CHAPTER EIGHT

CRITICISMS OF THE DRAFT IMPORT RISK ANALYSIS METHODOLOGY

Introduction

8.1 This chapter raises a number of criticisms of the risk assessment methodology adopted by BA in the draft IRA. Fundamentally, the risk assessment methodology utilises a qualitative assessment of risk, rather than a quantitative assessment. The Committee believes that a quantitative measure would greatly increase transparency of the risk assessment process, especially when measured against Australia's ALOP.

8.2 In addition, leaving aside claims that BA should have used a quantitative risk assessment, the qualitative risk assessment measure adopted by BA was also criticised for being biased towards the lower probabilities, and for 'splitting events' in the entry, establishment and spread pathways inappropriately. In turn, BA's application of a "very low" risk as meeting Australia's ALOP becomes problematic.

The Merits of Qualitative v Quantitative Risk Evaluation

8.3 In its written submission to this inquiry, BA noted that the qualitative risk evaluation matrix used in the draft IRA is similar to that used in the IRA on Non-viable Salmonoids and non-salmonoid Marine Finfish (the Salmon IRA). That qualitative risk evaluation matrix was subsequently proved to be defensible to scrutiny from the WTO Appellate Body.[1]

8.4 Nevertheless, the Committee is highly critical of the decision by BA to utilise a qualitative risk assessment in the draft IRA, as opposed to a quantitative risk assessment. Fundamentally, this is because of the complexity of the risk evaluation task in the draft IRA, the scarcity of data on some issues, the lack of knowledge in certain areas and the need for transparency in the risk assessment. These factors are precisely the reasons for favouring a quantitative analysis over a qualitative analysis.

8.5 To develop this point, as part of its inquiry into the importation of salmon, the Committee commissioned a research paper on the measurement of risk by Mr Gibson. Fundamentally, Mr Gibson argued that there are good reasons and well-established rules for combining variables in a quantitative risk evaluation matrix. These are best demonstrated by citing the following example.[2]

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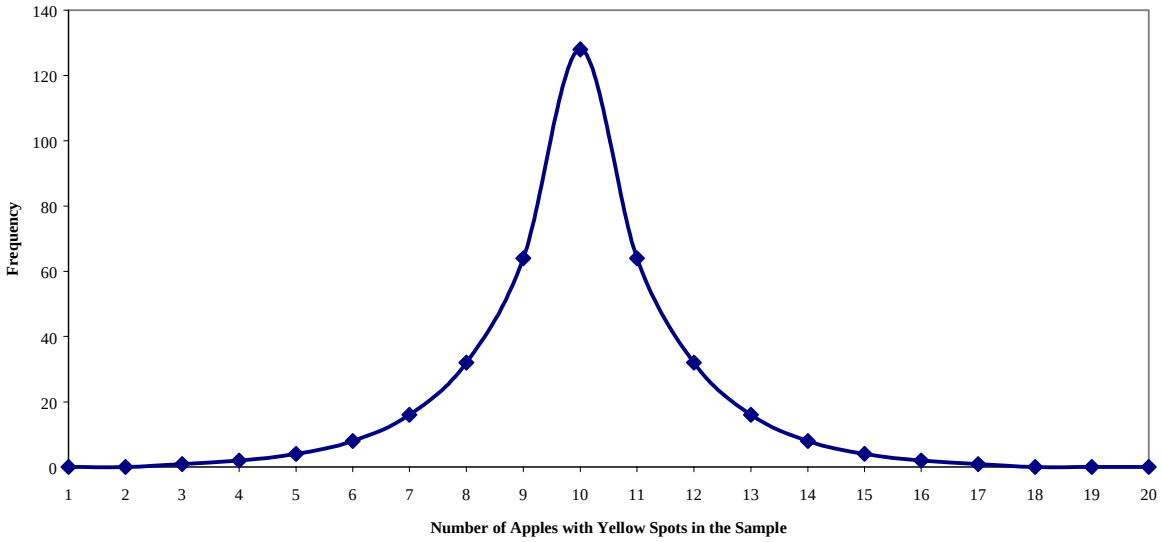
1 Submission 41, p 30

2 D.Gibson, *A Review of the Import Risk Analysis on non-Viable Salmonoid and non-Salmonoid Marine Finfish*, November 1999, p 15

8.6 Consider a consignment of 1 million apples. In an initial sample of 100 apples, 10 were found to have yellow spots. In the next sample of 100 apples, only 9 were found to have yellow spots. In the next sample, 12 were found to have yellow spots, and so on and so forth. These results can be charted on a distribution parabola as shown in Chart 8.1 below.

Chart 8.1: Frequency Distribution of Apples with Yellow Spots



8.7 As shown in the chart above, some samples of 100 apples were found to have as few as 3 apples with yellow spots, while other samples were found to have as many as 17 apples with yellow spots. This range from 3 – 17 is called the spread of the parabola. At the same time, the most likely outcome was for 10 apples in a sample of 100 to have yellow spots. This is called the location of the parabola, and defines the most commonly expected value. Accordingly, the above frequency distribution has a location of 10 and a spread of 3-17.[3]

8.8 Based on the above frequency distribution, Mr Gibson noted that a quantitative measure of probability has certain definite advantages over a qualitative measure:

a) A qualitative approach assigns a single probability to an event (ie the location), and does not take account of the variation or uncertainty of that value (ie the spread). That is to say, in the above example, a qualitative measure of probability based on a location of 10 does not take into account the fact that the outcome can potentially be as low as 3/100 or as high as 17/100.

3 *Ibid*, p 11

b) Because a qualitative approach cannot take into account the variations in the spread of outcomes (ie 3/100 to 17/100 in the above example), the user of the qualitative approach cannot adopt alternative measures of risk by adopting either the most optimistic (ie a probability of 3/100) or pessimistic (ie a probability of 17/100) outcome.

8.9 The above example highlights the fact that the qualitative risk evaluation matrix used by BA in the draft IRA does not allow a conservative approach to be adopted to the management of risk. Rather, the risks associated with New Zealand apples are simply what the authors state them to be, and as such cannot be tested. By contrast, a quantitative risk is ideally suited to such an analysis. It allows the user to break the risk down into constituent parts, and where necessary adopt alternative measurements of risk.

8.10 In this regard, the Committee notes the written submission of the New Zealand Government. The New Zealand Government argued that BA is entitled to implement a conservative approach to quarantine, but that conservatism should only be introduced in the risk management stage of the draft IRA. The New Zealand government submitted that there are instances in the draft IRA where a logical conclusion has been reached, but because of 'uncertainty', further conservatism is introduced.[4] Similarly, the New Zealand High Commissioner to Australia stated:

> … we believe the draft IRA contains a substantial measure of extra conservatism. What I mean by that is that the risk management process hangs together around a careful science based ascertainment of risk. It is not sufficient to work on the premise that there is a possibility of entry, establishment or spread of an organism.[5]

8.11 The Committee acknowledges this argument. However, the Committee believes that alongside a guiding assessment of risk based on the location of a particular risk, BA is also entitled to develop both conservative and optimistic assessments of risk. These alternative measures in turn can be used to inform the development of risk management protocols.

8.12 For example, BA may estimate the risk posed by fire blight based on an assessment of a 5/100 chance of apples from New Zealand harbouring *Erwinia amylovora*. At the same time however, BA should develop conservative estimates based on a 10/100 chance of apples from New Zealand harbouring *Erwinia amylovora*, and optimistic estimates based on a 0/100 chance. The results of all these measures should be used in developing risk management protocols.

8.13 Environment Australia also raised the appropriateness of qualitative assessment in its written submission to the inquiry. In developing its response to the draft IRA, Environment Australia engaged HERMA, who specialise in risk analysis.

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4 Submission 24, p 8

5 Evidence, RRAT, 5 April 2001, p 405-406

They elucidate well the arguments made above in relation to the estimation of spread of uncertainty:

> … we consider that significant uncertainty would be likely to be associated with the individual estimates and consequences that are derived using [the qualitative] methodology. When combined to yield cumulative probabilities and overall risk estimates, this would be expected to result in a cumulative multiplication of uncertainties. However, the methodology does not incorporate an appropriate uncertainty assessment or characterisation at any point. We consider this to be a major methodological flaw which severely limits the transparency and practical utility of the resultant risk estimates.[6]

8.14 Similarly, the Australian Food and Grocery Council argued in its written submission that:

> … any error in the assumptions will be magnified the more times the matrix of rules for combining likelihoods is applied, as will any errors in the subjective allocation of risk descriptions and probability ranges.[7]

8.15 Other parties also recommended that BA adopt a quantitative risk assessment technique. For example, in hearings on 29 March 2001, Professor Aldwinckle indicated his opinion that the only valid way of measuring risk is to multiply quantitative estimates, rather than multiplying words.[8] Indeed, the Committee notes AQIS's own report of its meeting with representatives from state agricultural departments on 20/21 July 2000:

> It was agreed that there needed to be a quantitative risk assessment done for fire blight and included in the draft IRA as an appendix.[9]

8.16 Finally, the Committee notes the findings of the recent ANAO report *Managing for Quarantine Effectiveness*. It noted that the principal constraints in the use of quantitative modelling is the time and technical resources required, but that AFFA has now produced guidelines for staff and members of IRA Panels and has run training programs on the use of quantitative analysis.[10]

8.17 Given the obvious advantages of quantitative risk analysis over qualitative risk analysis, the Committee strongly reiterates Recommendation 8 of *An Appropriate Level of Protection* (the Salmon report). Recommendation 8 of the Salmon report was

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6 HERMA Risk Consultants, *Preliminary Overview Comments on the Risk Assessment Methodology Employed by Biosecurity Australia in their "Draft Import Risk Analysis on the Importation of Apples from New Zealand"* (October 2000), 22 November 2000, cited in Environment Australia, Response to Questions on Notice from 28 February 2001

7 Submission 38, p 11

8 Evidence, RRAT, 29 March 2001, p 382

9 AQIS, Report from a Meeting with Representatives from State Agriculture Departments to Discuss the Draft NZ Apple IRA, 20-21 July 2000

10 ANAO, *Managing for Quarantine Effectiveness,* Audit Report No 47 2000-2001, June 2001, p 110

that 'wherever possible, AQIS support their qualitative analysis with quantitative risk assessment techniques'.

The Qualitative Measurement of Risk in the Draft IRA

8.18 In relation to the qualitative measurement of risk adopted in the draft IRA, Mr Gibson also noted in his paper that it is impossible to define a probability qualitatively. A "low" probability for one person, may be a "moderate" probability for another person in a different context.[11]

8.19 In this regard, the Committee cites the earlier example of apples from New Zealand which have a chance between 0/100 and 10/00 of harbouring *Erwinia amylovora*. In this scenario, an individual could assess the probability of apples from the consignment harbouring *Erwinia amylovora* as either "negligible", "very low" or "low". However, an assessment of "negligible" would clearly understate the risk if a particular batch of apples had a probability of harbouring *Erwinia amylovora* of 10/100. At the same time, an assessment of "low" would clearly overstate the risk if a particular batch of apples had a probability of harbouring the *Erwinia amylovora* of 0/100.

8.20 Mr Gibson also noted that it is impossible to combine different qualitative probabilities – there are no rules for combining a "low" and "moderate" probability to arrive at a conclusion.[12] Similarly, in its written submission, Environment Australia argued that it is difficult to see without meaningful qualification how the product of two "moderate" probabilities can be a "low" probability, or how the product of two of "moderate" and one "low" probability can be a "very low" probability (and therefore acceptable).[13]

8.21 In this regard, the Committee noted in the previous chapter BA's argument that where a "high" or "extreme" likelihood is multiplied by a lower likelihood, the result will generally fall into the same range as the lower of the two. In response, the Committee again finds it instructive to cite the paper by HERMA:

> In combining descriptive likelihoods, the results, on their own, appear to have little practical meaning, since cumulative probabilities give rise to cumulative uncertainties. Biosecurity Australia has provided no mathematical model, data or other evidence linking such descriptive theoretical "calculations" to the biological complexity and variability of the systems under consideration, and does not appear to have validated the methodology in any way. The practical validity of using this approach is therefore open to serious question.

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11 Mr Gibson, *A Review of the Import Risk Analysis on non-Viable Salmonoid and non-Salmonoid Marine Finfish*, November 1999, p 11

12 *Ibid*

13 Submission 43, pp 4-5

> Table 9 on page 48 and Figure 5 on page 49 detail a risk estimation matrix and an iso-risk curve respectively. Of particular interest here is Biosecurity Australia's interpretation of the risk significance of so-called "low probability – high consequence events". This includes the "very low" and "negligible" probability categories combined with the "high" and "extreme" consequence categories. Using potentially spurious theoretical arguments, Biosecurity Australia have determined that "low probability – high consequence events" generally correspond to a very low risk, and that this is acceptable to Biosecurity Australia.
>
> Putting aside the complex issue or risk acceptability, several important points need to be made with respect to this interpretation. First of all, combining any non-zero probability with a high or extreme consequence must result in a very high risk (not a low risk) due to the practical weighting (based on the greater potential uncertainty inherent in the probability terms) which must be given to any high-magnitude potential economic loss. The practical (and logical) risk argument should be as follows: If the probability of entry, establishment and spread is non-zero, then it is possible for the event to occur, and if it did occur, then the economic consequences are likely to be devastating (which equated to a very high overall risk). It is not just a matter of quasi-mathematical manipulation of probability and consequence terms, since the risk magnitude must be related to the practical loss situation, and to the uncertainties inherent in the risk assessment. [14]

8.22 Based on the HERMA paper, Mr Morvell from Environment Australia argued in hearings that risk assessment is an imperfect science, but that if you can quantify the level of risk by using actual data, clearly the level of uncertainty is reduced. By contrast, the use of a qualitative judgement makes it far harder for other parties to challenge or justify the assessed level of risk.[15]

8.23 The New Zealand Government also suggested that the rationale behind the combination of risks in the risk estimation matrix is far from transparent. For example, "low" x "low" = "low", but at the same time "moderate" x "low" = "low". Furthermore, the NZ Government argued that when more than two steps are combined, for example "low" x "low" x "low" x low", then logically the sequence will produce an overall risk that is considerably less than "low".[16]

8.24 Given these criticisms, the Committee nevertheless notes that some parties were in favour of the qualitative analysis adopted in the draft IRA. In his evidence to the Committee, Dr Wimalajeewa indicated that he did not object to the qualitative

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14 HERMA Risk Consultants, *Preliminary Overview Comments on the Risk Assessment Methodology Employed by Biosecurity Australia in their "Draft Import Risk Analysis on the Importation of Apples from New Zealand*" (October 2000), 22 November 2000, cited in Environment Australia, Response to Questions on Notice from 28 February 2001

15 Evidence, RRAT, 28 February 2001, p 365

16 Submission 24, p 8

approach adopted by BA.[17] Similarly, in its written submission, the Victorian Department of Natural Resources and Environment suggested that the IRA methodology is sufficiently robust.[18]

The Alternative Measurement of Risk Proposed by the AAPGA

8.25 In Attachment 4 to its written submission, the AAPGA proposed its own qualitative measurement of risk, as an alternative to that used in the draft IRA by BA.

8.26 The AAPGA argued that the draft IRA risk evaluation matrix is based on the qualitative likelihoods shown in Table 8.1 below.

Table 8.1: AAPGA Estimates of Quantitative Probability used by BA

Probability	Description	Quantitative probability range
Extreme	Virtually certain to occur	>0.99
High	Likely to occur	0.7 to 0.99
Moderate	Occur with an even probability	0.3 to 0.7
Low	Unlikely to occur	0.01 to 0.3
Very low	Very unlikely to occur	0.0000001 to 0.01
Negligible	Almost certainly not occur	$<10^{-7}$

Source: Submission 33, Appendix 4, p 105

8.27 The AAPGA argued that these likelihoods are biased towards the lower probabilities. Put simply, there are two probability categories above the "moderate" probability, however there are three probability categories below the "moderate" probability.[19]

8.28 To correct this perceived bias towards the lower probabilities, the AAPGA developed the qualitative measures of probability shown in Table 8.2 below. Table 8.2 includes a third probability category above the "moderate" category.

Table 8.2: Alternative AAPGA Measures of Quantitative and Qualitative Probability

Probability	Description	Quantitative probability range
Extreme	Virtually certain to occur	>0.9999999
Very high	Very likely to occur	0.99 to 0.9999999
High	Likely to occur	0.7 to 0.98999
Moderate	Occur with an even probability	0.3 to 0.69999
Low	Unlikely to occur	0.01 to 0.29999
Very low	Very unlikely to occur	10^{-7} to 0.00999
Negligible	Almost certainly not occur	$<10^{-7}$

Source: Submission 33, Appendix 4, p 105

17 Evidence, RRAT, 13 February 2001, p 147

18 Submission 45, p 1

19 Submission 33, Appendix 4, p 105

8.29 On the basis of its own quantitative measures in Table 8.2 above, the AAPGA presented its own matrix of rules for combining descriptive likelihoods, shown in Figure 8.1 below.

Figure 8.1: AAPGA Matrix of Rules for Combining Descriptive Likelihoods

Likelihood 1	*Extreme*	extreme						
	Very High	very high	very high					
	High	high	high	high				
	Moderate	moderate	moderate	moderate	low			
	Low	low	low	low	low	low		
	Very Low	very low	very low	very low	very low	very low	very low	
	Negligible	negligible	negligible	negligible	negligible	negligible	negligible	negligible
		Extreme	*Very High*	*High*	*Moderate*	*Low*	*Very Low*	*Negligible*
					Likelihood 2			

Source: Submission 33, p 24

8.30 Based on the above AAPGA matrix of rules for combining descriptive likelihoods, the likelihood from combining two "moderate" probabilities is "low":[20]

Median value for "moderate" = (0.3+ 0.7) / 2
= 0.5

Product of "moderate" x "moderate" = 0.5 x 0.5
= 0.25

8.31 The AAPGA also argued in Attachment 4 to its written submission that BA's estimation of economic consequence of the entry, establishment and spread of a pest in the draft IRA is highly simplistic. In particular, the AAPGA argued that the BA scale did not introduce any monetary values of, say, an "extreme" occurrence. The AAPGA suggested that an extreme consequence would involve over $1 billion in lost revenue.[21]

8.32 Accordingly, the AAPGA proposed an alternative scale for measuring consequence, again incorporating three measures both above and below a "moderate" consequence, and using a log scale to assign values between a "negligible consequence" of $1 and an "extreme" consequence of $1 billion. This is shown in Table 8.3 below.

20 Submission 33, appendix, p 107

21 Submission 33, appendix, p 111

Table 8.3: AAPGA Estimates of Economic Consequence

Classification	Description	Value
Negligible	The impact is unlikely to be recognised by directly affected parties.	>$1
Very low	The impact on any given criterion is likely to be minor to directly affected parties and unlikely to be discernible at any other level.	>$30
Low	The impact is likely to be recognised within an affected geographic region, and significant to directly affected parties. It is not likely that the impact will be recognised at the national level.	>$1000
Moderate	The impact is likely to be recognised at a national level, and significant within affected geographic areas. The impact is likely to be highly significant to directly affected parties.	>$30,000
High	The impact is likely to be significant at a national level, and highly significant within affected geographic regions. This classification implies that the impact would be of national concern. However, the serious effect on economic stability, societal values or social wellbeing would be limited to a given geographic region (one producing region but not the Goulburn Valley).	>$1 million
Very high	The impact is likely to be highly significant at a national level, and very highly significant within affected geographic regions. This classification implies that the impact would be of national concern. However, the serious effect on economic stability, societal values or social wellbeing would be limited to the Goulburn Valley alone or one producing region other than the Goulburn Valley.	>$30 million
Extreme	The impact is likely to be highly significant at the national level, and extreme within affected geographic regions. This classification implies that the impact would be of national concern. Economic stability, societal values or social wellbeing would be seriously affected in most if not all producing regions.	>$1 billion

Source: Submission 33, appendix 4, p 111-113

8.33 Based on its alternative measures of the probability of entry, establishment and spread of a pest, and the economic consequences of that happening, the AAPGA developed its own risk estimation matrix shown in Figure 8.2 below.

Figure 8.2: AAPGA Risk Estimation Matrix

Probability of entry, establishment and spread	*Negligible*	*Very Low*	*Low*	*Moderate*	*High*	*Very High*	*Extreme*
Extreme	very low	very low	low	extreme	extreme	extreme	extreme
Very High	very low	very low	low	extreme	extreme	extreme	extreme
High	very low	very low	low	extreme	extreme	extreme	extreme
Moderate	very low	very low	low	high	extreme	extreme	extreme
Low	very low	very low	very low	low	extreme	extreme	extreme
Very Low	negligible	very low	very low	very low	low	extreme	extreme
Negligible	negligible	negligible	negligible	very low	very low	very low	low

Consequence of entry, establishment and spread

Source: Submission 33, p 24

8.34 As can be seen, the AAPGA risk estimation matrix includes an extra "very high" category, together with a very different estimation of outcomes.

8.35 The Committee acknowledges the alternative qualitative analysis proposed by the AAPGA, and notes in particular the AAPGA's efforts to apply a quantitative value to the qualitative measures of risk adopted by BA. Nevertheless, the Committee continues in its firm belief that a full quantitative analysis is preferable to a qualitative risk analysis.

The Events in the Entry, Establishment and Spread Pathway

8.36 During the conduct of this inquiry, various parties also questioned BA's categorisation of the events in the entry, establishment and spread pathway. As noted in Chapter Seven, the probability of entry was in turn divided into eight steps, four each in the importation and distribution pathways.

8.37 In his written submission, Dr Wimalajeewa argued that BA should have assessed the "entry" component of the entry, establishment and spread pathway independent of the "establishment" and "spread" components:

> The possible entry of the bacterium *Erwinia amylovora* into Australia with New Zealand apples is primarily the most important single event occurring in the pathway associated with the importation. The other events that follow entry are only secondary. Therefore, 'entry' should be considered and assessed as such, on its own, and not be split or combined with other events that follow which will result in a significant loss of its true meaning.[22]

8.38 Furthermore, Dr Wimalajeewa argued that the last three steps in the "entry" component of the entry, establishment and spread pathway – "discarded waste", "exposure to the environment" and "vectors and other means of transfer" – should not have been considered under the entry component. Rather, Dr Wimalajeewa argued

22 Submission 28, p 6

these factors should have been considered under the establishment component, as was done in the 1998 IRA.[23]

8.39 As a result of this inappropriate categorisation of events in the entry, establishment and spread pathway, Dr Wimalajeewa argued that the draft IRA 'unrealistically and artificially' lowers the probability of successful transfer of *Erwinia amylovora* to a host here in Australia.[24]

8.40 In addition, the AAPGA argued that the matrix of rules for combining probability assumes that individual events in the entry, establishment and spread pathways are independent. However, the AAPGA argued that this is not the case:

a) When large numbers of fruit are infested (or infected) in an orchard in New Zealand the probability of eliminating the infestation/infection during pack-house procedures will decrease compared with the probability when low numbers are infested (or infected).

b) When low (but non-zero) numbers of fruit are infested following storage and transportation then it is less likely that on-arrival inspection will identify a problem than when high numbers of infested fruit are present.

c) The probability of transfer of a bacterial or fungal pest (importation step 4) will be influenced by the numbers of other pests present (insects, mites).

8.41 By contrast, the New Zealand Government argued in its written submission that the steps in the entry, establishment and spread pathway are appropriate. However, the New Zealand Government argued that the qualitative methodology has not been consistently applied. In particular, the probability of entry is broken down into the four importation and distribution steps, however an assessment of risk (ie "high", "low" etc) is not made at every point. Rather, an overall assessment is made for all 4 steps, and then combined to give the probability of entry:

> New Zealand believes that the qualitative assessment of risk should be applied in a consistent manner to all stages of the risk assessment, as phytosanitary measures are based on these assessed risks. There are also instances where a risk has been considered to be 'possible' or 'conceivable'. New Zealand submits that at all steps of the assessment, AFFA should provide some evaluation or estimation of likelihood or probability (qualitative or quantitative), as opposed to the mere possibility of a risk.[25]

23 Submission 28, p 6-8

24 Submission 28, pp 6-7

25 Submission 24, p 8

8.42 Finally, the Committee notes the suggestion of the TAPGA that the splitting of events in the entry, establishment and spread pathway provides an opportunity for manipulation of the final unrestricted risk assessment:

> If an event can be split into enough components then any of the sub-components can be rated low or very low which distorts the overall result.[26]

8.43 The Committee does not endorse this suggestion, but nevertheless believes that BA should reassess and rationalise the components of the entry, establishment and spread pathway. In particular, the possible transfer of *Erwinia amylovora* to a suitable host in sufficient numbers to initiate an infection should form part of the establishment pathway, rather than the entry pathway. In addition, as suggested by the New Zealand Government, each component of the entry, establishment and spread pathway should be assessed independently.

The Appropriate Level of Protection

8.44 During conduct of this inquiry, various parties argued that Australia's ALOP continues to be defined in uncertain terms. For example, Ms Williams from the Tasmanian Department of Primary Industries, Water and the Environment argued:

> … clearly, improvements need to be made so that we make our ALOP at least commensurate in precision with that of other countries – that is, no more or no less precise than those of some of our trading partners – and to do this jointly, with the Commonwealth in consultation with the states. Tasmania has been attempting to do this but with little success so far, other than an agreement to continue to talk.[27]

8.45 The Committee notes in this regard its Recommendations 10 and 11 in its earlier report *An Appropriate Level of Protection* (the Salmon report). The Committee recommended that AQIS take steps to define more explicitly the concept of ALOP. Recommendation 10 and 11 stated:

> That the Commonwealth Government, in consultation with the Community and with State and Territory governments, be responsible for the establishment of an appropriate level of protection for Australia.
>
> That the ALOP be more explicit and include as part of its determination environmental factors and the application of the precautionary principle.

8.46 AFFA has responded to these recommendations in the recent ANAO report *Managing for Quarantine Effectiveness*. AFFA advised that the WTO Appellate Body has found Australia's ALOP to be sufficiently precise, and that there are risks in

26 Submission 17, p 8

27 Evidence, RRAT, 14 February 2001, p 184

adopting an approach which might subsequently be found inappropriate, or which left current policies open to challenge.[28]

8.47 That said, the ANAO continued that many stakeholders still considered the concept of ALOP and the process by which it is set to be ill explained.[29] Accordingly, the ANAO recommended:

> The ANAO recommends that AFFA consider more effective means of communicating with stakeholders the concept, definition and application of Australia's ALOP in order to facilitate stakeholder understanding of the IRA process and achieve better outcomes.[30]

8.48 In the context of this current inquiry, the Committee notes in particular that it is difficult to define qualitatively what constitutes a "very low" risk, and whether a "very low" risk categorisation meets Australia's ALOP. The Committee received a number of submissions to this effect.[31]

8.49 In response, the Committee notes that the conduct of the final IRA using a full quantitative analysis will require BA to define a "very low" risk more accurately, and express it in numerical terms.

28 ANAO, *Managing for Quarantine Effectiveness,* Audit Report No 47 2000-2001, June 2001, p 111

29 *Ibid*, p 112

30 *Ibid*, p 113

31 Submission 13, p 2