Zealand would be around $12.7 million. As stated in the risk analysis (section 4.3.1.3), there are no zoonotic or food safety issues surrounding PRRS and exports of pork from New Zealand are limited to a few hundred kilograms annually to the Pacific Islands and Singapore. By comparison, the consequences of even a single case of BSE in this country are likely to be similar to those of an outbreak of foot and mouth disease, a matter that is addressed in *Key Statement 9* in section 3 of this document.

The risk analysis has described the possible routes by which PRRSv could enter this country through imported pig meat and risk management measures described have been recommended to effectively manage the risk. Please refer to the “cascade of risk reduction” in *Key Statement 1* in section 3 of this document.
4.34 SELWYN DOBBINSON

4.34.1 I am extremely concerned that it is being proposed that New Zealand’s current biosecurity measures for pig meat are to be eroded rather than enhanced.

*MAF response:* Please refer to Key Statement 1 in section 3 of this document.

4.34.2 …I find it incredible that BNZ would consider any measure that might weaken our current porcine-related border security without first knowing how PMWS entered New Zealand.

*MAF response:* The precise nature of the circumstances of the first detection of PMWS in New Zealand in late 2003 are the matter of some scientific debate, and speculation about this is beyond the scope of the risk analysis and this review of submissions. Please also refer to response 4.33.9 and Key Statement 13 in section 3 of this document.

4.34.3 …the rationale provided to support BNZ’s proposal is significantly flawed. I will not dwell on the errors that appear to have been made in BNZ’s interpretation of the current state of scientific knowledge on PRRS virus as I am aware that my colleagues intend to itemise the issues in some detail.

*MAF response:* MAF notes this comment. The submission from the NZPIB (see submission number 4.30) raised a large number of points raised in this submission that indicated disagreement with aspects of the interpretation of scientific data used in this risk analysis. In order to ensure transparency and openness, MAF sought the opinions of a number of independent internationally recognised experts in this field on the technical issues that were highlighted in that submission. The contributions of these independent experts are included as appendix 2 of this document. Although this extra round of external technical review is not part of the standard risk analysis process, it was carried out in this case to ensure that the technical issues raised in this submission were considered as thoroughly as possible.

4.34.4 No matter how a piece of meat is presented … there will be pieces of uncooked meat that will be trimmed … (and) there will be some product that will need to be disposed of after having passed their ‘used by’ date. There is a high probability that meat sourced from any of the Northern Hemisphere countries and many of the Southern Hemisphere countries will ensure that such trim will contain viable PRRS virus particles in sufficient quantity that such waste will have the capability of infecting naïve pigs.

*MAF response:* Please refer to Key Statement 2 in section 3 of this document.

4.34.5 The potential for such trim to be used by processors in the production of salami or other uncooked value-added products is very real. Such uncooked pig meat can become available to “backyard” pig farmers through the feeding of out-of-date sandwiches or filled rolls. Equally, the potential for “backyard” pig farmers
to feed small quantities of trim produced during normal food preparation, without cooking the material, is extremely likely. Supermarket, restaurant and hotel kitchen waste can also be expected to contain such potentially infectious material that may be fed to pigs without prior cooking.

**MAF response:** Please refer to Key Statements 2 and 5 in section 3 of this document.

**4.34.6** Recent investigations involved in the PMWS outbreak in the South Island highlighted that even well informed commercial pig farmers did not make the connection between feeding out-of-date filled rolls sourced from supermarkets that contained ham and salami, and the need to cook such waste foods. … When questioned, a staff member of one such commercial pig farmer admitted that she had regularly fed barrow-loads of out-of-date filled rolls and/or sandwiches to the herd’s dry sows, on a weekly basis.

**MAF response:** Please refer to Key Statements 2 and 5 in section 3 of this document.

**4.34.7** I do not believe that BNZ has adequately recognised the potential for PRRS virus to contaminate ‘backyard’ operations.

**MAF response:** Please refer to Key Statement 7 in section 3 of this document.

**4.34.8** … despite regulations, there are people who raise pigs who do not adequately cook potentially infectious food products. It would seem therefore that if a PMWS incursion can occur, the risk of a PRRS incursion is equally probable.

**MAF response:** The precise nature of the circumstances of the first detection of PMWS in New Zealand in late 2003 are the matter of some scientific debate, and speculation about this is beyond the scope of the risk analysis and this review of submissions. Please also refer to Key Statement 13 and Key Statement 5 in section 3.

**4.34.9** In essence it is stated that “there is little connection between pigs produced by backyard farmers and commercial piggery operators”. This is far from the truth… There are many ‘backyard farmers’ in the Canterbury region who manage 10 – 20 sows with the sole purpose of selling surplus weaners at sale yards … such weaners become scattered throughout rural areas and will inevitably end up being housed in close proximity to commercial piggery operations without the knowledge of the commercial pig farmer.

**MAF response:** Please refer to Key Statement 7 in section 3 of this document.

**4.34.10** Additionally a number of commercial piggery operators purchase such weaners to top-up their sheds during periods when their own production flow has been inadequate.

**MAF response:** Please refer to Key Statement 7 in section 3 of this document.
4.34.11 Hence, not only is there the risk that such small operators could produce infected animals that could be in sufficiently close proximity to commercial piggery operations that they were capable of infecting them through aerosol, bird or insect vector transmission, but the commercial piggery operators could inadvertently purchase carrier animals through saleyards and introduce them into their herds.

*MAF response:* Please refer to *Key Statement 7* in section 3 of this document.

4.34.12 It has been shown that flies can carry infective doses of PRRS virus for at least two miles from an infected source and that such quantities of virus were capable of infecting naïve animals [reference available if requested].

*MAF response:* Please refer to *Key Statement 10* in section 3 of this document.

4.34.13 Current thinking on the transmission of PMWS is that seagulls have been able to mechanically carry infective material to several commercial piggeries over a very short timeframe; clearly the same mechanism could apply to the transmission of PRRS virus.

*MAF response:* The precise nature of the circumstances of the first detection of PMWS in New Zealand in late 2003 are the matter of some scientific debate, and speculation about this is beyond the scope of the risk analysis and this review of submissions. Moreover, MAF is unaware of any studies that have demonstrated transmission of PRRS between pig herds via seagulls as suggested in this submission. Please also refer to *Key Statement 10* in section 3 of this document.

4.34.14 Another potential risk factor is via contaminated transport vehicles. Research in the USA indicates that the normal cleaning and disinfection practices used in New Zealand would be totally inadequate for the management of PRRS virus [reference available if requested].

*MAF response:* Section 3.4.5.3 of the risk analysis acknowledges that transmission of PRRSv has been demonstrated via contaminated boots and clothing. However, the importance of fomites relative to other routes of transmission is unknown. MAF would expect that commercial pig enterprises would consider adequate cleansing and disinfection of vehicles to form part of standard on-farm biosecurity practices, especially given that PMWS is now recognised in New Zealand. Please also refer to *Key Statement 10* in section 3 of this document.

4.34.15 ...some commercial piggery operators … have their dry sows managed off-site by third party managers. I am aware of two such third party managers who have fed uncooked kitchen waste in the past in an endeavour to reduce the feed cost and so make a greater profit…Several such third party managers maintain small herds of their own pigs in conjunction with those that are being managed for a commercial piggery operation… The connection between backyard farmer, saleyard and commercial piggery operator is very real and quite extensive.
4.34.16 It must therefore be assumed that some level of feeding of uncooked feed waste will occur and that such practices will put commercial piggery operators at risk. I do not believe that BNZ have adequately recognised this area of risk.

**MAF response:** The risk analysis has not assumed total compliance with the waste feeding regulations. Indeed, if such an assumption had been made, it would not have been necessary to recommend *any* risk management measures for imported pig meat. Rather, as discussed in **Key Statement 1** in section 3 of this document, the assessment of risk does not rest solely on any single link in the overall risk pathway. The recommended measures are only one of many steps in the “cascade of risk reduction” which together are considered adequate to effectively manage the risk in the commodity. However, it is noteworthy that several overseas submissions (see 4.36.2, 4.38.14, 4.39.5, 4.42.2, 4.43.3 and 4.44.6) have suggested that because these regulations exist in New Zealand, the risk management measures recommended are unjustified and pig meat imports should be allowed without sanitary measures against PRRS. Please also refer to **Key Statement 5** in section 3 of this document.

4.34.17 There are a number of different strains of the PRRS virus … it must be assumed that the most virulent and contagious virus strain will be the one to be introduced when establishing a risk management assessment. It appears that the proposed protocol is not based on this principle.

**MAF response:** MAF has acknowledged the existence of different strains of PRRS virus and states (in section 4.3.1.3 of the risk analysis) that “the clinical signs of PRRS infection are extremely variable, and depend on the strain of the virus, the immune status of the herd, the presence of intercurrent disease and management factors”.

4.34.18 The BNZ proposal appears to emphasise the impact of the strains of virus that are most associated with reproductive failure and has largely ignored the huge pre-weaning mortalities that are commonly associated with some strains of the virus… From an economic point of view one must consider the potential for significantly increased pre- and post-weaning mortalities as well as the increased number of sows that abort.

**MAF response:** Section 3.4.4 of the risk analysis states “An outbreak of PRRS in a naïve herd may involve an acute onset of reproductive failure in the breeding herd with sows aborting or farrowing pre-term, the birth of stillborn and mummified piglets, sow deaths and *pre-weaning mortality amongst piglets*” (emphasis added).

4.34.19 I do not believe that the model that has been used by BNZ adequately recognises the impact of a PRRS incursion on animal welfare.

**MAF response:** Please see the response to 4.30.73 above.
4.34.20 It (PRRS) is an extremely infectious organism that is difficult to diagnose.

MAF response: Section 3.4.5.1 of the risk analysis acknowledges the infectiousness of this organism, stating: “infection of susceptible pigs probably takes place by nose to nose contact or by breaks in the skin of susceptible animals being contaminated with urine or faeces of infected animals”.

Regarding diagnosis of PRRS, chapter 2.6.5 of the OIE manual of diagnostic tests and vaccines for terrestrial animals states “A variety of assays for the detection of serum antibodies to PRRSV have been described. Serological diagnosis is, in general, easy to perform, with good specificity and sensitivity, especially on a herd basis.” See: www.oie.int/eng/normes/mmanual/A_00099.htm.

4.34.21 It is likely that an incursion involving “backyard” farmers will never be recognised until it has spread to commercial operators who have better veterinary surveillance... it is most likely that an incursion of PRRS virus will not be recognised for some months and by then will have spread widely throughout New Zealand.

MAF response: Please refer to Key Statement 14 in section 3 of this document.

4.34.22 It is pertinent to study the effect that the combination of FMD followed by Classical Swine Fever had on the British pig industry. Currently the British industry is producing roughly 25 percent of the volume of pig meat that it did prior to the advent of those two diseases and is struggling to survive let alone regain its previous production. It is likely that a PRRS incursion in New Zealand will have a similar effect on the New Zealand pig industry.

MAF response: Classical swine fever affected 16 farms in the East Anglia region of the United Kingdom in 2000, and was promptly eradicated. The most recent UK FMD outbreak occurred after this and was eradicated by the end of 2001. Figures from the National Audit Office (www.nao.org.uk) indicate that during the 2001 FMD outbreak only 1.7 percent of culls on infected premises and 4.3 percent of dangerous contact culls were pigs. Neither of these diseases has been present in the United Kingdom since their eradication. It is difficult to see how these past disease outbreaks could be thought to be still impacting on the British pig industry.

Rather, MAF considers that UK legislative changes to improve animal welfare were the primary reason for the decline of the UK pig industry since 2000. Most importantly, stalls and tethers for non-lactating sows were banned in the UK from 1 January 1999, a measure which went beyond existing EU Council Directives and which had a severe impact on the profitability of pig farming in the UK. A large number of reviews on the economics and competitiveness of UK pig industry are relevant to this matter. While undoubtedly some pig farms were depopulated for disease control purposes during the CSF and FMD outbreaks, the decision by many farmers not to repopulate their farms was based on sound economic reasons. The RSPCA report of March 1999\(^29\) concluded that the new regulations were:

\(^{29}\) Effects of the free trade rules as a barrier to raising animal welfare standards: a case study of the UK pig industry. RSPCA, March 1999
“...a contributing factor to the current crisis faced by pig farmers. By increasing the costs of production, the stall and tether ban has, in effect, raised the production break even point. This implies that when the pig cycle is at its low point (as it is currently), UK producers will face financial difficulties at an earlier stage than they would have without the ban and earlier than their competitors on the UK and common export markets.”

Further, in a 2002 postal survey carried out by the University of Exeter a questionnaire was sent out to farm holdings known to have been pig farmers according to returns in the previous 5 years agricultural censuses. Of 900 respondents to the questionnaire (a 61 percent response rate), 587 indicated that they had no pigs. While 21 holdings had been depopulated due to disease control measures, only 2 had restocked while 6 indicated that they would definitely not be restocking. A further 19 respondents indicated that they were in the process of destocking and that they intended to exit the industry.

4.34.23 I do not believe the current BNZ proposal has adequately recognised either the short term or long term impact of a PRRS virus incursion on the pig industry and its support industries.

**MAF response:** Please refer to Key Statement 8 in section 3 of this document.

4.34.24...the dynamics of pig movements in New Zealand has not been properly assessed and that there has been too much reliance on the legal requirement for trimmed meat to be cooked before being fed to pigs.

**MAF response:** Please refer to Key Statement 5 in section 3 of this document.

4.34.25 The surface of pre-packaged meat is commonly trimmed by housewives before being cooked. Such scraps are often accumulated before being disposed of so significant volumes of contaminated product could be fed to pigs at one time.

**MAF response:** Please refer to Key Statement 2 in section 3 of this document.

4.34.26 The analysis assumes that the centre of a piece of meat is heated to the same temperature as the surface. ‘Rare’ steaks and other cuts are commonly prepared so that the internal temperatures may not be adequate to inactivate PRRS virus. Thus it would appear that high value cuts may still result in waste that could be infective to naïve animals.

**MAF response:** Section 3.4.2 of the risk analysis indicates that PRRS virus will persist for 6 to 20 minutes at 56°C. Cooking a pork steak to achieve a pale pink centre requires an internal temperature of 60 to 63°C and during the resting time, meat continues to cook and the internal temperature may raise further (http://whatscookingamerica.net/Information/MeatTemperature Chart.htm).

---

30 The structure of the pig population in England – results of national survey of pig production systems, 1 March 2002, University of Exeter.
4.34.27 In any viral family there are members that behave differently to other members so that a global acceptance of the sensitivity of PRRS to pH, heat, freezing and thawing should not be made. References such as Benfield et al, 1999, do not indicate which PRRS strain was used so that broad assumptions should not be made.

*MAF response:* MAF is unaware of any studies which demonstrate strains of PRRS virus that are significantly more thermostable or resistant to pH changes than indicated in the risk analysis.

4.34.28 It would appear possible that the length of PRRS virus survival in meat may be greater than calculated by in vitro studies and survival in meat products, such as salami, *may* be possible: there are no studies presented that rule out this possibility.

*MAF response:* As discussed in the risk analysis, PRRS virus is known to be relatively sensitive to pH and is rapidly inactivated outside a pH range of 6.0 to 7.5. Because of this, a wide range of salamis can be considered to pose a negligible risk of PRRS.

Section 4.1.3 of the risk analysis has concluded that PRRSv in raw pig meat will persist in chilled and frozen pig meat during storage and transport to New Zealand.

4.34.29 …no matter what the owner may think or advise, staff may not be biosecurity conscious and may not be selective when feeding stock. If meat trim were to be included in supermarket waste [including out-of-date product], one could be confident that some of it will be fed to pigs.

*MAF response:* Please refer to Key Statements 2 and 5 in section 3 of this document.

4.34.30 I know of several backyard farmers who own either one or two sows and sell the majority of their weaners at the local saleyard.

*MAF response:* Please refer to Key Statement 7 in section 3 of this document.

4.34.31 Aerosol spread has clearly been debated and largely refuted in the analysis. However, whether spread is by aerosol or flies and other airborne insects, appears immaterial; the scientific evidence shows that airborne transmission has occurred overseas.

*MAF response:* As discussed in section 3.4.5.5 of the risk analysis, there is no scientific evidence to prove airborne spread of PRRSv under field conditions in any country. The only credible study that has demonstrated airborne spread (under highly artificial experimental conditions) was carried out in 2005 by Prof Dee. It was concluded from this study that, in the field, the transmission of PRRSv by aerosols is probably a rare event, *if it occurs at all.*
The issue of airborne spread is discussed at length in appendix 2 of this document. Although various claims have been made that airborne spread is the only possible explanation for specific field observations, the results of published, peer-reviewed experimental studies question whether this route of transmission is likely to be significant. Please also refer to Key Statement 10 in section 3 of this document.

4.34.32 …young pig carcasses are extensively trimmed before being trussed on a barbeque. I have seen farmers feed such trim directly to farm dogs that were hanging around so the possibility that such trim could be fed to pigs can be assumed. If these pigs were viraemic at birth there would be a significant potential that they could harbour very high levels of active virus, this practice poses a serious risk that has not been quantified.

**MAF response:** Entire pig carcasses would not be classified as consumer-ready high-value cuts as indicated in section 5.2.2 of the risk analysis. Thus, an entire pig carcass imported from a country with endemic PRRS would have to be treated by approved cooking or pH change under the recommendations in section 5.2.3 of the risk analysis, and this would inactivate any PRRS virus present.

4.34.33 …contact between backyard piggeries and commercial outdoor operations, through seagull contact, will be greatest when such outdoor herds have the greatest number of vulnerable stock. In the winter time and early spring, mallard duck populations are very high in outdoor piggeries as the ducks forage in the puddles and bogs created by sows during the wet season; the significance of mallard ducks was noted in the analysis but disregarded as a significant risk. Since duck populations on any given farm can be counted in their hundreds and seagulls [at any given time] in their thousands [actual counts are available if requested], bird vectors must be regarded as a significant risk factor.

**MAF response:** MAF is unaware of any studies that have demonstrated transmission of PRRS between pig herds via seagulls as suggested in this submission. Please also refer to Key Statement 10 in section 3 of this document.

4.34.34 Despite assertions in the analysis that feral pig contact with commercial piggeries is rare, the presence of feral pigs amongst outdoor units in the South Island is a frustratingly common occurrence.

**MAF response:** The role of feral pigs is discussed in section 4.3.1.1 of the risk analysis and the likelihood of PRRSv being maintained in the New Zealand feral pig population is considered to be negligible. Because of this negligible likelihood and the low likelihood of contact between feral pigs and commercial pigs, the consequences of introduction of PRRSv into the feral pig population are considered to be negligible.
4.35 ROGER S. MORRIS

4.35.1 It seems clear in s 22 (1) that the risk management measures must be applied before the items can be released into commercial distribution within New Zealand, and risk management cannot rely entirely on the way in which biosecurity measures are taken by individual users of the risk goods after their release for commercial distribution.

*MAF response:* The risk analysis has not relied entirely on post-border measures after the goods are given a biosecurity clearance, nor has total compliance with the waste feeding regulations been assumed in the risk analysis. Indeed, if such an assumption had been made, it would not have been necessary to recommend any risk management measures for imported pig meat. Rather, as discussed in Key Statement 1 in section 3 of this document, the assessment of risk does not rest solely on any single link in the overall risk pathway. The recommended measures are only one of many steps in the “cascade of risk reduction” which together are considered adequate to effectively manage the risk in the commodity. While s22(1) indicates that an IHS relates to pre-clearance measures, the matters that a CTO must have regard to in s22(5) include post-clearance issues, and the risk analysis refers to post-clearance matters as part of its assessment of the risks of importing pork that may carry PRRS virus, not as part of the biosecurity measures that it recommends. The CTO is entitled to take these post-clearance matters into account and indeed realistically must do so to comply with s22(5)(c). Provisions of the SPS Agreement contemplate that if no international (in this case, OIE) standards exist to effectively manage the risk, then a member country may apply appropriate risk management measures based on a scientific risk assessment, which includes an assessment of the likelihood of “entry, establishment or spread” of an organism and an assessment of “associated potential biological and economic consequences” (eg Article 5(3) and definition of “risk assessment” in Annex A). It is not possible to assess consequences without looking at post-clearance circumstances such as how domestic fauna and flora might be exposed to an organism that might cause unwanted harm, and whether that is likely to occur.

4.35.2 …it could be argued that all importers who distributed raw pig meat commercially would be in breach of s 52 of the Act, which prohibits the release of an unwanted organism. There may also be issues of liability in the event of an outbreak of PRRS, should distribution of raw infected pig meat be permitted.

*MAF response:* MAF considers that importers would not be in breach of s 52 of the Biosecurity Act 1993, because there would be no risk of communication, release or spread of PRRS virus while the pork remained in the control of the importer, even if the importer was aware that there was a high statistical likelihood that the virus was present somewhere in the shipment.

4.35.3 Biosecurity New Zealand has made very limited efforts to publicise the regulations or draw them to the attention of even the known pig owners …, and has made even less effort to achieve compliance through enforcement measures.

*MAF response:* A concerted effort has been made to publicise the Biosecurity (Meat and Food Waste for Pigs) Regulations 2005 following their promulgation (please see the media release and fact sheet included as appendix 4). On behalf of MAF, the New
Zealand Pork Industry Board periodically reminds their members about the Regulations (please see the GAP newsletter also included in appendix 4) and NZFSA has incorporated information about the Regulations in the Codes of Practice being drafted for the restaurant and hospitality sector. MAF recognises that communication is a continuous process and requires continued efforts to publicise these Regulations to both pig farmers and waste food generators.

MAF’s Compliance and Enforcement Group follows up on every complaint it receives from the public and the New Zealand Pork Industry Board has been very helpful in this regard. Please also refer to Key Statement 5 in section 3 of this document.

4.35.4 Australia has had a total ban on garbage feeding for decades, yet a recent study limited to the peri-urban area of Sydney showed that the practice still occurred.

**MAF response:** Please refer to Key Statement 5 in section 3 of this document.

4.35.5 …it appears that BNZ wishes to rely entirely on total compliance with a post-border regulatory mechanism which it acknowledges is far from effective, to prevent establishment of an unwanted organism which would have very serious effects on the pork industry.

**MAF response:** The risk analysis has not assumed total compliance with the waste feeding regulations. Indeed, if such an assumption had been made, it would not have been necessary to recommend any risk management measures for imported pig meat. Rather, as discussed in Key Statement 1 in section 3 of this document, the assessment of risk does not rest solely on any single link in the overall risk pathway. The recommended measures are only one of many steps in the “cascade of risk reduction” which together are considered adequate to effectively manage the risk in the commodity. It is worth noting, however, that several overseas submissions (see 4.36.2, 4.38.14, 4.39.5, 4.42.2, 4.43.3 and 4.44.6) have suggested that because these regulations exist in New Zealand, the risk management measures recommended are unjustified and pig meat imports should be allowed without sanitary measures against PRRS. Please also refer to Key Statement 5 in section 3 of this document.

4.35.6 It is very questionable whether the measures proposed would meet the requirements of s 22 (5) (a) even if 100 percent compliance were achieved, and therefore it appears that the CTO cannot recommend adoption of an IHS based on the IRA.

**MAF response:** Please see response 4.35.1

4.35.7 The PRRS IRA discounts windborne spread of PRRS, but the evidence it uses to do so could just as easily be used to discount airborne spread of FMD, since some FMD strains show little or no windborne spread, while others are readily spread my this method.

**MAF response:** As discussed in section 3.4.5.5 of the risk analysis, there is no scientific evidence to prove airborne spread of PRRS virus under field conditions in any country. The only credible study that has demonstrated airborne spread (under
highly artificial experimental conditions) was carried out in 2005 by Prof Dee. It was concluded from this study that, in the field, the transmission of PRRSv by aerosols is probably a rare event, if it occurs at all.

The issue of airborne spread is discussed at length in appendix 2 of this document. Although various claims have been made that airborne spread is the only possible explanation for specific field observations, the results of published, peer-reviewed experimental studies question whether this route of transmission is likely to be significant. Please also refer to Key Statement 10 in section 3 of this document.

4.35.8 Pigs are also very important in the overall surveillance strategy for introduced animal diseases, due to their susceptibility to many of these diseases, and their value as detectors…this function must be taken into account in deciding what risk management measures to take against diseases such as PRRS.

**MAF response:** The risk management measures recommended provide the appropriate level of protection against PRRS based on the available scientific literature without being more trade-restrictive than required to achieve this level of protection. This is in line with New Zealand’s commitments as a signatory of the SPS agreement.

4.35.9 There are therefore major technical inconsistencies between the position of BNZ on diseases such as FMD, and the claims of the IRA in relation to PRRS. I am very concerned that adoption of the recommendations of the IRA would seriously undermine New Zealand’s favourable biosecurity status in a number of ways, by undermining border control measures as a key element of biosecurity, and I argue that the adoption of the IRA would contravene s 22 (5) (a) of the Act.

**MAF response:** As indicated in Key Statement 9 in section 3 of this document, section 4.3.1.3 of the risk analysis states that the introduction of PRRS virus into pig herds in New Zealand would be unlikely to result in significant indirect costs in terms of domestic or international market reactions and that exports of pork from New Zealand are limited to a few hundred kilograms annually to Pacific Islands and Singapore. In contrast, clinical suspicion of FMD in New Zealand would be likely to lead to an immediate suspension of exports of animals and animal products followed by closure of overseas markets upon laboratory confirmation of this diagnosis. Financial losses associated with FMD would be likely to include the loss of export earnings from animals, animal products and byproducts, the costs of control measures and compensation, and costs associated with the storage of animal products (e.g. meat and dairy products) during the period of no exports.

MAF is satisfied that there are no legal issues relating to the interpretation of s 22 of the Biosecurity Act that should cause MAF to reassess the approach indicated in the risk analysis.

4.35.10 Such analyses should consider the national economic benefit from biosecurity measures in accordance with standard economic principles.

**MAF response:** Please refer to Key Statement 8 in section 3 of this document.
4.35.11 ...economic effects of PRRS are dismissed as minor on the basis of a very inadequate and purely descriptive consideration of the issues, with no attempt to undertake a true consequence assessment.

**MAF response:** Please refer to Key Statement 8 in section 3 of this document.

4.35.12 From the viewpoint of the commercial pork industry, it can validly be argued that PRRS is a disease which would be more damaging to it than FMD, because in the long term the productivity effects of PRRS on the commercial pig industry would cause continuing damage, whereas FMD has much smaller and more temporary effects on pig herd productivity, and the disease would be eradicated promptly in the larger national interest.

**MAF response:** Please see the response to 4.35.9 above.

4.35.13 Because exports represent only a small part of output, the pork industry would not suffer substantial net losses, yet it is a vital cornerstone of detection effort for a possible incursion of FMD.

**MAF response:** Biosecurity New Zealand’s website lists a number of measures currently in place to protect the country against the introduction of FMD (www.biosecurity.govt.nz/pests-diseases/animals/foot-n-mouth/mafs-role.htm). These measures include:

a) Nine new x-ray machines have been installed at our international airports making a total of fifteen at nine airports. These machines can detect plant, meat, fruit and food material.

b) All baggage coming into New Zealand is x-rayed or hand-searched.

c) Mail coming into New Zealand also goes through an x-ray machine and is screened by detector dogs. Risk parcels are then examined by MAF staff.

d) Eleven new teams of detector dogs are being trained to work at airports. Once they are on board, there will be a total of 21 dogs who can smell food and plant material on people and their clothing and in their bags.

e) Passengers arriving in New Zealand from countries that have Foot and Mouth Disease are being treated as high risk and are singled out for special checking.

f) One hundred new biosecurity staff are being recruited to bolster numbers working at the airports. Extra staff are currently working at peak times and staff have had their leave restricted.

 g) A new, more detailed and easier to understand biosecurity declaration card has been produced, and must be completed by all travellers to New Zealand.

h) If passengers are careless when completing their declaration card or forget to declare items, they will be instantly fined $200. If they deliberately make a false declaration, they could be fined up to $100,000 and imprisoned for up to five years.

i) A major education campaign is under way to inform travellers, farmers and people living in urban areas about Foot and Mouth Disease.

Primary surveillance for FMD on farms is provided by farmers and/or veterinary practitioners and a freephone number is available to report any suspected cases, which results in an initial investigation by an approved veterinarian.
Generally, cattle are considered to be the sentinel species for this disease because they consistently show textbook clinical signs of FMD whereas pigs (which show less dramatic clinical signs following infection) are considered to act as amplifiers of the disease because they are relatively resistant to airborne infection and are by far the most potent source of airborne virus\textsuperscript{31}, thereby enhancing the spread of FMD.

4.35.14 The industry is in fact a very responsible participant in exotic disease preparedness, because it takes a wider view than purely pursuing its own self-interests. It is therefore very disappointing that BNZ takes such a narrow and incomplete view of economic issues affecting biosecurity decisions.

\textit{MAF comment:} Noted.

4.35.15 The IRA also gives no consideration to the possibility that other unwanted organisms could enter in uncooked meat from approved countries, since the current IHS includes no protective measures against agents other than PRRS.

\textit{MAF response:} Current IHSs for imported pig meat have measures for a number of diseases apart from PRRS based on the recommendations of MAF’s earlier publication \textit{The importation into New Zealand of meat and meat products – a review of the risks to animal health} (see: \url{www.biosecurity.govt.nz/files/pests-diseases/animals/risk/meat-meat-products-ra.pdf}). For example, pig meat from the USA is imported on the basis of country freedom from African swine fever, foot and mouth disease, classical swine fever, rinderpest and swine vesicular disease. The present risk analysis was limited to consideration of the risk of introducing PRRS virus in imported pig meat. As stated in section 2.1, measures introduced for PRRS in pig meat in September 2001 were provisional, requiring the completion of a risk analysis to finalise MAF’s position on this issue. Other hazards were outside the scope of this risk analysis.

4.35.16 The very brief consequence assessment in the IRA does not adequately consider the items required to be evaluated under s 22 (5) (b), and does not give adequate weight to the larger biosecurity implications of the proposed change.

\textit{MAF response:} Please see response 4.36.1. Please also refer to Key Statement 8 in section 3 of this document.

4.35.17 New Zealand complies with its international obligations in relation to pig meat imports, and there is no technical justification for a relaxation of these measures. The proposed relaxation is incompatible with New Zealand law.

\textit{MAF response:} Statements in this review of submissions document (e.g. 4.37.2 and 4.44.7) indicate that our trading partners do see the current measures as excessively trade restrictive and a technical barrier to trade under the WTO. MAF is satisfied that there are no legal issues relating to the interpretation of s 22 of the Biosecurity Act

\textsuperscript{31}Donaldson AI, Alexandersen S, Sorensen JH and Mikkelsen T (2001), Relative risks of the uncontrollable (airborne) spread of FMD by different species. \textit{The Veterinary Record} 148, 602-4.
that should cause MAF to reassess the approach indicated in the risk analysis. Please also see Key Statement 11 in section 3 of this document.

4.35.18 The IRA as circulated does not comply with s 22 of the Biosecurity Act, and if it were adopted as a modified IHS, importers could be argued to be in breach of s 52. This could possibly extend as far as legal liability for the adverse effects, if PRRS was discovered in New Zealand in the future.

*MAF response:* MAF is satisfied that there are no legal issues relating to the interpretation of sections 22 or 52 of the Biosecurity Act that should cause MAF to reassess the approach indicated in the risk analysis.

4.35.19 It is therefore concluded that the CTO is unable to recommend the adoption of the proposed changes, because they fail to meet the obligations of the Act.

*MAF response:* Please see the response to 4.35.18 above.
4.36 DANISH MEAT ASSOCIATION

4.36.1 We believe that international recommendations on trade with commodities, as stated by the OIE, should always be the foundation for trade so as to avoid obstructive and non-scientifically based trade barriers.

**MAF response:** Under section 22 (5) (c) of the Biosecurity Act, the chief technical officer must have regard to New Zealand’s international obligations, before making a recommendation to the Director-General relating to the issue or amendment of an import health standard. This is in line with Article 3.1 of the WTO SPS agreement. However, article 3.3 of the SPS agreement states that members may introduce or maintain measures which result in a higher level of sanitary protection provided those measures are supported by a scientific assessment of the risks in accordance with Article 5 of the SPS agreement. The PRRS risk analysis released by MAF in July 2006 was carried out following international (OIE) guidelines for animal health risk analysis, and therefore is in accordance with Article 5 of the WTO SPS agreement.

4.36.2 …we hold significant concern for the notified risk management measures in light of New Zealand’s failure to enforce its own internal rules in relation to the feeding of waste to pigs.

**MAF response:** Please refer to Key Statement 5 in section 3 of this document.

4.36.3 …the risk analysis does not provide for a clear understanding of ‘consumer ready cuts’ and in particular the use of the term ‘high value’ appears unnecessary and may lead to further confusion and therefore additional barriers to trade.

**MAF response:** Please refer to Key Statement 3 in section 3 of this document.

4.36.4 …it is our view that provided fresh and or chilled pork meat is processed into consumer ready packs for sale to the consumer, then the need to further specify the value of the cut becomes irrelevant and should therefore be removed.

**MAF response:** Please refer to Key Statement 3 in section 3 of this document.
4.37 DANISH VETERINARY AND FOOD ADMINISTRATION

4.37.1 The Danish Veterinary and Food Administration therefore fully agree with your comments that the risk analysis basically concludes that the risk is negligible and that the proposed measures are not in accordance with a negligible risk.

MAF response: The risk analysis concludes that there is a non-negligible likelihood of release of PRRS virus in imported pig meat although the likelihood of exposure through feeding raw scraps of imported pork is considered negligible for any farm complying with the 2005 garbage feeding regulations.

However, MAF does recognise that there are small, non-commercial or marginally commercial herds which may not be complying with garbage feeding regulations and this is reflected in the overall non-negligible risk estimation.

4.37.2 We therefore also fully agree that the enforcement problems of the NZ authorities should not be the reason for trade barriers.

MAF response: Please refer to Key Statements 5 and 11 in section 3 of this document.

4.37.3 The definition of consumer-ready high value cuts is of crucial importance to the solution.

MAF response: Please refer to Key Statement 3 in section 3 of this document.
4.38 FINLAND FSA

4.38.1 The reported risk analysis follows the guidelines in Section 1.3 of the OIE Terrestrial Animal Health Code, which is the internationally accepted approach for import risk analysis.

*MAF response:* Noted.

4.38.2 Hazard identification - The conclusions of the section, paragraph 3.5 on p 18, are considered valid

*MAF response:* Noted.

4.38.3 The release assessment result calculated from the data of the article of Magar and Larochelle (2004) is presented as the conclusive point ii) in the Release assessment section 4.1.4 on p 36. The report lacks a critical appraisal of the validity of this one report and of the reliability and representativeness of the cited prevalence of the virus in pig meat in countries endemic with PRRS.

*MAF response:* The findings of the Magar and Larochelle study indicated a similar likelihood of infectious PRRS virus being present in the meat of pigs at slaughter as the likelihood predicted by the quantitative release assessment model in the risk analysis. Based on this extensive study it is not unreasonable (given that the risk analysis has taken a qualitative approach) to conclude that there is a low (but non-negligible) likelihood of infectious PRRSv being present in the meat of slaughtered pigs from a country with endemic PRRS.

4.38.4 …Magar and Larochelle do not give any indication of random sampling in their Materials and methods section. The conclusion ii) (p 36) to have a possibly selected non-random sample from two Canadian abattoirs represent all the pig meat in the countries outside New Zealand, which are endemic with PRRS, cannot therefore be accepted as valid.

*MAF response:* Please see the response to 4.38.3 above.

4.38.5 …it would have been useful to know the survival of PRRS virus in muscle in cases where the pigs had been infected more than 11 days before slaughter which probably would decrease the amount of virus present in muscle samples.

*MAF response:* The risk analysis highlighted a number of points on which further scientific information would be useful. However, risk analyses can only draw upon whatever scientific literature is available at the time of the analysis. If further scientific studies are carried out on relevant points, recommended sanitary measures may change in the future.
4.38.6 In the paper it was concluded that it is likely that the infectivity will persist in chilled and frozen pig meat during storage and transport to New Zealand (p 36). The conclusion would be more tenable with more detailed description about the process including handling after slaughter in the country of origin, transport to New Zealand and how the meat is handled in New Zealand and how long (how many days) it takes before pieces of raw meat could end up to be eaten by pigs on commercial pig farms, in case of illegal feeding of uncooked imported pig meat.

MAF response: The assessment of the likelihood of PRRS surviving storage and transportations in section 4.1.3 of the risk analysis suggests that it is likely that significant levels of PRRS virus infectivity will survive the chilling and freezing temperatures for the length of time that pig meat is held at during storage and transport to New Zealand.

4.38.7 The probability of a pig being infected prior to slaughter is set as a point estimate …based on the results from the NAHMS serological study which was made in 4756 pigs from 284 finishing herds not vaccinating against PRRS in the USA… the resulting probability for virus being present in oropharyngeal and tonsillar tissue is 0.26 (1 in four) and, as a result of this, it is concluded … that the risk is moderate to high… a reference in the text (Albina, 1997) states that although it is believed that more than 50 percent of farms are affected in Europe, there are low density pig areas with much lower prevalences… The level of seroconversion is not a reliable estimate of the infection status of the animals at slaughter.

MAF response: Section 4.1.2.5 of the risk analysis compares the results of the 2001 quantitative model with results of later field studies. The likelihood of virus being detected in pigs at slaughter demonstrated by these field studies (1.2 percent) was accepted in the release assessment rather than the 0.3 percent prediction of the model. Changes to the assumptions made in the model would therefore have no significant effect on the overall findings of the published risk analysis.

4.38.8 The model seems to set the probability for infectious PRRS present at the time of slaughter (P2) to 0 if age at slaughter is smaller than the sum of the age of infection and the duration of viremia. Otherwise P2 is set to 1. The probability (P3) of a pig harbouring infectious PRRS in tissues at slaughter is calculated as P1 x P2. This implies that the model uses the seroconversion rate in the assessment always when the age at slaughter is less than the sum of age of infection and the duration of viremia.

MAF response: Please see the response to 4.38.7 above.

4.38.9 The effect of these two points on the conclusions of the release assessment has not been discussed in the report.

MAF response: Please see the response to 4.38.7 above.
4.38.10 The results of the model are given in point estimates of the expected value. This does not give a clear view of the distribution of results and therefore not of the uncertainty and basis of the conclusions of the release assessment. The number of iterations per each simulation is not stated.

**MAF response**: Please see the response to 4.38.7 above.

4.38.11 The conclusions of the section, paragraph 4.2.6 on p 44-45 (exposure assessment), are considered valid

**MAF response**: Noted.

4.38.12 The conclusions of the section, paragraph 4.3.2 on p 50 (consequence assessment), are considered valid.

**MAF response**: Noted.

4.38.13 The (risk estimation) conclusion “…, there is a non-negligible likelihood of release of PRRS virus in imported pig meat.” cannot be accepted as valid if it is based solely on the results by Magar and Larochelle (2004).

**MAF response**: As stated in section 2.3.2, the risk estimation is based on the release, exposure and consequence assessments and therefore considers all relevant available scientific literature.

4.38.14 According to the report the only exposure pathway for PRRS would exist on pig farms that are not complying with the garbage feeding regulations of New Zealand. Considering this the recommended sanitary measures to manage the risk can not be regarded justified. This problem should be managed with measures of Veterinary authorities of New Zealand to intensify controls or other ways to improve enforcement of regulations.

**MAF response**: A number of submissions to this risk analysis (for example see 4.31.6, 4.32.8, 4.33.4, 4.34.16, and 4.35.5) have argued that, because of the unknown level of compliance with New Zealand’s garbage feeding regulations, the sanitary measures recommended do not provide an appropriate level of protection against an incursion of PRRS. Please refer to Key Statement 5 in section 3 of this document.
4.39 NETHERLANDS MAF

4.39.1 In general we can support the argumentation / conclusions of the Finish delegation.

*MAF response:* Noted.

4.39.2 The argumentation / conclusions in the report regarding hazard identification, exposure assessment, consequence assessment are considered valid.

*MAF response:* Noted.

4.39.3 The (non-negligible) likelihood of persistence of virus in chilled/frozen meat during transport / storage to/in NZ would be more tenable with a more detailed description of the process of the meat and estimated timeframes until pieces of raw meat could be eaten by pigs in NZ.

*MAF response:* The assessment of the likelihood of PRRS surviving storage and transportsations in section 4.1.3 of the risk analysis suggests that it is likely that significant levels of PRRS virus infectivity will survive the chilling and freezing temperatures for the length of time that pig meat is held at during storage and transport to New Zealand.

4.39.4 The likelihood of pigs being infected prior to slaughter is based on a (probably non random) point survey in the USA. (In view of) the sensitivity of this parameter to the model, it might not be appropriate to assume this as the situation in all countries that export to NZ.

*MAF response:* Section 4.1.2.5 of the risk analysis compares the results of the 2001 quantitative model with results of later field studies. The likelihood of virus being detected in pigs at slaughter demonstrated by these field studies (1.2 percent) was accepted in the release assessment rather then the 0.3 percent prediction of the model.

4.39.5 (In view of) the conclusion of the report that the only exposure pathway for PRRS would exist on pig farms that are not complying with the garbage feeding regulations of NZ, the recommended sanitary measures to manage the risk cannot be regarded justified. This problem should be managed (primarily) with measures of the NZ authorities within the country in order to increase compliance.

*MAF response:* A number of submissions to this risk analysis (for example see 4.31.6, 4.32.8, 4.33.4, 4.34.16, and 4.35.5) have argued that, because of the unknown level of compliance with New Zealand’s garbage feeding regulations, the sanitary measures recommended do not provide an appropriate level of protection against an incursion of PRRS. Please refer to *Key Statement 5* in section 3 of this document.
4.40 CHRIS TRENGROVE

4.40.1 I fully support NZPIB’s submission.

*MAF response:* Noted.

4.40.2 The recommended sanitary measures proposed in the Import Risk Analysis include options that would allow pork meat infected with PRRS to be released into New Zealand. This is despite the fact that it recognises that such meat has the ability to infect naive pigs through feeding. I am very concerned that the level of risk is under-estimated. I do not accept that the range of options proposed will manage the identified risk.

*MAF response:* Please refer to *Key Statement 1* in section 3 of this document.

4.40.3 …what is a “consumer-ready high value cut”? Such cuts have the ability to infect naive pigs.

*MAF response:* Please refer to *Key Statement 3* in section 3 of this document.

4.40.4 The Biosecurity (Meat and Food Waste) Regulations 2005 are the theoretical protection measure against PRRS infecting the New Zealand pig herd. This is a very flattering view of how these Regulations are working in practice.

*MAF response:* Please refer to *Key Statement 5* in section 3 of this document.

4.40.5 When MAF recommended that regulations be re-instated following its 2001 review, it proposed that there would be reactive policing rather than proactive policing…Hindsight over the last 15 months has now amply demonstrated that reactive policing of these regulations has been a very low priority. A very low level of follow up on reported suspected cases of non-compliance has only recently been set up in response to considerable efforts from NZPIB. I believe until the end of June 2006 there had only been two actual farm visits, and some phone calls and letters to these reported suspected cases of non-compliance. I have personally met with both the BNZ Director of Biosecurity and the Minister to reinforce the concern of NZPIB at the potential for biosecurity incursion via this regulated but substantially unchecked route. My concern is certainly for the New Zealand pig herd but also for New Zealand agriculture generally. The UK learned a very hard lesson in 2001 with FMD, where it is most likely that the incursion was through feeding infected material to pigs despite this being an illegal practice.

*MAF response:* Please refer to *Key Statement 5* and *9* in section 3 of this document.

4.40.6 The Risk Analysis … relies on the assumption that consumer-ready high value cuts (undefined) will not end up as waste…there are a number of reasons for product becoming waste, as well as the trimmed or discarded component. Other
significant pathways generating waste are via product out of quality specification, and past or close to 'use by' date...There is no reference at all in the Risk Analysis to these pathways which will be potentially significant in terms of generating PRRS infected pork within New Zealand.

**MAF response:** Please refer to Key Statements 2 and 3 in section 3 of this document.

4.40.7 With PMWS now endemic, it is even more crucial that New Zealand is protected from PRRS incursion, as these diseases have a synergistic effect in terms of on-farm disease impact.

**MAF response:** Please refer to Key Statement 13 in section 3 of this document.

4.40.8 The Risk Analysis overlooks some important considerations about pig ownership in New Zealand...it assumes that there is little contact between the commercial sector and non-commercial sector, and that the commercial industry can take steps to protect its biosecurity ...the commercial pork sector is at risk from the geographic location of non-commercial pig ownership. I have attached a map illustrating AgriBase figures (June 2006) which shows commercial pork producing units and other farms. These sectors are clearly geographically overlaid.

**MAF response:** Please refer to Key Statement 7 in section 3 of this document.

4.40.9 I am aware that Dr Eric Neumann of Massey University's EpiCentre has a proposal with BNZ seeking its support to investigate the nature of the para-commercial pork industry and to establish linkages with the commercial sector. This is crucial factual data required before the Risk Analysis can make assumptions that there are, or should be, barriers of interaction between the commercial and non-commercial industries.

**MAF response:** Please refer to Key Statement 7 in section 3 of this document.

4.40.10 I want to emphasize that appropriate sanitary measures to prohibit the release of PRRS infected meat into New Zealand are not a barrier to trade...Imports have flourished: since the sanitary measures were imposed - growing from 17,616 tonnes (bone-in equivalent weight) in 2001 to 31,862 tonnes (bone-in equivalent weight) in 2005. While there are a number of factors which impact on trade, this percentage increase of 81 percent includes both PRRS infected countries (e.g. USA) and non-PRRS infected countries (e.g. Australia).

**MAF response:** Although imports of pig meat into New Zealand have increased since the introduction of the current control measures for this commodity, if the current measures cannot be scientifically justified then New Zealand, as a signatory of the SPS agreement, cannot continue to require their implementation. Furthermore, statements in this review of submissions document (e.g. 4.37.2, and 4.44.7) indicate that our trading partners do see the current measures as excessively trade restrictive and a technical barrier to trade under the WTO.
4.40.11 A PRRS incursion would have major impact on commercial pork producers, their staff and families and the supporting rural communities

**MAF response:** Please refer to *Key Statement 8* in section 3 of this document.
4.41 DAVID LAWTON

4.41.1 My exposure to the backyard sector is relatively unique amongst those in the pig industry…prior to the identification of these properties through various and often necessarily creative means, neither I nor the commercial farmer has been aware of their existence. The need to investigate these herds has generally arisen because of contacts with other potentially at risk herds…when the links emerge it is clear that they are numerous and that there is a complex network of regular and haphazard contacts within this sector.

MAF response: Please refer to Key Statement 7 in section 3 of this document.

4.41.2 Pig breeding on these (backyard) properties is common and pigs are freely traded between properties for all sorts of reasons….In addition,… it is not uncommon for food sources to be shared amongst properties. Almost without exception these small pig herds are fed a variety of food waste that is derived from every available source. These sources include restaurants, bakeries, hospitals, supermarkets and large food processors. The food itself is a mixture of cooked and uncooked waste that ranges form supermarket green waste to reject pies. On more than one occasion I have personally seen uncooked pork cuts in such waste.

MAF response: Please refer to Key Statements 5 and 7 in section 3 of this document.

4.41.3 I believe that the activities of backyard pig keepers are a risk for the introduction of an exotic disease. Some of these diseases, such as PPRS, are fairly pig specific, while others such as FMD are highly infectious to a range of livestock.

MAF response: Please refer to Key Statement 7 in section 3 of this document.

4.41.4 Some in MAF recognize this and have sought to understand the backyard sector more fully. This led to a call for proposals…to characterize the population of backyard pig herds in the area surrounding the Auckland International Airport…MAF chose not to fund the research as the funding required exceeded their anticipated budget for this project.

MAF response: Funding of research projects by MAF is beyond the scope of this risk analysis.

4.41.5 From my wide and ongoing experience within the New Zealand pig industry and of the many backyard pig keepers that are not part of the industry, I believe the authors show very little understanding of either of these sectors in addition to their apparent lack of objectivity. As a result, the authors have proposed changes to the current sanitary measures that on the data that they themselves provide, will not adequately manage the risk of PRRS entering New Zealand and infecting the national herd.
MAF response: Please refer to Key Statement 7 and also to the “cascade of risk reduction” in Key Statement 1 in section 3 of this document.

4.41.6 …the authors accept that PRRS virus will enter New Zealand in pig meat imported from countries affected by PRRS and that some of this meat will be infective at the point of its end use where, if it is fed to a pig, it may infect that pig with the virus.

MAF response: Please refer to Key Statement 1 in section 3 of this document.

4.41.7 Between June 2003 and June 2004, 8,855 tonne of pig meat was imported into New Zealand from counties affected by PRRS. Of this, 97 percent was frozen. If it assumed that all of the remaining 3 percent was processed in a manner that inactivates PRRS (e.g. as salami etc), then the relevant tonnage is 8,580. Using the data of Magar and Larochelle (2004) to which the authors attribute some importance, it is expected that 103 tonnes of this meat will contain virus sufficient to be detected by PCR. With freezing and thawing the titre of virus declines, such that after freezing at -23°C, 75 percent of samples that had had sufficient virus for detection by viral isolation, no longer had detectable levels after 10 days. …Note, however, that in Table 15 data is presented that indicates that there is still some probability of infection following ingestion of only 1 g of this meat. As dose is dependent on both virus titre and the quantity of meat ingested, without making an assumption about the expected quantity of meat that will be ingested it is not possible to make a precise estimate. The authors conclude that it is reasonable to assume that the virus titre decreases by 75 percent from that present at slaughter over one freeze and thaw cycle. This is not an unreasonable assumption, although it is does not necessarily follow that 75 percent of meat is no longer infective. Thus, any estimate of the amount of meat that is infective at the point of use is crude at best. However, if it is assumed that all of the 103 tonnes of imported meat that was expected to harbour virus (PCR positive) in 2003/2004 is infective and that 75 percent of this infectivity is lost during a freeze and thaw cycle, 25,750 kg of pig meat would have been infective to pigs at its point of use in that year were it not for the existing sanitary measures.

MAF response: It is recommended in the risk analysis that the existing sanitary measures remain in place for pig meat coming from countries with endemic PRRS that is not in the form of consumer-ready, high value cuts or will not be processed on arrival into consumer-ready, high value cuts. The release assessment agrees that there is a non-negligible likelihood of chilled or frozen pig meat from a country with endemic PRRS harbouring infectious PRRS when imported into New Zealand and the exposure assessment, consequence assessment and risk estimation demonstrate that there is a non-negligible risk to small, non-commercial or marginally commercial breeding herds that are not complying with the garbage feeding regulations and for herds with inadequate biosecurity practices. Please refer to the “cascade of risk reduction” in Key Statement 1 in section 3 of this document.

4.41.8 As 1.2 percent of pig meat imported from North America (where PRRS is endemic) is expected to harbour the virus the description of the likelihood as “low” is misleading when referring to a recognized hazard. Such a description is
generally reserved for risks that are less than 1 in 1 million or 0.0001 percent in this context.

MAF response: As indicated in Import Risk Analysis Animals and Animal Products (Murray 2002), ‘Low’ has the Concise Oxford Dictionary definition of ‘Less than average, coming below the normal level’. MAF believes it is quite reasonable to describe a likelihood of 1.2 percent as low and is unaware of an alternative definition which reserves this term for likelihoods of less than 0.0001 percent.

4.41.9 The authors correctly conclude in the executive summary that the threat of imported pig meat that contains PRRS virus leading to the infection of a New Zealand pig only exists if a New Zealand pig is exposed to this meat. However, they then go on to state that an exposure pathway would only exist on pig farms that were not complying with the garbage feeding regulations. While this statement is technically correct … it is at the same time very misleading as it fails to identify the exposure pathway that would exist on properties where small herds of pigs are kept and the owners fail to comply with the garbage feeding… A more appropriate conclusion would be that “a potential exposure pathway is likely to exist on many of the more than 7000 properties on which a small herd of pigs is kept but that are not recognised or registered as pig farms”. By omitting to identify this exposure pathway in the executive summary, the risk of exposure is grossly misrepresented. It is possible that this was an oversight.

MAF response: Please refer to Key Statement 5 and 7 in section 3 of this document.

4.41.10 This number (over 7,000 properties with small pig herds) is derived from Agribase which is incomplete. In addition, it does not include properties in the South Auckland area where the density of backyard pig keepers is believed to be very high. It is possible therefore that the total number of such properties may exceed 15,000.

MAF response: This is not disputed. Section 2.1.2 of the risk analysis states “Since AgriBase does not attempt coverage in the urban areas, the backyard pig herds in Auckland and South Auckland are not included in the above figures. There are thought to be a large number of pigs in that region, particularly as a source of pig meat supply to the Polynesian community. It is estimated that up to 70,000 pigs per year may be slaughtered in this area, comprising approximately 10 percent of the national annual kill.”

4.41.11 …it is assumed that a pig must eat about 500 g of infective pig meat to receive an infectious dose simply because this quantity of meat was used in transmission studies. There is no basis for this assumption, although the work on which this assumption was derived does perhaps show that when 500 g of meat is fed, the probability of infection is high and that sufficient virus is provided to establish infection even when the titre of virus is below that detectable by virus isolation…Thus, the authors comment that it is unlikely that scraps in quantities similar to those used in the transmission studies will be generated in kitchen waste from households is irrelevant.
**MAF response:** The risk analysis does not make the assumption claimed in this submission. Please refer to *Key Statement 4* in section 3 of this document.

4.41.12 In addition, as noted earlier, many of the scraps that are fed to backyard pigs do not originate from household kitchens, but are sourced from the kitchens of large institutions, restaurants and so on. Even if any importance was to be given to the 500 g quantity, to assume that such commercial kitchens would not generate this volume of scraps is presumptuous.

**MAF response:** Please refer to *Key Statement 2* in section 3 of this document.

4.41.13 One of the reasons why the authors suggest that the amount of scraps will be low and thus available for pig feed, is that the proposed changes to the sanitary measures will only apply to high value cuts. Although what constitutes a high value cut is not defined as such, reading of the analysis suggests that they include chops, steaks and roasts. While I accept that these will yield less scraps than some other cuts, that they yield a little bit of trim is likely. In a commercial kitchen, a little bit of trim from many cuts can surely add up to a lot?

**MAF response:** Please refer to *Key Statements 2 and 3* in section 3 of this document.

4.41.14 It is also well known that at times whole cuts are discarded for a variety of reasons including because a product may be past its ‘use by’ date. There is no recognition of the potential for large quantities of high value cuts to be discarded at retail level because it is close to or past its ‘use by’ date.

**MAF response:** Please refer to *Key Statement 2* in section 3 of this document.

4.41.15 The authors state that should pig farms in New Zealand become infected with PRRS, the likelihood of spread to other pig farms would be low as long as standard biosecurity practices are observed...While many routes of transmission between the backyard herd and that on the pig farm would be eliminated if the pig farm adhered to basic biosecurity procedures, some transmission routes such as aerosol spread are simply beyond the control of the farmer.

**MAF response:** As discussed in section 3.4.5.5 of the risk analysis, there is no scientific evidence to prove airborne spread of PRRSv under field conditions in any country. The only credible study that has demonstrated airborne spread (under highly artificial experimental conditions) was carried out in 2005 by Prof Dee. It was concluded from this study that, in the field, the transmission of PRRSv by aerosols is probably a rare event, if it occurs at all.

The issue of airborne spread is discussed at length in appendix 2 of this document. Although various claims have been made that airborne spread is the only possible explanation for specific field observations, the results of published, peer-reviewed experimental studies question whether this route of transmission is likely to be significant. Please also refer to *Key Statement 10* in section 3 of this document.
4.41.16 In the South Island where almost half of the sow herds on commercial farms are housed and farrow outdoors, seagulls are ubiquitously present... It is through this behaviour that we suspect PMWS has spread between farms in Canterbury over the past eight months.

*MAF response:* The precise nature of the circumstances of the detection and spread of PMWS in New Zealand since late 2003 are the matter of some scientific debate, and speculation about this is beyond the scope of the risk analysis and this review of submissions. However, MAF is unaware of any studies that have demonstrated transmission of PRRS between pig herds via seagulls as suggested. Please also refer to Key Statement 10 in section 3 of this document.

4.41.17 There is no “standard” biosecurity practice in New Zealand, although we have encouraged producers to implement biosecurity measures both at an individual and industry level. For example the NZDPIB has a Farm Biosecurity Policy document that I developed for them at their request a few years ago and that is referred to in the analysis. The proportion of pig farmers that implement all of the recommended practices outlined in that policy is small, although it has increased since PMWS was recognised. Nevertheless, I am aware of individual farms that have developed PMWS despite having very comprehensive biosecurity programs. The bottom line is that a pig farmer can only control those factors that are under his or her control. While they may insist that only clean trucks come onto their property, say to deliver feed or cart pigs, they are ultimately dependent on the integrity of the trucking company or driver for compliance.

*MAF response:* Please refer to Key Statement 6 in section 3 of this document.

4.41.18 If PRRS virus was introduced into New Zealand, the impact on individual producers and the industry as a whole would be catastrophic...It is the authors opinion that the consequences of PRRS introduction would be negligible apart from the direct losses to affected farms. I consider this naïve. Pigs have to eat. On commercial pig farms in New Zealand, over 270,000 tonnes of feed is consumed annually and most of this is either grown in New Zealand or derived as a by-product from other industries e.g. milk powder, meat and bone meal, poultry offal. There are also many other support and service industries that benefit from the pig industry e.g. trucks cart pigs and feed and abattoir workers kill pigs.

*MAF response:* Please refer to Key Statement 8 in section 3 of this document.

4.41.19 This analysis should not only be of concern to the New Zealand pig industry, but to all persons who value rural New Zealand, its productivity and the contribution it has made to development and ongoing economic and social success of this nation

*MAF response:* Please refer to Key Statement 8 in section 3 of this document.
4.42  JOhn R Clifford

4.42.1  The risk assessment is well written and conforms to guidelines from the World Organisation for Animal Health.

  MAF response: Noted.

4.42.2  You indicate that the main risk of import and spread of PRRS virus is posed by feeding uncooked scraps to domestic swine. It is currently illegal in New Zealand to feed uncooked meat scraps to swine, yet before this prohibition there were no outbreaks of PRRS. Therefore, we would conclude that the final risk assessment of risk is negligible, as opposed to your designation that the risk is non-negligible.

  MAF response: A number of submissions to this risk analysis (for example see 4.31.6, 4.32.8, 4.33.4, 4.34.16, and 4.35.5) have argued that, because of the unknown level of compliance with New Zealand’s garbage feeding regulations, the sanitary measures recommended do not provide an appropriate level of protection against an incursion of PRRS. Please refer to Key Statement 5 in section 3 of this document.

4.42.3  APHIS is pleased that the risk mitigations will allow importation of uncooked, consumer-ready, high-value cuts of pork for direct export.

  MAF response: The risk analysis has recommended that consumer-ready, high value cuts of pig meat from countries with PRRSv can be imported with no further sanitary measures against PRRSv. Further details of this trade will be developed within the context of an import health standard.

4.42.4  We are also happy that there will be an option for uncooked pork to be processed upon arrival into consumer-ready, high-value cuts of pork.

  MAF response: The risk analysis has recommended that pig meat from countries with endemic PRRSv could be further processed on arrival, in an officially approved facility, into consumer-ready high value cuts with no further sanitary measures against PRRSv. Further details will be developed within the context of an import health standard.

4.42.5  We would like to verify that uncooked pork offals and trimmings can be exported from the United States to New Zealand for sausage production.

  MAF response: Comment on this issue is beyond the scope of this risk analysis.
4.43 JOY PHILIPPI

4.43.1 The first conclusion in the document states that there is a low likelihood of the PRRS virus being present in the pig meat at the time of slaughter...We concur, as various scientific studies have investigated PRRS infectivity at slaughter and support this conclusion.

*MAF response:* Noted.

4.43.2 The risk assessment goes on to acknowledge that from 1998 to mid-2005 there were no regulatory controls enforced in New Zealand on the feeding of food waste to pigs...

About 97 percent of all imported pig meat is imported frozen, and...a single freeze/thaw cycle can be expected to reduce the amount of PRRS virus in pork by 75 percent...

About 95 percent of imported frozen pork would have been further processed...Such processing commonly involves cooking ...

Most chilled meat would have been held for a total of 7 days between slaughter and sale to consumers in New Zealand, over which time about 90 percent of any PRRS infectivity present would be lost...

...there would have been limited trimming prior to cooking and therefore limited generation of raw scraps...

*MAF response:* As stated in 4.2.3, the evidence presented indicates that the likelihood of effective exposure from PRRS in imported pig meat is remote in practice, and for piggeries complying with the garbage feeding regulations the likelihood of exposure to infectious PRRS virus in pig meat is essentially zero. However, for other piggeries there remains a very low likelihood of exposure. As there would be significant consequences should PRRS infection occur in a breeding herd, the overall risk estimate is considered to be non-negligible and risk management measures are therefore appropriate.

4.43.3 Assuming that New Zealand will continue to enforce their regulations banning untreated food waste feeding, the risk of pigs being exposed to PRRS through ingestion of pig meat is therefore negligible.

*MAF response:* A number of submissions to this risk analysis (for example see 4.31.6, 4.32.8, 4.33.4, 4.34.16, and 4.35.5) have argued that, because of the unknown level of compliance with New Zealand’s garbage feeding regulations, the sanitary measures recommended do not provide an appropriate level of protection against an incursion of PRRS. Please refer to *Key Statement 5* in section 3 of this document.
4.43.4 It is notable that the meat in the Magar and Larochelle study was stored at -70°C which maximises the survival of the virus but which is a temperature well below the common temperature used for frozen meat transport (-20°C). Therefore, you can reasonably expect negligible risk of PRRS transmission in pork that is held or transported at -20°C or greater because viral survival will be negatively affected.

**MAF response:** MAF recognises that a single freeze/thaw cycle has been shown to reduce the titre of PRRS virus in pig meat by up to 2 logs and that the likelihood of virus isolation in thawed meat was shown to be only 25 percent of that prior to freezing (section 5.2.2.1 of the risk analysis). However, it is MAF’s opinion that this level of reduction is not sufficient to reduce the likelihood of release to a negligible level.

4.43.5 …the science supports the conclusion that there is a negligible likelihood of release of the PRRS virus in imported pig meat.

**MAF response:** Having evaluated all available scientific evidence, MAF has concluded that there is a non-negligible likelihood that chilled or frozen pig meat from a country with endemic PRRS will harbour infectious PRRS virus when imported into New Zealand.

4.43.6 …it is our understanding that, on the basis of the current risk assessment, the United States would be allowed to export high value pork cuts, but prohibited from exporting pork offal or pork trimmings to New Zealand. While we are clearly opposed to import policies that would in any way restrict the import of U.S. pork, we would appreciate confirmation that our reading of the current risk assessment is correct.

**MAF response:** As indicated in the responses to 4.42.3, 4.42.4 and 4.42.5, the details of a specific trade will be addressed within the context of any import health standard developed from the recommendations contained in this risk analysis so we will seek to address this question then. However, pork offal and pork trimmings would not fall within the definition of consumer-ready high-value cuts.
4.44 DR. DEBBIE BARR

4.44.1 It is the opinion of the Animal Health Risk Assessment (AHRA) group that the generic risk analysis on porcine reproductive and respiratory syndrome (PRRS) virus in pig meat is a very thorough, well documented and transparent document.

*MAF response:* Noted.

4.44.2 The New Zealand risk assessment looks at one possible hazard (PRRS), and if the virus is present in the exporting country, restrictions are applied without determining the country situation. This could be unfair since the prevalence of the disease, detection capability, controls in place and management practices will have a direct impact on the release assessment, and would result in variable levels of risk...an exporting country such as Canada should be able to have a release assessment more adapted to its situation, which would therefore be more accurate in regards to the potential risk to the importing country (New Zealand).

*MAF response:* One of the key scientific publications used in the release assessment (Magar & Larochelle, 2004) is a report on a random survey in 2 slaughterhouses in Canada. MAF is unaware of any more recent data that would allow a reassessment of the country situation.

4.44.3 In 1995, the AHRA group performed a risk assessment on PRRS in Canadian pork meat. The outcome was that the likelihood of infection in exporting up to 30000 tonnes of Canadian pork meat would be 1 infection in 2755 years (0.03 percent chance), with a 95 percent confidence level. This outcome is considered extremely low and is in agreement with the outcome of the New Zealand release assessment, which is essentially negligible risk for New Zealand piggeries complying with garbage feeding regulations and very low for piggeries not complying with garbage feeding regulations.

*MAF response:* The 2004 study cited in response 4.44.2 indicates that 1-2 percent of pig carcasses at slaughter contain infectious PRRS virus.

4.44.4 The experimental infection was done through ingestion of 500 to 900 g of meat fed over two consecutive days. The New Zealand risk analysis has not demonstrated that swine in New Zealand would likely be exposed to such a large quantity of infected meat resulting from importing contaminated meat.

*MAF response:* MAF agrees with this. However, the risk analysis also does not consider the quantities used in feeding trials (500 – 900g) to suggest a minimal infectious scrap size.

4.44.5 The assessors assumed that the likelihood of exposure is higher for farms not complying with garbage feeding regulations, but could not estimate this likelihood because of lack of information concerning the minimum amount of
uncooked meat that contains an infective dose...In our opinion, the New Zealand risk assessment took a conservative approach.

**MAF response:** MAF agrees that there is no information regarding the minimum infectious scrap size, and, as stated above, the risk analysis did not consider the quantities used in feeding trials (500 – 900g) to suggest a minimal infectious scrap size. Although this submission considers this to be a conservative approach, a number of other submissions would strongly disagree.

4.44.6 The risk management options proposed in the New Zealand’s Import Risk Analysis: *PRRS Virus in Pig Meat* do not address the option of reducing the likelihood of exposure by improving compliance by New Zealand producers with the 2005 garbage feeding regulations.

**MAF response:** MAF has recognised that the level of compliance with these regulations is unknown. To provide an appropriate level of protection against an incursion of PRRS without sanitary measures on imported pork, MAF would need to be confident that there is total compliance with these regulations by New Zealand pig keepers. Unfortunately, this would not be economically feasible to achieve.

4.44.7 Canadian access to the New Zealand pork market has been hampered by technical barriers.

**MAF response:** Please refer to *Key Statement 11* in section 3 of this document.