FORM 6-K

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Report of Foreign Private Issuer

Pursuant to Rule 13a-16 or 15d-16

of the Securities Exchange Act of 1934

June 7, 2004

JAMES HARDIE INDUSTRIES N.V.

(Exact name of Registrant as specified in its charter)

4th Level, Atrium, unit 04-07
Strawinskylaan 3077
1077 ZX Amsterdam, The Netherlands
(Address of principal executive offices)

Indicate by check mark whether the registrant files or will file annual reports under cover Form 20-F or Form 40-F.

Form 20-F..X.... Form 40-F.....

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(1): Not Applicable

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(7): Not Applicable

Indicate by check mark whether by furnishing the information contained in this Form, the registrant is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.

Yes ..... No ..X...

(If “Yes” is marked, indicate below the file number assigned to the registrant in connection with Rule 12g3-2(b): Not Applicable

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Safe Harbor Statement

The exhibit attached to this Form 6-K contains forward-looking statements. Words such as “believe,” “anticipate,” “plan,” “expect,” “intend,” “target,” “estimate,” “project,” “predict,” “forecast,” “guideline,” “should,” “aim” and similar expressions are intended to identify forward-looking statements but are not the exclusive means of identifying such statements. Forward-looking statements involve inherent risks and uncertainties. We caution you that a number of important factors could cause actual results to differ materially from the plans, objectives, expectations, estimates and intentions expressed in such forward-looking statements. These factors, which are further discussed in our reports submitted to the Securities and Exchange Commission on Forms 20-F and 6-K and in our other filings, include but are not limited to: competition and product pricing in the markets in which we operate; general economic and market conditions; compliance with, and possible changes in, environmental and health and safety laws; dependence on cyclical construction markets; the supply and cost of raw materials; our reliance on a small number of product distributors; the consequences of product failures or defects; exposure to environmental or other legal proceedings; and risks of conducting business internationally. We caution you that the foregoing list of factors is not exclusive and that other risks and uncertainties may cause actual results to differ materially from those contained in forward-looking statements. Forward-looking statements speak only as of the date they are made.

EXHIBIT INDEX

Exhibit No.	Description
99.1	New Actuarial Review — Press Release and James Hardie Actuarial Expert Witness Report — Filed with the Australia Stock Exchange on June 7, 2004

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

James Hardie Industries N.V.

Date: June 7, 2004

By: /s/ Pim Vlot
Pim Vlot
Secretary

EXHIBIT INDEX

Exhibit No.	Description
99.1	New Actuarial Review — Press Release and James Hardie Actuarial Expert Witness Report — Filed with the Australia Stock Exchange on June 7, 2004

Exhibit 99.1

James Hardie Industries NV
Media enquiries please contact: Julie Sheather on
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7 June 2004

James Hardie Releases New Actuarial Review

James Hardie today provided to the Special Commission of Inquiry into the Establishment of the Medical Research and Compensation Foundation (MRCF), and the ASX, an independent actuarial review of future asbestos liabilities of the former James Hardie subsidiaries Amaca and Amaba, now held by the MRCF.

The review was prepared by KPMG Actuaries (KPMG) for James Hardie and ABN 60 Pty Limited (formerly James Hardie Industries Limited) and assesses actuarial advice provided by Trowbridge Consulting between 1996 and 2003.

The report was commissioned to assist the Commissioner to determine the situation facing the MRCF and the former James Hardie subsidiary companies and to provide KPMG's view of historical and current projections with which to address many of the issues being considered by him.

The figures produced by KPMG highlight "an unforeseeable upward trend" in claims numbers and average claimant costs in recent years.

Based on information that would have been available to Trowbridge at the time it prepared its actuarial report for ABN 60 Pty Limited in February 2001 (and upon which the funding for the MRCF was based), KPMG believes their best estimate would have been in the order of $694m. The equivalent Trowbridge figure was $323m.

The estimate produced by KPMG for future liabilities as at June 2003 is $1,573m which compares to the Trowbridge estimate of $1,090m. The KPMG figures include some $432m in legal costs. Among a number of differences, KPMG has included an additional $356m for superimposed inflation* that was not included by Trowbridge.

James Hardie's CEO Mr Peter Macdonald said the different figures were extremely concerning to the directors of the company who believed that the funding set aside at the time the Foundation was created would meet the most likely estimate of future anticipated claims.

Directors are considering the implications of the KPMG report.

End.

** Superimposed inflation is inflation above the underlying rate of inflation and is sometimes called judicial inflation. In this sense, it reflects that the rate of increase in court awards can increase at a higher rate than underlying inflation.*

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Disclaimer

This media release contains forward-looking statements. Words such as "believe," "anticipate," "plan," "expect," "intend," "target," "estimate," "project," "predict," "forecast," "guideline," "should," "aim" and similar expressions are intended to identify forward-looking statements but are not the exclusive means of identifying such statements. Forward-looking statements involve inherent risks and uncertainties. We caution you that a number of important factors could cause actual results to differ materially from the plans, objectives, expectations, estimates and intentions expressed in such forward-looking statements. These factors, which are further discussed in our reports submitted to the Securities and Exchange Commission on Forms 20-F and 6-K and in our other filings, include but are not limited to: competition and product pricing in the markets in which we operate; general economic and market conditions; compliance with, and possible changes in, environmental and health and safety laws; dependence on cyclical construction markets; the supply and cost of raw materials; our reliance on a small number of product distributors; the consequences of product failures or defects; exposure to environmental or other legal proceedings; and risks of conducting business internationally. We caution you that the foregoing list of factors is not exclusive and that other risks and uncertainties may cause actual results to differ materially from those contained in forward-looking statements. Forward-looking statements speak only as of the date they are made.

EXECUTIVE SUMMARY

Scope and Purpose

I have been asked by Allens Arthur Robinson to provide an expert witness submission to the Special Commission of Inquiry into the Establishment of the Medical Research and Compensation Foundation ("MRCF").

I have been asked to consider the appropriateness of the advice given by Trowbridge Consulting and the nature of the actuarial assumptions they made. I have also been asked to provide an actuarial reassessment of the asbestos-related liabilities as at 31 March 2000, 13 February 2001 and 30 June 2003.

My assessment considerations have predominantly focussed on the period 2000 to 2003. I have only considered the valuations at 1996 and 1998 for the purpose of performing comparisons with the valuation at 31 March 2000.

Background

Over the years 1996-2001, James Hardie Industries Ltd ("James Hardie") received advice from Trowbridge Consulting, the actuarial subsidiary of Deloitte Touche Tohmatsu ("Trowbridge"), in relation to the level of asbestos liabilities to which it was potentially exposed.

The MRCF subsequently received actuarial advice from Trowbridge in the period 2001 to 2003.

Overview and Key Observations on 2000 Valuation and 2001 Update

It is my opinion that in three key respects the work of Trowbridge for the 31 March 2000 draft valuation and the 13 February 2001 update advice falls outside of the bounds of what would be regarded as reasonable actuarial advice.

The three key areas are:

- The peak and duration of the future number of claims notifications;
- The rate of superimposed inflation on claim amounts assumed; and
- The rate of future nil settlements assumed.

I do not agree with the Trowbridge view in 2000/2001 that the peak in the number of reported mesothelioma claims had already been reached by the year 2000.

Information available in the market at the time, and epidemiological views, suggested that this was not so at a national level nor would it have been reasonable in respect of James Hardie, taking into account the nature and incidence of James Hardie's exposures. The nature of exposures within Australia and for James Hardie, as apparent in 2000/2001, indicate to me that the peak in reported claims would not be likely to be reached until at least 2010. In these circumstances, I would consider that an assumed peak of at least 2005 would be at the lower end of a reasonable range.

Trowbridge formed a view in 2000/2001 that there was no need to allow for future superimposed inflation. It is my assessment that this was at the lower bound of the range of assumptions made by Australian actuaries for this factor at that time.

Public Liability, Workers Compensation and CTP portfolios had all exhibited significant levels of superimposed inflation during the period from the mid 1990s. General market practice and assumptions were allowing for some rate of superimposed inflation (although not necessarily at the same level as those historically exhibited).

Within the provisioning of asbestos-related liabilities, I was, and my clients were, making some allowance for future superimposed inflation at that time.

I do not agree with the Trowbridge view in 2000/2001 that the rate of nil settlements for mesothelioma claims would be 25% in future. In my opinion, their own analyses did not support this view but instead supported a rate of between 15% and 20%.

As a consequence of these three key aspects, it is my view that the assessment of the liabilities by Trowbridge set out in the draft 31 March 2000 report and the 13 February 2001 update letter did not reflect a reasonable actuarial assessment.

Overview and Key Observations on 2003 Valuation

As requested, I have performed an independent valuation of the MRCF asbestos liabilities as at 30 June 2003. This assessment is materially different to that made by Trowbridge as at the same date. The key differences between our respective assessments are:

- Trowbridge, in 2003, continued to assume that future superimposed inflation would remain zero. Given the continuing trend of actual emerging superimposed inflation and my understanding of general actuarial practice in 2003, it is my assessment that this is outside the range of reasonable actuarial assumptions at that time.

- Trowbridge, in 2003, were adopting assumptions in the areas of the number of future claims (in terms of the peak and duration of the reporting pattern), the average costs of claims and the proportion of nil settlements that are, overall, optimistic relative to my assessment.

Summary of Liability Assessments

The table below provides a summary of the provisions recommended by Trowbridge to James Hardie, or the MRCF, and those assessed by me.

Table E.1: Comparison of reserves

Assumption	KPMG	Trowbridge	Difference
31 March 1996	N/A	$ 230.2m	
31 March 1998	N/A	$ 253.8m	
31 March 2000	$ 539.7m	$ 294.7m	$ 245.0m
13 February 2001 (no extra data)	$ 694.2m	*$ 322.6m	$ 371.6m
30 June 2001	N/A	$ 574.3m	
30 June 2002	N/A	$ 751.9m	
30 June 2003	$ 1,573.4m	$ 1,089.8m	$ 483.6m

*This is the full cashflow. The 20-year cashflow was $286.5m. The figures above make no allowance for the present value of the QBE settlement of $3.1m p.a. for 15 years from 2000.

It should be noted that the provision at June 2003 could be affected by the following factors:

- The emerging experience in relation to reported claims and average costs in the period since June 2003;
- Changes in the yields available on Commonwealth Government bonds which would affect the discount rates selected; and
- Impact of any exceptional judicial or epidemiological developments in the period since June 2003.

Extent of Deterioration of Asbestos-Related Liability Provisions of James Hardie

It is apparent from the table above that the assessments of the liabilities by Trowbridge resulted in significant revisions upwards.

It is apparent from the above table that my own assessments of liabilities have also shown a significant trend upwards. That said, the extent of my increase is (in proportionate terms) less than that resulting from Trowbridge's assessments.

The emerging experience in the numbers of claims in which James Hardie (or Amaca / Amaba) have been co-joined as a defendant have shown an unforeseeable upward trend. This upward trend has also, in my experience of those markets, been reflected in the UK and US where similar unpredictable trends have emerged, in spite of the best attempts of actuaries to predict the development of notifications. This is also true for the epidemiological studies which, whilst the peak period of incidence has not changed substantially, had not foreseen the absolute level of emergence of claims.

Furthermore, the average claimant costs (including claimants' legal costs) have shown an unforeseeable upward trend. This is in part due to inflationary pressures but is also likely in part to be a consequence of an increase in the percentage of the total claim borne by James Hardie through co-sharing, which may be a consequence of what is often termed 'deep pocket syndrome'.

Part of the deterioration has also resulted from the change in the discount rate to be applied to cashflows. At March 2000 and February 2001, a discount rate of 7% per annum was selected, whilst in June 2003 a rate of broadly 5% per annum was selected. The impact of this change is that if I had re-valued the June 2003 liabilities at 7% per annum the liability assessment would have been $1,285.2m, i.e. the change in the discount rate has contributed $288.2m.

Based on my assessment at February 2001 of a liability of $694.2m, the liability at June 2003 would have **increased** to $752.8m at June 2003. The increase of $58.6m relates to the fact that the unwinding of the discount, at around $45m p.a., exceeds the annual payments in the early years so that the provision would be expected to increase.

Table E.2 identifies the sources of the change in the assessment of liabilities from $694.2m to $1573.4m.

Table E.2: Analysis of change in KPMG liability assessment: February 2001 to June 2003

Assumption	Contribution $m	Liability $m
KPMG Assessment at February 2001		694.2
less Expected Payments	(89.4)	
plus Unwinding of Discount	148.0	
Expected KPMG Assessment at June 2003		752.8
Numbers	168.0	
Average Costs	336.1	
Nil Settlement Rate	28.3	
Discount rate restated to June 2003	288.2	
Actual KPMG Assessment at June 2003		1,573.4

Within my assessments I have assumed that insurance recoveries will be made at a rate of recovery consistent with the gross claim payments. I do, however, note that in my experience within the insurance and reinsurance markets, there appears to have been little activity with regards to recoveries on the Amaca / Amaba insurance contracts in the last few years. As such, if this deferral of recoveries continues it may cause additional cashflow strains to be borne by the fund, potentially unnecessarily so.

Survival Ratios

One often-used benchmark of the adequacy of an asbestos liability assessment is the "survival ratio".

The survival ratio is a ratio of the discounted liability amount to the annual rate of payments being made, where the annual payments rate can be assessed based on the most recent year or based on the average of the last three years (say). This ratio gives a crude measure of how long the fund would last at the current, or recent, rate of disbursements (ignoring interest effects).

The ratio provides a useful benchmark for comparing different insurance companies' liability assessments, and also for a particular company over time to gauge the extent to which the liability assessment remains consistent with the emerging experience.

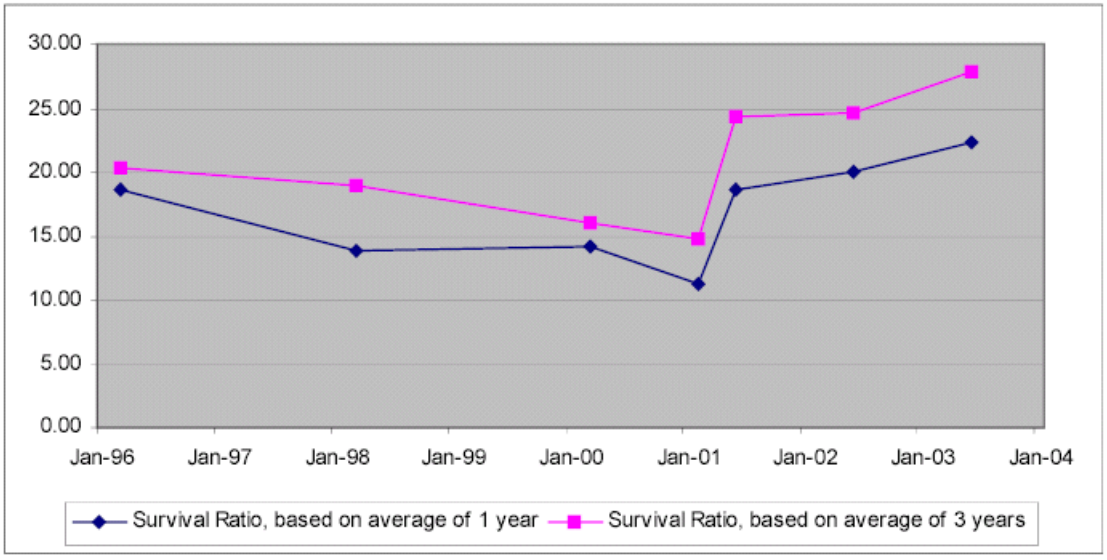
It should, however, be noted that this is only a **high-level indicator**, and that between companies and time periods, comparisons need to take into account differences in:

- Timing of exposure;
- Maturity of claims;
- Payment/settlement patterns; and
- Trends in other elements and percentage sharing of claims.

The graph below shows how the survival ratio, based on the actuarial assessment of the liabilities as recommended by Trowbridge, has changed over time. The figures in the chart are net of insurance which James Hardie had placed to cover various elements of the portfolio. The ratios are shown based on 1-year payments and 3-year average payments.

The considerable difference that has emerged between the 1 year and 3 year average ratios in the last three years reflects the significant increase in the rate of payments over this period. Gross payments have increased by 135% from $22.8m in 2000 to $53.6m in 2003 — the current payment rate is well above the last 3-year average.

Figure E.1: Trends in implied survival ratios for James Hardie using Trowbridge recommendations



*The figure for February 2001 is based on the all-years cashflow provision of $322.6m rather than the figure that was adopted (being a 20-year cashflow of $286.5m). The survival ratio based on the curtated cashflows would be 9.9 and 13.1 respectively.

In my experience in the Australian market, survival ratios of between 20 and 35 are the norm and anything outside that range would require consideration of the nature of the exposures. Even then, where the company has a survival ratio in that range, it does not necessarily imply the liabilities are adequate.

As stated already, it is also important not just to consider the absolute level of the survival ratio but the trend in the survival ratio. It can be seen that there was a systematic reduction in the survival ratio for the portfolio up to February 2001, followed by an immediate and significant increase back towards a level I would regard as more typical.

Furthermore, consideration should also be given to the maturity of the payments. Companies with relatively immature historic payments might require higher survival ratios than those for whom payments have been relatively more mature, although this in part may be a result of the nature and timing of exposures.

KPMG's Assessment at 31 March 2000

KPMG's central estimate of the liabilities at 31 March 2000 is $539.7m. This is based on cashflows being discounted at a rate consistent with ED88. If instead liabilities were discounted at a rate more akin to risk-free rates, the assessment of the liabilities would instead be $571.2m.

The table below shows an analysis of variation between the central estimate I have assessed and that assessed by Trowbridge.

Table E.3: Analysis of variation of liabilities at March 2000

Assumption	Contribution $m	Liability $m
Trowbridge's Recommendation		294.7
Trowbridge's recommendation adjusted for the correction in respect of discounting of insurance recoveries	-5.0	
US Claims	3.0	
Average Costs	14.3	
Numbers	98.2	
Superimposed inflation	107.5	
Nil Settlement Rate	27.0	
Total Difference	**245.0**	
KPMG Assessment		539.7

KPMG's Assessment at 13 February 2001

KPMG's central estimate of the liabilities at 13 February 2001 is $694.2m. This is based on cashflows being discounted at a rate consistent with ED88, being approximately 7% per annum.

It should be noted that if a rate more akin to a risk-free rate were used that the liabilities would be assessed as $804.9m, based on a risk-free rate (averaged across durations) of approximately 5.9% per annum.

The table below shows an analysis of variation between KPMG's central estimate and that assessed by Trowbridge.

Table E.4: Analysis of variation of liabilities at February 2001

Assumption	Contribution $m	Liability $m
Trowbridge's Recommendation using 20 years cashflows		286.5
Additional Cashflows	36.1	
Trowbridge's Recommendation using all future cashflows		322.6
Inclusion of Wharf Claims	9.4	
US Claims	3.6	
Average Costs	10.9	
Numbers	156.0	
Superimposed inflation	156.4	
Nil Settlement Rate	35.3	
Total Contribution	**371.6**	
KPMG Assessment		694.2

KPMG's Assessment at 30 June 2003

KPMG's central estimate of the liabilities at 30 June 2003 is $1,573.4m. This is based on cashflows discounted using a yield curve for Commonwealth Bonds at 30 June 2003.

Trowbridge's assessment of the liabilities was $1089.8m, this being based on a uniform discount rate of 5% per annum. KPMG's assessment of liabilities at a discount rate of 5% per annum would be restated to $1,627.1m.

In considering this assessment, and the change in assessments set out above, it must be stressed, that as has been exhibited both by James Hardie's and MRCF's past development, and that of the Australian and worldwide market more generally, the assessment of asbestos liabilities is subject to considerable uncertainty and actuarial judgement at any given point in time. This is in part a consequence of the extremely long-tailed nature of the liabilities and also a reflection of the extent to which the liabilities are significantly influenced by factors such as legal developments and epidemiological advancements.

As such, it should be noted that the assessment of $1,573.4m above, whilst a best estimate, could be subject to further as-yet-unforeseeable development.

The table below shows an analysis of variation between KPMG's central estimate and that assessed by Trowbridge.

Table E.5: Analysis of variation of liabilities at June 2003

	Contribution $m	Liability $m
Trowbridge's Recommendation		1,089.8
Average Costs	89.1	
Numbers	47.5	
Nil Settlement Rate	44.2	
Superimposed Inflation	356.5	
Discount Rate	(53.7)	
Total Contribution	**483.6**	
KPMG Assessment		1,573.4

Market Overview

As I have already noted, it can clearly be seen that both within Trowbridge's valuation and in my assessments that the liabilities have shown continual increases in reserves, albeit to different degrees.

It should be recognised that provisioning of asbestos-related liabilities has proven problematic for actuaries and insurance companies across the world for the last five years or more.

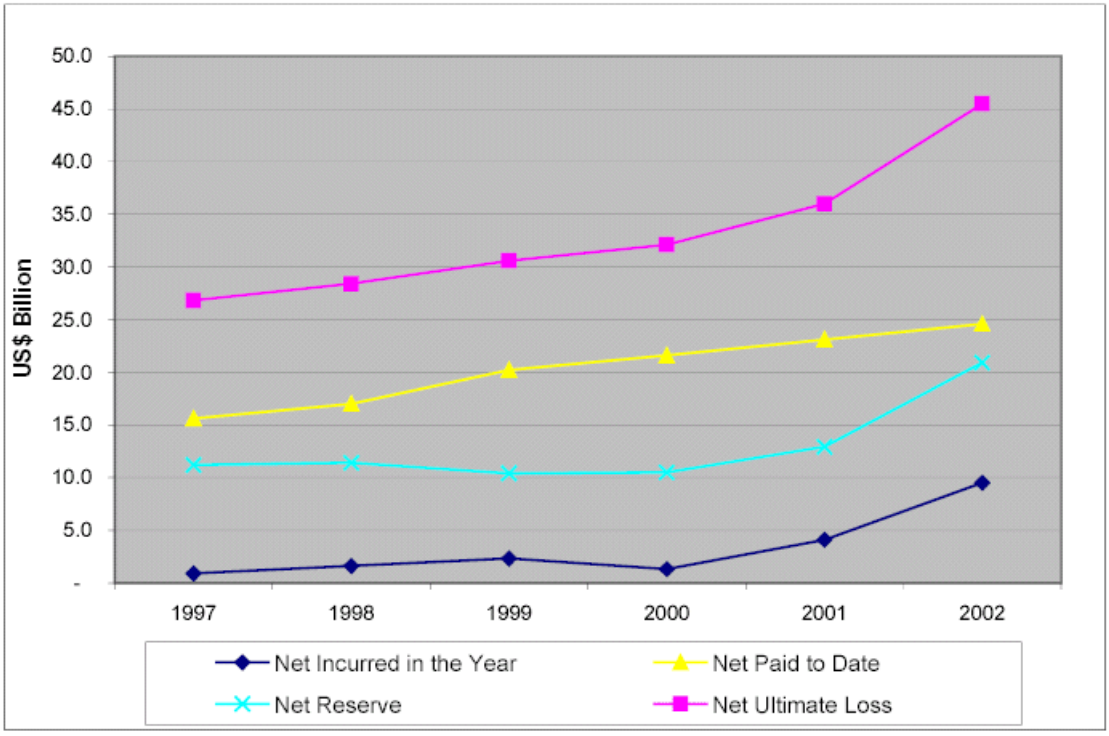
The problem of the regular need for further increases in the levels of provisions set aside has not been restricted to Australia, and certainly not to James Hardie or the MRCF. Both the United States and Equitas have experienced some significant deterioration in their asbestos-related liabilities in the last five years.

In the United States, the net reserves and net ultimate losses have shown a significant upward trend between the end of 2000 and the end of 2002. As can be seen in the chart below, the net reserves in the United States almost doubled from $10.5bn to $20.9bn in the 2-year period. The net ultimate cost of claims increased by more than 40% in the same period from $32.1bn to $45.5bn.

It is also noted that the trend of further increases in reserves continued in 2003, with the following companies announcing increases in provisions amounting to more than $6bn:

- Travelers adding $2.6bn (14/1/03),
- Hartford adding $2.6bn (12/5/03),
- Allstate adding $0.5bn (Q2 and Q3),
- ACE adding $0.3bn (27/1/03), and
- Liberty Mutual adding $0.3bn (Q3).

Figure E.2: Net Asbestos Liabilities – US Insurance Industry



Source: A.M.Best; Asbestos: The Relentless Peril by Adrian Leonard

It should be noted that "unimpaired claimants" have had a material effect on these figures in recent years.

The survival ratio for US asbestos-related liabilities is 14.0 and 14.3 based on 1-year average and 3-year average payments respectively.

Equitas, the reinsurance vehicle set up in 1996 to carry Lloyd's pre-1993 liabilities, has also been affected by the worldwide adverse developments in asbestos-related liabilities. In 2000 it increased provisions by £1.5bn, in 2001 it increased provisions by £1.7bn, and in 2003 it increased provisions by £0.4bn.

At the end of the 2002 financial year, Equitas' survival ratio for asbestos liabilities (being the ratio of reserves to annual average payments) was 23.6.

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Section 1

INTRODUCTION

1.1 Background of the interaction of James Hardie Industries and the Medical Research and Compensation Foundation with Trowbridge

Over the years 1996-2001, James Hardie Industries Ltd ("James Hardie") received advice from Trowbridge Consulting, the actuarial subsidiary of Deloitte Touche Tohmatsu, ("Trowbridge") in relation to the level of asbestos liabilities it was potentially exposed.

The Medical Research and Compensation Foundation ("MRCF") has subsequently received actuarial advice from Trowbridge in the period 2001 to 2003.

1.1.1. James Hardie: 1996-2001

Over the period 1996-2001, Trowbridge provided four actuarial assessments of the costs of future asbestos-related disease liabilities of James Hardie to its Board of Directors (the "Board").

In October 1996, the first valuation report was provided to James Hardie based on data to 31 March 1996. The actuarially assessed liability was $230.2m. This report was signed by Mr David Minty and Mr Geoff Atkins, both Fellows of the Institute of Actuaries of Australia ("IAAust").

In September 1998, a second report was provided which assessed the potential liability based on data to 31 March 1998. The actuarially assessed liability was $253.8m. This report was also signed by Mr Minty and Mr Atkins.

In June 2000, James Hardie received advice from Trowbridge of the level of liabilities required based on data to March 2000. The actuarially assessed liability was $294.7m.

The authors were Mr David Minty and Mr Karl Marshall, a Fellow of the Faculty of Actuaries. The report was not finalised or signed and it remains in draft form to date.

In November 2000, two actuaries employed by Trowbridge presented an update to the market on the development of asbestos liabilities within Australia. This was presented to the Institute of Actuaries of Australia's 8th Accident Compensation Seminar and the authors were Mr Bruce Watson and Mr Mark Hurst. The report indicated a continuing deterioration in asbestos-related disease claims, especially with respect to the numbers of claim notifications, which far exceeded any modelling previously published in Australia.

In February 2001, James Hardie received updated advice from Trowbridge. James Hardie requested this advice take into account the developments in the market since the time of their previous advice (June 2000). This analysis was presented in the form of a brief update letter dated 13 February 2001. It showed cashflows for 10, 15 and 20 years. The report showed a discounted liability of $286.5m for 20 years of cashflows (based on a 7% discount rate). The calculations appear to have an effective date as at 31 March 2000. The authors of this letter were Mr Minty and Mr Marshall.

1.1.2. The Medical Research and Compensation Foundation (MRCF): 2001-2003

The MRCF was set up on 16 February 2001. The MRCF encompassed the liabilities of the two companies James Hardie & Company Pty Limited (renamed Amaca Pty Ltd) and Jsekarb Pty Limited (renamed Amaba Pty Ltd).

In August 2001, Trowbridge issued its first valuation report to the MRCF, based on information up to and including 30 June 2001. The authors were Mr Minty and Mr Marshall. The report indicated a central estimate liability of $574.3m. This prima facie appears to indicate that a considerable increase in liabilities had been identified within the 6 months since the 13 February 2001 letter had been presented to the Board of James Hardie.

Two further valuation reports have since been issued, based on data to 30 June 2002 and 30 June 2003 respectively. Each of these reports has shown further considerable increase in liabilities relative to prior valuations: to $751.9m in June 2002 and to $1089.8m in June 2003. The authors of these reports were Mr Minty and Mr Atkins.

A chronology of the various Trowbridge presentations to the market and valuation reports is attached in Appendix A.

1.2 Terms of reference

1.2.1. Who commissioned this expert report

This report has been commissioned by Allens Arthur Robinson, formerly Allen, Allen & Hemsley ("Allens"), acting as lawyers to James Hardie.

This report has been prepared as an expert witness submission to the Special Commission of Inquiry into the Establishment of the MRCF.

1.2.2. Scope of engagement

I have been requested to consider the nature of the actuarial advice provided by Trowbridge to James Hardie, and subsequently to the MRCF.

I have been asked to consider the appropriateness of the advice given by Trowbridge, and the nature of the assumptions they made. I have also been asked to consider what a reasonable actuary might have concluded and further to advise on my views ("KPMG's assessment" or "my assessment") of the extent of liabilities that should have been determined by Trowbridge, on the basis of a reasonable actuary's view at each of the key dates: being 31 March 2000, 13 February 2001 and 30 June 2003.

I have, in the case of the March 2000 and February 2001 valuations, made no use of hindsight, and considered only the data, information and views that were potentially available to the Trowbridge actuaries at the times they provided their advice. I have also considered the impact of extra data on my liability assessment.

Such sources of information available to Trowbridge informing their views could include epidemiological studies, actuarial reserving bases used in the UK and US (which could have been available from Trowbridge's associated partner firms), and their own knowledge and research. In my opinion, Trowbridge's advice, as highlighted in their published papers, should have considered the nature of the techniques and methodologies commonly used to assess asbestos liabilities elsewhere in the world.

In respect of the 2003 valuation, I have taken account of hindsight information. I note the recent indication that the NSW Government is intending to over-turn a previous legal decision in respect of Orica vs. CGU. This valuation makes no allowance for the impact Orica may have had.

1.2.3. Areas of work not in scope

This report does not cover any issues relating to the establishment of the MRCF more widely.

It is understood that certain cashflows estimated by Trowbridge were applied within a broader "investment model". This report does not cover that modelling work.

There have been discussions about potential legal reforms to help balance asbestos and other general liabilities, including steps to create a Proportionate Liability structure or other tort reforms specifically relating to asbestos. It is noted that these developments, which may act to distribute costs differently amongst the joined parties in proportion to their relative contributions. No explicit allowance for this within any of the analysis or assessments within this report.

No allowance has explicitly been made for any impact of the increased usage of Alimta (Pemetrexed) or other drugs increasingly being used to treat asbestos-related cases. Such treatments may increase the lifetime of malignant pleural mesothelioma sufferers and thereby increase the cost of settlements.

1.2.4. Accounting standards

It is noted that Trowbridge's valuation reports were prepared with due regard for the relevant accounting standards prevailing at the time. Specifically, I note that the relevant draft standard for the March 2000 valuation and the February 2001 update was ED88.

It is noted that ED88 specifically referred to "discontinuing liabilities at the market yield as at the reporting date on high quality corporate bonds".

It is also of note that there was to be no consideration of any margins for risk and uncertainties required by ED88.

Taking the above into account, my assessment of the liabilities in 2000 and 2001 is a central estimate discounted at a yield commensurate with that achievable on high quality corporate bonds rather than the risk-free rate indicated within actuarial professional standards. My assessment will also make no allowance for a prudential margin.

The relevant accounting standard for the assessment of liabilities at 30 June 2003 was AASB 1044 (which replaced ED88). This accounting standard specifically refers to "the pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability".

I have interpreted this as implying the use of a risk-free rate of discount and have used such a rate in my assessment of the liabilities at 30 June 2003.

1.3 KPMG Actuaries and the Curriculum Vitae of Richard C Wilkinson

1.3.1. KPMG Actuaries

KPMG Actuaries Pty Ltd ("KPMG Actuaries") is an actuarial consultancy providing specialist actuarial and financial services advice to the insurance and financial services industries in Australia and South-East Asia.

KPMG Actuaries, in its current form, was established in 1996. It was first established as Edwards Consulting in 1984 as a life insurance consultancy.

KPMG Actuaries now consists of a General Insurance practice, a Life & Financial Services practice and a Health Insurance practice.

KPMG Actuaries' General Insurance Practice provides valuation and audit services to a diverse client base across the industry and for a wide variety of portfolios. It also provides advice in respect of liquidations, mergers & acquisitions, as well as corporate restructurings.

KPMG Actuaries is a self-owned practice, owned by the Directors of KPMG Actuaries. It is not a subsidiary of KPMG, but is an affiliate member of the worldwide KPMG network.

1.3.2. Curriculum Vitae of Richard C Wilkinson

I, Richard Wilkinson, am a Fellow of the Institute of Actuaries, and have been since 1974. I am also a Fellow of the Institute of Actuaries of Australia.

I am the General Insurance Practice Leader, and a Director, of KPMG Actuaries in Sydney, Australia.

I have occupied my current role of Practice Leader of KPMG Actuaries' General Insurance practice since April 2002. Prior to undertaking this role, I was the Head of KPMG LLP's international insurance actuarial practice between 1995 and 2002 and was based in London.

I have worked within the Australian insurance industry since the 1980s, when I first became involved in the liquidation of NEM. NEM had asbestos exposure through its workers compensation portfolio, together with a moderate amount of general and product liability risks. Since that time I have developed extensive first-hand experience of the Australian insurance industry. Through this experience, I have developed extensive knowledge in provisioning for asbestos-related liabilities within the Australian insurance industry both on the direct and reinsurance side.

Since 1998 I have advised the KPMG Insurance Audit practice in Sydney. Some of their clients have material exposure to asbestos liabilities, within both general and products liability and workers compensation portfolios.

Additionally, since March 2001, I have been working for the Joint Liquidators of HIH as the Chief Actuarial Advisor to the liquidators. I provided evidence to the HIH Royal Commission in that role.

In my previous roles, especially with KPMG London, I had developed an extensive exposure to asbestos reserving and methodologies used in the UK, European, US and Australian markets, especially via a number of my clients within:

- Lloyd's of London,
- The London Market,
- The captive insurance market,
- Insolvent companies, and
- A large manufacturer which produced an extensive number of products which contained asbestos, being Turner and Newell.

Many of the exposures and claims I have reviewed emanated from the US. On the reinsurance side from Australia, I was involved with the audit of a company called General Accident Group who had significant exposures to the Australian market. I was also involved when they commuted their considerable exposure with CSR.

In respect of the insolvent companies for whom I continue to provide advice, their combined liability to asbestos is over US$1.25bn, with the main element coming from the US. I also continue to advise one direct company in the UK that wrote liability business and has a reasonably large exposure to UK asbestos. The emergence of claims for that company is following a similar pattern to that currently being experienced in Australia.

I was involved in the formation of Equitas, the reinsurance vehicle set up to ring-fence all pre-1993 Lloyd's liabilities. Equitas was eventually created in 1996. I acted both as the actuarial adviser to the "exceptional cases team" and also advised and reviewed the level of liabilities allocated to the managing agent who had the largest single exposure to asbestos in Lloyd's for 1992 and prior, this being the Merrit Group.

1.3.3. Assistance and peer review

I, Richard Wilkinson, am acting as the expert witness in this matter. I have been assisted considerably by Mr Jefferson Gibbs and Mr Neil Donlevy. Mr Greg Martin has provided a peer review of the analysis undertaken and of this expert witness report.

Jefferson Gibbs is a Director of KPMG Actuaries and is a Fellow of the Institute of Actuaries and an Accredited Member of the Institute of Actuaries of Australia. Jefferson has extensive experience in asbestos reserving of UK and US liabilities, having worked for KPMG's general insurance practice in London. Jefferson chaired the Institute of Actuaries' Employers Liability Working Party in 2000. The Working Party's paper includes an overview of the analysis of and methodologies used in the evaluation of direct asbestos liabilities. He has developed considerable insight into the issues facing the Australian industry in relation to asbestos-related diseases through work performed with, and for, both KPMG Actuaries and KPMG clients.

Neil Donlevy is a Senior Manager of KPMG Actuaries and is a Fellow of the Institute of Actuaries and an Accredited Member of the Institute of Actuaries of Australia. Neil has experience valuing US and UK asbestos (and other pollution and health hazard) liabilities underwritten in the London Market by an insurance company for whom he worked. He has developed considerable insight into the issues facing the Australian industry in relation to asbestos-related diseases through work performed with, and for, both KPMG Actuaries and KPMG clients.

Greg Martin is the Managing Director of KPMG Actuaries. Greg is a Fellow of the Institute of Actuaries of Australia and is the Senior Actuary (as defined under the Code of Conduct) of KPMG Actuaries.

1.4 Professional standards and compliance

This report is not a valuation report; it is an expert witness report. As such, it is my opinion that the report is not required to comply with IAAust general insurance professional standard PS 300. Nonetheless, I have been cognisant of PS 300 and its implications when preparing the report.

I also note the obligations I have in complying with the IAAust's Code of Conduct. In particular, paragraph 9 of the Code of Conduct states "members must realise that there is room for honest differences of opinion on many matters. Members must avoid unjustifiable or improper criticism or malicious injury to the reputation of another member."

I am aware of the need to act with integrity in my relationship with other members.

1.5 Data and information available to KPMG Actuaries

The following information has been provided by Mr Michael Ball, of Allens, and his team:

- Trowbridge's presentation to the 8th Accident Compensation Seminar dated 29 November 2000, written by Bruce Watson and Mark Hurst;
- Trowbridge Reports ("Review of Potential Exposure to Asbestos-Related Claims") to James Hardie, as at March 2000 and 13 February 2001;
- Trowbridge Reports ("Review of Potential Exposure to Asbestos-Related Claims") to MRCF, as at 30 June 2001, 30 June 2002 and 30 June 2003;
- Letter of Engagement from Allens to Trowbridge dated 30 January 2001;
- Letter from Trowbridge to Amaca dated 29 August 2001 ("Change in Assessment of Potential Asbestos-Related Liabilities");
- Letter from Trowbridge to Amaca dated 29 August 2001 ("Use of Emerging Data in Assessment of Potential Asbestos-Related Liabilities");
- Letter from Trowbridge to Amaca dated 26 September 2001 ("Application of updated Data to Assessment of Potential Asbestos-Related Liabilities");
- Letter from Trowbridge to Amaca dated 20 March 2002 ("Assessment of Potential Asbestos-Related Liabilities");
- Letter from Roy Williams (of Allens) to Wayne Attrill ("Project Green"), dated 23 June 2000;
- The Commission of Inquiry's Issues Paper, issued 25 March 2004;
- The Commission of Inquiry's Revised Issues Paper;
- The Expert Statement submitted by Professor B.K. Armstrong;
- The Witness Statement submitted by Andrew William Smith (a paralegal of Turner Freeman) to the Inquiry dated 2 April 2004;
- A letter written by Steve Ashe, of James Hardie, dated 8 August 2000;
- CDs containing various spreadsheets used by Trowbridge in their valuation work between 1998 and 2003;

- 12 files submitted by Trowbridge to the Commission (including the witness statements of David Minty and Karl Marshall);
- Datasets used by Trowbridge in relation to the valuation of MRCF liabilities as at 30 June 2003.

1.6 Reliance and limitations

I am limited in the extent of advice I am providing. The advice is limited by the availability of the data provided by Allens and the Commission. Amongst the considerable amount of information supplied, access has been given to Trowbridge's working papers, but completeness of these has not been verified.

It would be usual for an actuary to seek access to claims handlers and assessors, together with legal advisors and litigators, who were advising on the individual asbestos claims. This would facilitate a better understanding of the key issues driving initial claims estimates and outcomes specific to James Hardie.

The direct interviews would allow the actuary to understand the way in which the entity recorded its case liabilities and whether these fully reflected the legal advice given. This also helps to establish how practices may have changed over time and how this is reflected in the incurred cost development of those claims in aggregate. The valuations I have performed in order to prepare this report have not had the benefit of this input and have therefore been more 'desk-based' valuations than desirable.

It is emphasised that the projection of the ultimate cost of asbestos liabilities is affected by extremely complex factors and in the large part is based on the projected epidemiological factors which emerge from exposures many years previously, and for which detailed information is not available, and therefore for which the claims exposures to both employees and users of asbestos products are subject to considerable uncertainty. The cost per claim is subject to considerable variation with every case, and is highly sensitive to many factors, including emerging medical and legal developments, which I cannot predict at this stage.

Medical developments could include the emergence of drugs as successful treatments, either to cure plaintiffs or extend their life.

Legal developments could include the admission of new sources of claims or identification of increased levels of secondary exposures. They may also include changes to legislation regarding the level of benefits payable to plaintiffs, which could materially increase or decrease the adequacy of the liabilities assessed.

I have had to make assumptions over the nature of the legal and epidemiological environment prevailing in the future in formulating my assessment of the liabilities at 30 June 2003. I have only allowed for known legal and medical advancements to date, and assume a continuation of these going forward. It is my opinion that this is the approach that a reasonable actuary would make in the circumstances.

I do, however, caution that as a consequence, the variation of the environment from this assumption could result in the liabilities assessed exceeding or falling short of the ultimate cost of claims.

1.7 Distribution and use

The purpose of this report is limited by its terms of reference, discussed in section 1.2, and should not be used for any other purpose.

This report is provided to Allens and it is to be made available to all parties involved in the Special Commission of Inquiry. KPMG Actuaries and I provide our consent for this report to be made available to all such parties.

The report should only be distributed in its entirety (including appendices) and judgments about the conclusions and comments drawn in this report should only be made after considering the report in its entirety.

KPMG Actuaries and I will not be liable for the financial consequences of any third party, including those third parties involved in the Special Commission of Inquiry, relying upon information or conclusions contained within this report.

Section 2

STANDARDS OF ADVICE

2.1 Overview of relevant standards

Australian actuaries, as professionals, are required to ensure that their work and advice meet certain standards. These standards seek to ensure that a user of advice receives at least the deemed minimum quality of the work, analysis and advice, and that the advice is based on certain norms (unless clearly stated otherwise).

There are professional guidance notes and a Code of Conduct in addition to the professional standards.

The two standards most relevant at the time of the work undertaken by Trowbridge for James Hardie were:

- Professional Standard 300 "Actuarial Reports and Advice on Outstanding Claims in General Insurance", (effective date July 1994) of the Institute of Actuaries of Australia; and
- Code of Conduct (effective date April 1998) of the Institute of Actuaries of Australia.

A copy of each of these is attached in Appendices C and D respectively.

I provide below an outline to each of these standards and the requirements each bestows upon the advising actuaries.

2.2 Professional Standard 300

2.2.1. Applicability of PS 300

PS 300 applies to "actuaries preparing estimates of the liabilities for outstanding claims of general insurance companies, reinsurers, self insurers and providing advice on the liabilities to be set aside to meet those liabilities in the balance sheet..."

It is my opinion that, in terms of PS 300, James Hardie was a self-insurer. This is based on the fact that James Hardie knowingly self-retained risk exposures below specific insurance covers. James Hardie purchased insurance (which has the characteristics of reinsurance) to manage its retained risk, with the cover in some cases being quite limited. It is also noted that the workers compensation portfolio was almost totally insured with Allianz, via its acquired subsidiary MMI.

It is my view that the liabilities valued by Trowbridge have every characteristic of the liabilities found in a general insurance company, and as such any actuarial reporting and work performed by Trowbridge was "governed" by PS 300. The relevant versions of the standard were effective as at July 1994 and April 2002.

Some key elements of PS 300 are summarised below, sourced from the July 1994 standard.

2.2.2. Procedures

The actuary should perform the following when advising on outstanding claims liabilities:

- Seek written terms of reference and purpose of the advice;
- Collect necessary data;
- Select a valuation model and assumptions;
- Reconcile results with the previous investigation;
- Analyse variability and sensitivity;
- Formulate conclusions; and
- Present a written report.

The actuary should also consider collecting and analysing additional data.

2.2.3. Data

The actuary should ensure that he/she:

- Understands the procedures for administering and accounting for the insurer's claims;
- Is conversant with the policy terms/liability exposures, legislated benefits and legal environment, and any reinsurance arrangements;
- Is familiar with legal and social trends affecting the liabilities; and
- Has sufficient and appropriate data, which is complete and consistent. Reasonable steps must be taken to verify overall consistency of data with financial records.

2.2.4. Liabilities

The actuary should subdivide the data into appropriate groupings, having due regard to the credibility of the data once sub-divided, and should then select the most suitable model for each group.

The actuary needs to select appropriate assumptions and parameters which will have due regard to past experience and make allowance for future trends. The actuary should not spread a change in basis over more than one valuation.

The actuary should make appropriate allowance for future inflation and also for the rate of discount, which should be set having due regard for the risk-free rate and the assets held by the insurer. Where the discount rate differs from the risk free rate, the actuary should explain the reasoning for adopting a different rate.

It is the responsibility of the actuary to ensure the calculations are carried out correctly.

The actuary should analyse the change in results since the last valuation and understand the sources of movements. The actuary should also compare and investigate how the results have changed (especially if significant).

2.2.5. Uncertainty

The actuary has a responsibility to explain the nature and consequence of the uncertainty of his estimate and also provide sufficient information to portray the range of reasonable uncertainty.

This will most often be done by use of sensitivity and scenario analyses.

The actuary should enunciate clearly the nature of the key components of this uncertainty. This is often illustrated by probabilistic distribution tables to show the range and breadth of possible outcomes.

2.2.6. Reporting

The report should state its purpose and/or the terms of reference.

The report also needs to state if it complies with PS 300 and if not, why not and in what respects it does not comply.

The report should explicitly cover the nature and accuracy of the data used. It should identify the valuation model and key assumptions and what has changed since the last report.

It should identify the results, the uncertainty and a comparison of actual experience against that expected at the last valuation.

The actuary should discuss data verification, limitations on the extent and quality of data and any reliance placed on the auditor for checking.

The report should state the assumptions and how they have been derived.

If relevant, any qualifications need to be stated.

2.3 Code of Conduct

2.3.1. Applicability of the Code of Conduct

The Code of Conduct covers some general points about the conduct of actuaries, about actuarial advice and about the contents of reports.

The Code of Conduct is an overarching standard.

A summary of the relevant components of the Code of Conduct follows.

2.3.2. Actuarial advice

The advice given by the actuary should be unbiased.

Where an area of work is well established, an actuary should not accept an assignment unless they have the relevant practical experience or are to be guided by an actuary of such relevant experience.

2.3.3. Third party transmission

If the actuary has reason to believe that their advice will be transmitted in whole or part to a third party, the actuary must take all reasonable steps to ensure that any significant implications of the advice are stated, and that the advice is not presented in a way likely to give a misleading impression.

2.3.4. Contents of reports

When providing a report, the actuary should state whether the report complies with the relevant Professional Standard, Guidance Note or Mandatory Guidance Note published by the IAAust (in this case PS 300). If it departs from the standard the report must state this and provide justification for the departure.

2.3.5. Data

The actuary's report should describe or clearly identify the data used and the methods and assumptions used. In particular, the actuary should draw attention to the consequences and implications of using these.

The actuary should ensure that the advice given is based on sufficient and reliable data and on adequate and appropriate assumptions.

If the actuary gives advice which does not follow the above requirement then the actuary must qualify their report.

2.4 Definition of a "reasonable actuary"

In my opinion a reasonable actuary is an actuary with sufficient relevant experience in the area upon which advice is being provided. In the case of asbestos liabilities he or she would have substantial, but not exhaustive, awareness of the various epidemiological and legal developments taking place within Australia affecting the emergence of asbestos related claims, and who has at least broad awareness of the developments and trends in asbestos claims in UK, Europe and US, given the worldwide nature of the problem.

A reasonable actuary is an actuary who will accord with all material aspects of Professional Standards, Guidance Notes and Codes of Conduct and will offer appropriate advice, recognising the requirements and circumstances of the user of their advice.

As described in those standards, a reasonable actuary will present unbiased results. A reasonable actuary should complete sufficient checks on data reasonableness to be satisfied that it was sufficient for the actuary's purposes.

A reasonable actuary should provide clear communication of the key results, assumptions, sensitivities and issues involved in their advice.

A reasonable actuary should apply an analysis and methodology consistent with the Actuarial Control Cycle. This is discussed further below.

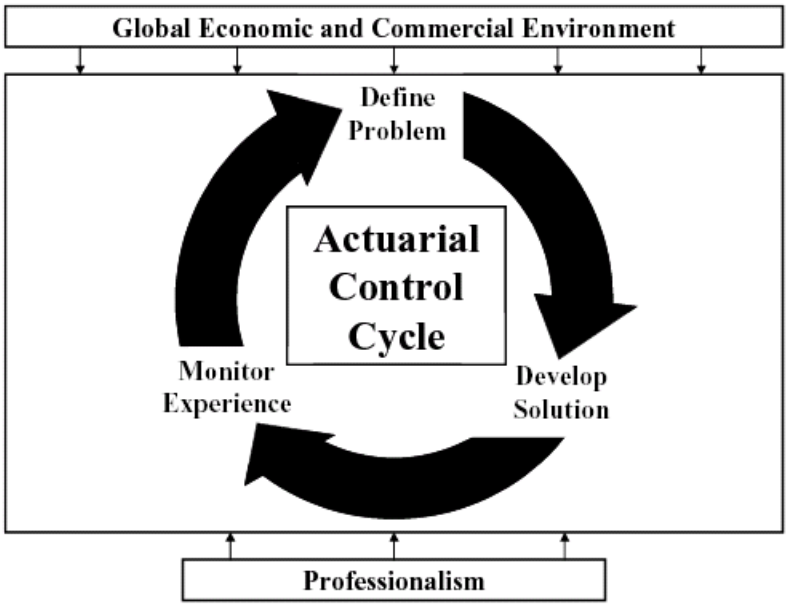
2.5 Review of experience to date ("actuarial control cycle")

One of the key aspects of the work of a reasonable actuary is the use of what the actuarial profession currently calls "the Actuarial Control Cycle".

The Actuarial Control Cycle is a concept that was documented at Macquarie University by an education committee from the IAAust in 1994-95. It now forms an integral part of the professional examination of the IAAust and is a compulsory part of actuarial qualification. The concept was well established in the Australian actuarial profession before 2000.

The actuarial control cycle framework can be described pictorially as follows:

Figure 2.1: The actuarial control cycle



The principle of the control cycle is that when an actuary has a complex issue to address or advise upon, the actuary first identifies what the key aspects of the issue are. This helps to identify the scope of the project and also to identify the approach that may need to be used.

The actuary would then construct a model (or solution) and specify the parameters and assumptions to feed into the model and make forecasts of the future experience.

The actuary should then, at successive valuations, monitor how the actual experience emerges. The actuary should also consider how appropriate the previous assumptions and parameters were and from this, the actuary should refine (or maintain) the model, the parameters and the assumptions taking into account the emerging experience and external factors. This process allows the actuary's work to evolve and also for their advice to react to developing information.

The actuary should, in all of their work, consider the environment and external developments to that environment (be it legal, medical, social or economic).

Part of the actuarial control cycle is that the actuary should monitor and identify the causes of changes in the valuation result and attribute the change to each of the significant items that have changed (e.g. changes in future assumptions, emerging experience etc).

The actuary should also, when revisiting a model, consider not just whether the parameters need to change but also whether the model itself should change in light of emerging experience and external developments.

Section 3

MARKET CONSIDERATIONS IN RELATION TO ASBESTOS LIABILITY ASSESSMENT

3.1 Overview

This section provides some context for the overall Trowbridge approach and the key assumptions. In a number of cases I refer to studies that were not available to Trowbridge at the time of the various reviews. I have also separately documented information which has become available more recently.

3.2 Establishing the peak and duration of future notifications

3.2.1. Epidemiological studies

A bibliography of various epidemiological studies referenced is attached in Appendix E. Appendix B provides a chronology of these studies and how their availability relates to the timing of the various Trowbridge advices. The chronology also shows the relevant and material court awards and legislative changes during the period.

1. *Australia*

Key studies in Australia are Berry (1991), Berry et al (2004), Leigh et al (2002) and (2004).

Berry et al (2004) indicates that experience in Wittenoom[1] appears to be better than previously forecast, being at the lower end of the Berry (1991) models.

Leigh et al (2002) and (2004) indicate the incidence of mesothelioma has increased four-fold in 20 years. They indicate that Australia has the highest reported incidence rates in the world. The report indicates that the incidence of mesothelioma in Australia is as high as liver cancer and the mortality rates are as high as those for kidney cancer amongst males and uterine cancer amongst females.

[1] Wittenoom was a mine in Western Australia which began mining blue asbestos in 1938 under the ownership of Lang Hancock. It was sold to CSR in 1943 and it continued to mine blue asbestos until 1967. Since that time, CSR have had exposure to claims from both their employees at Wittenoom and from product and public liability exposures resulting from use of the blue asbestos mined at Wittenoom. Professor Berry's 1991 paper relates to a study of the "Prediction of mesothelioma, lung cancer and asbestosis in former Wittenoom asbestos workers". As such, there is no consideration of the claims experience resulting from CSR's product and public liability exposures.

A number of these and other reports disclose the relationship between exposure and reporting, i.e. the distribution of the latency periods for mesothelioma.

2. *UK and Europe*

Key studies in the UK and Europe are Peto (1995), Peto (1999), Health & Safety Executive (HSE) (Hodgson & Darnton) (2003), Peto (2004) and Pelucchi, Decarli et al (2004).

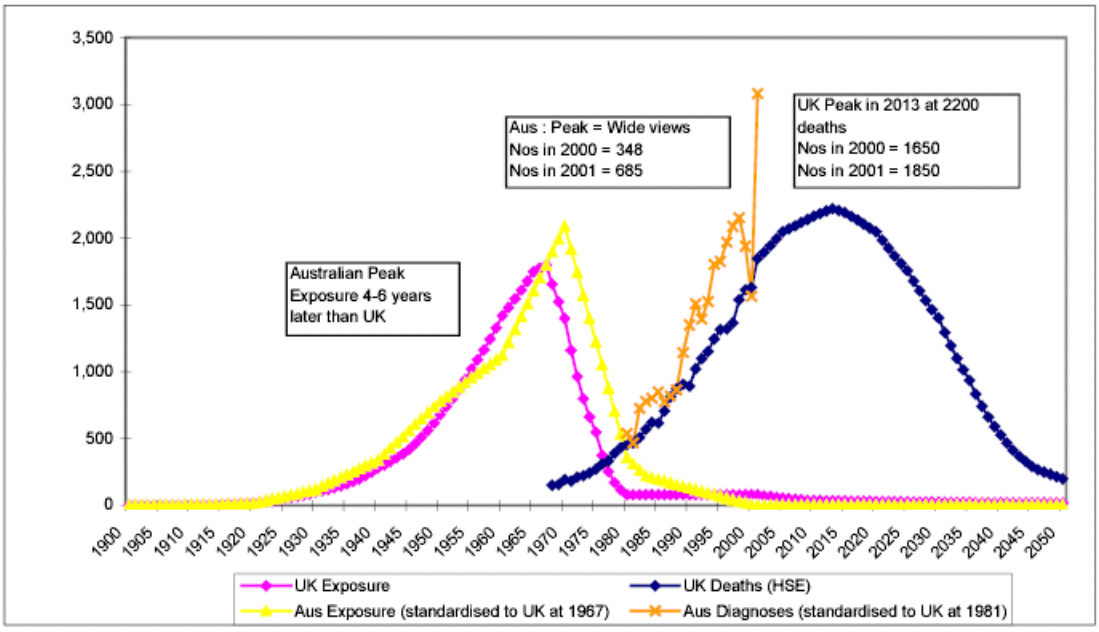
Peto's 1995 analysis of UK mesothelioma indicated a peak for UK claims by reporting year of 2,700-3,300 claims per year in around 2020. The HSE 2003 report indicated that improved modelling suggested a peak of between 1,950-2,450 in 2013; that is earlier, and lower. Peto (2004) indicated an improvement relative to previous estimates with a peak of around 2,400 in 2015-2020. Peto (1999) addressed European exposures and confirmed the peaks in Europe to broadly accord with UK findings. Peaks of between 2013-2020 were estimated across a variety of countries.

Pelucchi & Decarli (2004) revisited the Peto (1999) analysis and they also indicated an improvement in Europe relative to previous estimates, consistent with the indication of moderate improvement indicated by both the HSE and Peto research in the UK.

3.2.2. Nature of worldwide exposures and deaths

Figure 3.1 shows the nature of the exposures for the UK and Australia in terms of net asbestos consumption (Production and Imports less Exports) by year.

Figure 3.1: Analysis of exposure and deaths from mesothelioma: UK and Australia



Sources: Treasure T, Walter D, Swift S, Peto J (2004); Radical Surgery for Mesothelioma (BMJ)

Australian Number of Deaths: Australian Mesothelioma Register: 2003

UK Number of Deaths: HSE Statistics (www.hse.co.uk)

Australian Exposure Statistics: Bureau of Mineral Resources; RJ Hughes 1978; Leigh et al 2002, Virta 2003 (Extrapolation by KPMG from 10-year intervals), US Geological Survey (produced annually)

The number of mesothelioma deaths have been standardised to the UK at the 1981 level (the Australian volume of deaths was 25% of the UK at that point). It can be seen that the Australian exposure is some 4-6 years later in its peak than the UK and that it peaked in the early 1970's. The UK exposure peaked in around 1966/67.

The current view in the UK is that the peak of future deaths will arise in, or around, 2015 (HSE Central Estimate is 2013; Peto 2015-2020).

Given this, one might infer that for the Australian Industry as a whole, the peak may also lie somewhere in the 2nd or 3rd decade of the 21st century. Some epidemiologists in Australia have expressed a view that the peak will now occur in 2023 based on their modelling, whilst other Australian sources indicate that the peak might be as late as 2030.

The number of mesothelioma deaths in the UK is expected to peak at between 1,950 and 2,450 per year (HSE Central Estimate 2,200) with a total number of future deaths in the period 2004-2050 of around 55,000 (compared with 22,000 already incurred in the period to 2003).

In Australia, the number of diagnoses or notifications to 2003 is approximately 8,000 (source: Malignant Mesothelioma in Australia, Australian Mesothelioma Register Report 2003). This can be broadly equated to deaths given the extremely short period between diagnosis and death for mesothelioma. Those affected by malignant mesothelioma usually will die within a couple years of the onset of the disease. Many malignant mesothelioma patients are not diagnosed in a timely manner so the time of diagnosis and death are often very close together. Receiving no treatment for malignant mesothelioma is associated with a typical survival rate of between four months and a year.

In the US, some market commentaries are now indicating that the peak will arrive in the US in the period 2010-2020. However, it should be recognised that the US experience has, in part, been distorted by the 'unimpaired claimant' effect.

3.2.3. The insurance industry

It is noted that within the insurance industry there exists a degree of variation in the assumed year at which the peak of notifications will arise.

In 2000, a considerable number of insurers assumed that the peak of notifications would arise in the period 2002-4.

It should be noted that the existence of such an assumption does not necessarily imply this as being a reasonable assumption for the James Hardie assessment, and nor does it provide independent support to Trowbridge's assumed peak of notifications for James Hardie's liabilities.

This is because:

- The peak assumed within the insurance industry was significantly influenced by Trowbridge's published presentations;
- The peak relates to insurance exposures, not those of a direct asbestos manufacturer;
- James Hardie's exposure was more readily measurable than that for many insurers where exposure from their insured clients is often not available or difficult to quantify. As such, this extra information ought to have been factored in;
- James Hardie's main element of exposure is to public and product liability. For workers compensation claims, the exposure will in the main be related to when the company no longer produces or manufactures asbestos-related products. For product and public liability, the exposure remains a considerable time after the last date of production of products containing exposure, reflecting the "working life" of those products, so that the exposure therefore extends.

3.3 Superimposed inflation

3.3.1. Analysis of inflation within liability portfolios

Market experience, at the time of 2000, suggested that total inflation had been running at up to 8% per annum above base wage inflation for a number of years for a range of liability-related classes. Trowbridge would have been aware of this impact on such classes of liability; including workers compensation, public liability and CTP. All of these portfolios were exhibiting growing trends in superimposed inflation. Actuaries were making appropriate allowance for this exhibition of superimposed inflation both in pricing and reserving for these portfolios.

For public liability claims, superimposed inflation had generally exhibited between 6% and 8% per annum on average over the period 1995-1999.

For workers compensation, superimposed inflation had generally exhibited between 4% and 8% per annum during the latter part of the 1990s.

For CTP in NSW and QLD, superimposed inflation in the latter part of the 1990s was exhibited between 2% and 6% per annum over the period.

In relation to asbestos-related disease liabilities coming through the insurance industry, superimposed inflation of between 5% and 10% was exhibited during the 1990s, with public liability claims generally experiencing higher rates of superimposed inflation.

3.3.2. Market treatment of allowance for superimposed inflation

Market practice in respect of allowing for superimposed inflation within valuation models, especially in relation to asbestos-related liabilities, has generally been to assume an average rate to apply over all future years. This was particularly the case in 2000 and 2001.

Market practice has also been to aggregate together a number of contributing factors to the overall rate of superimposed inflation, being:

- The rate of pure ('judicial') superimposed inflation,
- The impact of medical or other developments, and
- The effect of an ageing population of claimants on the rate of inflation of overall damages, a component of which relates to loss of earnings.

It is common practice to assume that the third item has a negative effect on superimposed inflation and that this is offset against the other factors.

The general approach, and it is the approach that I have taken within this report, is to implicitly offset these various factors in arriving at the average rate of superimposed inflation to apply over all years.

Therefore, whilst superimposed inflation may have been high in recent times, there are some factors which might potentially act to dampen this in the future, being the effect of the ageing population of claimants.

As claimants age, the component of the claim which relates to loss of earnings or pension diminishes, reflecting the shorter future working life or life expectancy of a healthy individual. As such, this diminishing component of the claim acts to partially suppress the overall inflationary nature of claims.

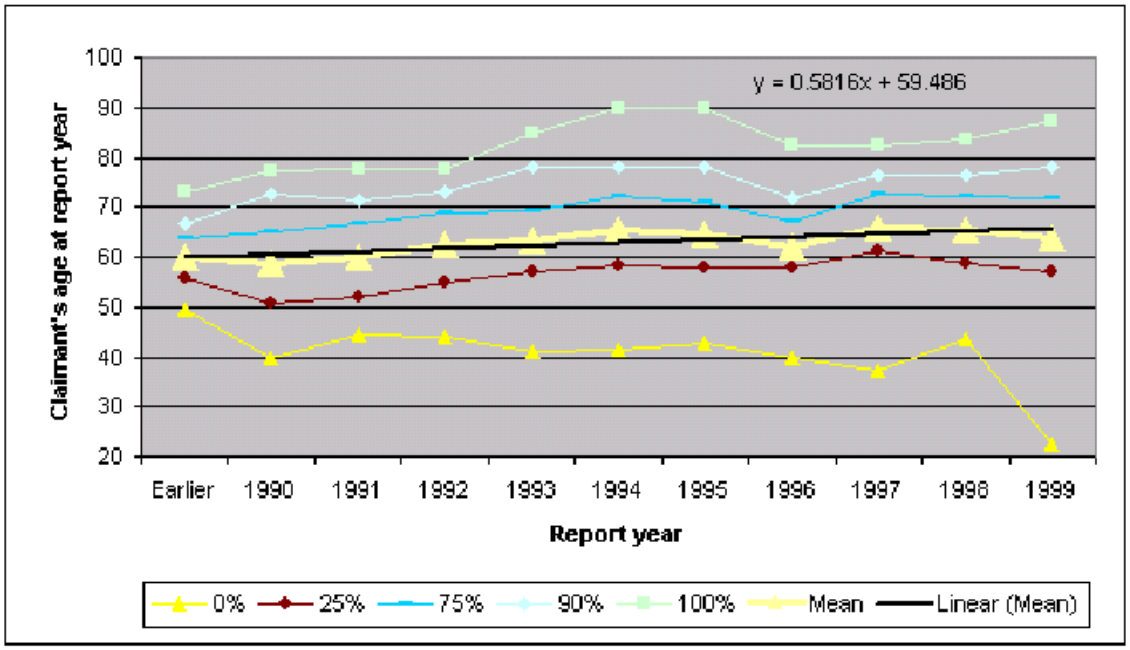
It should be noted that this assumption of an ageing population providing a negative effect on inflation would be influenced by changes to retirement age and also life expectancy more generally.

It should also be recognised that the existence or potential existence of secondary exposures, to individuals who were not directly exposed through mining or manufacture of asbestos products could also lead to a younger population being exposed.

Such secondary exposure could therefore have the opposite impact to an ageing portfolio and exacerbate the apparent rate of superimposed inflation in the future.

Whilst it appears that recent levels of superimposed inflation has been of the order of 6% per annum or more for a number of years, I have not assumed that this would represent the long-term average position, and that the long-term average would be somewhat lower. My assessment is that a rate of 2% per annum averaged over all future years is consistent with the impact of the various factors.

Figure 3.2: Analysis of age of claimant by report year



Source: KPMG Analysis of James Hardie datasets, March 2000

The chart above shows the minimum (0%) and maximum (100%) ages of claimant for each report year. The age of the 25th, 75th and 90th percentile observations are also shown.

The mean age of claimants is shown, together with a trendline of how the mean has progressed over time. The chart shows that the average of age of a claimant has been increasing by approximately 0.60 years with each passing year.

This analysis has provided me with an insight to the extent to which the effect of ageing has affected historic average claims costs and also provides me with a more robust basis for making adequate allowance for the effect of ageing upon future rates of superimposed inflation.

3.4 Approach used to evaluate asbestos-related disease liabilities

The approach below describes what, in my opinion, a "reasonable actuary" could pursue by way of methodology and approach in evaluating the liabilities for asbestos-related diseases.

I recognise that the extent to which this can be followed is dependent on the information available from the client or the market, or which might be able to be made available from a variety of sources.

- Identify exposures by year (source, State, type of asbestos product, nature of occupation);
- Distribution of latency period by disease type;

- Identify "to date" position;
- Conclude "Ultimate" position by year;
- Inference of disease incidence per unit exposure;
- Allow for legal/environmental factors, such as:
  - Increasing propensity to sue;
  - "Unimpaired claimants";
  - "Downstream" claims;
  - New sources of claim; and
  - Change in mix of exposure by occupation etc.
- Project future notifications;
- Project future settlements (this will be done for each disease type modelled);
- Analyse historic average settlement costs (@ 100% share);
- Inflate to current money terms;
- Analyse James Hardie share historically;
- Trended view of James Hardie share prospectively;
- Considerations of legal developments on average costs (@ 100% level and on James Hardie share);
- Inflate to future settlement year using Average Weekly Earnings (AWE) plus future superimposed inflation allowance;
- Loading for legal cost elements similarly;
- Measure insurance recoveries consistently with gross claims experience; and
- Review insurance contracts in terms of:
  - Years on risk;
  - Policy limits;
  - Policy terms;
  - Disputes of coverage; and
  - Recoverability/bad debt liabilities.

Section 4

TROWBRIDGE'S GENERAL APPROACH

4.1 Methodology adopted by Trowbridge

4.1.1. Overview

Based on a review of the working papers and the review of the reports produced by Trowbridge in their assessment of the asbestos-related liabilities of James Hardie and then the MRCF, it appears that Trowbridge's methodology, in general terms, has not changed since they began advising James Hardie in 1996. It is generally consistent with the existing practice adopted by Australian actuaries when considering asbestos provisioning.

It entails a projection of future numbers of claims to be reported multiplied by an individual average cost to settle those claims (subdivided by type of asbestos disease claim), plus an adjustment on the value of claims already reported but not settled. There are two key components to such analysis:

- The ultimate costs associated with claims that have been reported but are open or could reopen (discussed further in Section 4.1.2 below).
- The ultimate costs associated with claims that have been incurred but have not yet been reported ("IBNR"). This is discussed further in Sections 4.1.3 and 4.1.4 below.

4.1.2. Outstanding costs of reported claims

Trowbridge note that individual estimates ("case estimates") were available for the open claims on a "low", "best estimate" and "high" basis.

Trowbridge effectively added the known reported open claims to its numbers and averages model for IBNR claims discussed below.

It appears that Trowbridge's approach effectively used case estimates to provide a rule-of-thumb only. In doing this a great deal of useful information that may be imparted by the case estimates of these open claims falls outside of the information considered.

It is, and was, common practice to make more use of the paid amounts and case estimates on the open claims. This is discussed further in Section 4.3.2 below.

4.1.3. Numbers of claims

The methodology used by Trowbridge is to first estimate the number of future claims to be reported in each year by class of liability, i.e. public or general liability and workers compensation[+] (see Section 4.1.7) and by disease type (see Section 4.1.8).

This is done through the application of a "Berry Curve" or similar curve.*

From the assumed number of future claims reports and from the current open claims, the total number of future settlements is estimated by year. A settlement pattern is applied to map claim numbers from year of reporting to year of settlement. Generally the settlement pattern is different for new reports and currently open claims and is derived by reference to past settlement patterns which Trowbridge have analysed.

Trowbridge then estimate the proportion of claims settled which will be settled for nil claim costs ('Nil claims'), again based on an analysis of the historic rate of nil settlements.

4.1.4. Average claims costs and inflation

Costs are modelled separately for claim settlements and legal components. The average claim settlement cost specified is for a non-nil claim settled and is in current dollar terms. It is derived separately by disease type and class of liability, and is derived from examination of the historic settlement costs by year. Based on a review of the working papers and the actuarial reports, it does not appear that these historic costs were inflated to current money terms.

[+] It should be noted that henceforth within this report, whenever I use the term "Workers Compensation" in relation to James Hardie or MRCF claims, it relates only to the element of retained risk; the vast proportion of these claims are insured with Allianz, via its subsidiary MMI.

*Professor Berry is an epidemiologist who has conducted a considerable number of studies into the development of mesothelioma in Australia. One of his most notable studies, particularly for actuaries, is his 1991 research paper "Prediction of mesothelioma, lung cancer, asbestosis in former Wittenoom asbestos workers".

The Berry curve is derived from consideration and studies into the exposure and incidence of deaths of miners at Wittenoom, Western Australia. The key components to any curve used are (a) the peak in the notification curve, and (b) the duration of future claims notified from the valuation date. It is also important, when developing and utilizing such a curve, to take into account the detailed exposure information underlying the liability relative to that of Wittenoom mine.

The legal costs of nil and non-nil settlements are set separately and are also established by reference to the analysis of settled legal cost data for each of these groups.

The average claim costs are then projected to the date of settlement by inflating from the valuation year to the settlement year using an assumed future average claims inflation rate (Trowbridge set this equal to its estimate of future wage inflation).

There does not appear to have been any separation or analysis of claims between "small" and "large" in the setting of the average cost assumption.

No allowance for superimposed inflation (i.e. inflation above the base measure of wage inflation) is made by Trowbridge.

4.1.5. Insurance recoveries

The majority of James Hardie's insurance contracts, being those upto 1986, were written on an exposure-year basis. That is, recoveries are made against claims which have been notified to the company by first allocating the claims back to the relevant years of exposure from which the claims arose and spreading the cost over those (potentially multiple) exposure years accordingly (usually based on a proportional allocation). From 1986, the contracts were generally written on a 'claims made' basis. That is, recoveries are made against claims which have been notified to the company in the year.

The insurance recoveries, as estimated by Trowbridge, are modelled by the following method:

- Calculate the future cashflows on general liability claims, including an allowance for legal costs (net of an allowance for unallocated loss adjustment expenses ("ULAE");
- Assume that the percentage split of cover by insurer is based on an historic assessment of the**estimated** recoveries to date;
- Assume that 1.5% of the claims costs relate to Jsekarb;
- Identify the implied contributions by year of each insurer;
- Quantify the expected cash recoveries from each insurer recognising the limits of exposure of the insurance contract, separately for JH&Coy and Jsekarb, and the level of cover **estimated** to have already been used;
- The QBE commutation was assumed to imply no coverage remained.

4.1.6. Cashflows and discounting

From the number of future settlements and the average cost of settlement, by settlement year, the claim and legal costs by class of liability and disease type are projected for each future financial year on a cash basis. The insurance recoveries are netted off the gross cashflows to derive the net cashflows, and any additional costs relating to specific liabilities (such as wharf claims) are added. The cashflows are discounted at a uniform discount rate.

The discount rate in 2000 and 2001 was set relative to anticipated "market yields... on high quality corporate bonds".

4.1.7. Class of liability

The data was segmented by class of liability into general (public and product) liability and workers compensation claims. The claims relating to Waterside (Wharf) Workers were (where applicable) separately analysed.

4.1.8. Disease types

For general liability, the data was segmented by disease type into:

- Mesothelioma / non-mesothelioma (used for pre June 2001 reports);
- Mesothelioma / lung cancer / asbestosis / Asbestos-Related Pleural Disease (ARPD) and others (used for June 2001 and onwards).

For workers compensation, the analysis by disease type was generally not made and all claims were aggregated together.

4.1.9. Data gathering and checking

Data was combined by Trowbridge from two sources maintained by James Hardie, namely:

- An "individual claim register";
- An "accounting database" by matching claims identifiers.

Trowbridge notes that "this matching process was not straightforward".

Trowbridge reconciled claim payments between the Individual Claim Register and the accounting database. Trowbridge note in their reports that other "checks, for reasonableness and internal consistency" were made, but further detail is not given. Trowbridge made the following observations:

- "We found a number of anomalies in the data" – 31 March 2000 valuation report, and

- "Some of the individual claim information was missing or incomplete" – 30 June 2003 valuation report.

4.1.10. Excluded items

There are a number of areas which Trowbridge "have not quantified due either to their speculative nature or lack of specific data".

The three areas of excluded items (as per the 31 March 2000 report) were:

- Claims originating outside Australia and New Zealand;
- Claims due to non-disabling conditions (e.g. stress);
- Environmental, property or land remediation.

Additionally, it should be noted that a number of other items are implicitly excluded from consideration. These include:

- Any claims which do not have a report date assigned to them, and
- Any current or prospective legal developments which cannot be readily quantified owing the lack of specific data or being speculative in nature.

4.2 Key assumptions

Appendix F shows the progression of the key assumptions made by Trowbridge over time, between 1996 and 2003.

4.2.1. Key assumptions

The key assumptions required for the Trowbridge model are:

- Number of future reported clams;
- Pattern of settlements of future reported claims and of currently open claims;
- Average settlement cost and average legal cost;
- Rate of nil settlements;
- Future inflation;
  - Base
  - Superimposed
- The discount rate; and
- Insurance recoveries.

4.2.2. Key considerations

This section addresses the types of questions, thoughts and considerations Trowbridge ought to have addressed when setting their assumptions. Section 4.3 will address the extent to which this was done.

Number of future reported claims

- When is the peak?
- How long will future notifications continue for?
- What is the nature of James Hardie's exposure?
- How does this differ to US, UK exposures and what are UK and US views on peaks and durations?
- Does data move (e.g. through re-designation of claim types from non-mesothelioma to mesothelioma)?
- What are the sources of the reported claims by occupation, by exposure period, by age of claimants? Is there any visible or predictable trend in this?
- What is the distribution of the latency period?
- What is the impact of the filing of multiple claims per claimant against more than one James Hardie entity?
- Is there any evidence of increased co-joining of James Hardie (or the MRCF) owing to a perceived 'deep pocket'?

Pattern of settlement

- What has been the past settlement pattern?
- Any views on litigation or other developments which may alter this?
- What is the best estimate prediction for the open claims?
- Changes in settlement strategy by James Hardie (or MRCF)

Average cost of settlement (claims and legal)

- Recent and historic average settlements (inflated to current money terms)
- What are the trends in the "100% share" costs?
- How is James Hardie's share changing (is there any increase results from a perceived 'deep pocket')

- Landmark legal cases potentially impacting settlements, together with a quantification
- Impact of re-designations (i.e. from non-mesothelioma to mesothelioma)
- Any moving data historically? (i.e. changes to the historic number of claims reported)
- Any medical developments e.g. earlier identification, extending life?
- How are case estimates tracking between report date and settlement?
- Is there any notable distortion from 'large' claims? Are any open claims expected to settle for very large amounts?
- What is expected in respect of open claims on a best estimate basis?

Nil settlement rate

- Recent and historic average rates of nil settlements
- What is the pattern of nil and non-nil settlements?
- What is expected in respect of open claims on a best estimate basis?
- Can we project ultimate settled at nil and non-nil by a report year cohort? Is such a protection showing any trends?

Future inflation (superimposed)

- Australian market views on historic superimposed inflation
- James Hardie's own historic experience of superimposed inflation
- Segmenting claims data e.g. by ordering historic settlements
- Measuring observed inflation
- Age profile of claimants by year
- Landmark legal cases which may cause judicial inflation or deflation pressures
- Exposure and claims mix by state
- Have case estimates tracked well to settlement? Are case estimates reasonably estimating inflation to settlement date?
- Real inflation rate relative to selected discount and observations of this in recent periods.

4.3 Reasonableness of key assumptions and approach undertaken by Trowbridge

4.3.1. Overview

With the benefit of hindsight that comes from later data and valuations, it is clear that the assumptions and approach of earlier valuations have led to assessments of liabilities that have ultimately proven significantly too low. The comments below are set out to represent my views **without** the benefit of such hindsight.

4.3.2. Review of outstanding costs of reported claims

As at 31 March 2000, case estimates on a best estimate basis were $25m, approximately 9% of the total assessed liability of $295m.

The approach used by Trowbridge in respect of known claims is not typical of the approaches seen elsewhere in that it makes limited use of the information available for open claims. The standard approach used is for a projection based on a "report year" grouping or "cohort".

The projections would typically use standard chain ladder methods applied to:

- Cumulative paid claim amounts;
- Cumulative paid plus case estimates ('Incurred') claim amounts;
- Cumulative numbers settled at nil;
- Cumulative numbers settled at cost; and
- Reported numbers (as recording of reports can be subject to processing delays).

These projections would allow the actuary to:

- Identify any past processing delays or changes to processing (in doing so raise the potential for similar distortions going forward);
- Examine the current and ultimate expected split of nil to non-nil claims, improving on the current practice of only relying on settled claims for this, and helping to identify more quickly any emerging trends in this split;
- Examine the settlement pattern (by claim number and amount), in turn adding to the data available in setting this assumption for cashflow modelling;
- Explicitly model the emerging cashflows from open claims through the paid claim projection, again adding information to this modelling;

- Examine the total outstanding costs for open claims; and
- Examine the implied settlement cost of open and/or recently notified claims to ascertain the extent to which settlement costs may be increasing or decreasing. This provides an early detection of any adverse trends emerging in recent claims experience, allowing the actuary to respond as appropriate.

This approach would provide a check, which is to a degree independent, of the result of the method used. In turn understanding any differences would allow the actuary to further refine the assumptions used in the more material IBNR component.

Setting out such information would also aid in data checking and the application of the "Actuarial Control Cycle" (discussed in Section 2.5). Specifically:

- The change in cumulative paid amounts should be reconcilable to the company cashflows.
- The triangle of reported numbers would show the changing data in historic periods, allowing a check for data completeness and consistency with prior data sets. This comment also applies to examination of paid and incurred claims triangles.

4.3.3. Numbers of claims

Trowbridge have used a Berry Curve, calibrated to the recent levels of reported claim numbers. There is no explicit discussion or visible consideration of whether the curve is appropriate, or the extent to which the curve needs explicit adjustment. As far as can be ascertained, no consideration has been made of the nature of the actual exposures of James Hardie, such as tonnage of asbestos used or volume of products produced or sold.

The Berry Curve is based on a population of miners employed by CSR at Wittenoom mining Crocidolite ("blue asbestos"), which is associated with asbestosis and mesothelioma. The Wittenoom mine closed in 1967. The workers in the mines had very heavy exposure to asbestos dust and the levels of claim will likely have been heavier, more severe and expected onset of asbestos-related diseases would have been quicker than those exposed via James Hardie. The longer-term fall-off of claims would also likely have been earlier owing to the heavier associated mortality.

James Hardie ceased using Crocidolite asbestos in 1968 (source: Asbestos: The Relentless Peril, Adrian Leonard (2003), page 113) but continued producing insulation products until 1974 using Amosite ("brown asbestos"), and brake linings and asbestos cement were produced until 1987 using Chrysotile ("white asbestos") (source: Trowbridge March 2000 Report, page 13).

It is not apparent whether any consideration or analysis has been performed of the mix of claims by source or occupation to identify the extent to which the patterns in numbers might be changing as a result of any changes in the nature and source of claims being notified.

In my view, the approach used by Trowbridge is less sophisticated than models potentially available to Trowbridge. I note that exposure modelling is not always used; it is especially difficult for some companies and insurers where product liability exposure information is not available. However, for companies with direct asbestos exposure, such as CSR and James Hardie, it is my opinion that such information is both important and more readily available and has been taken account of in my assessment of liabilities.

4.3.4. Average claims costs and inflation

Trowbridge split the claims into legal elements and the claims/damages elements. This is a reasonable approach.

The average cost is derived by considering past average settlements. This is a reasonable approach.

The average costs are analysed historically without inflating the historic costs into current money terms. In my opinion, the standard approach used by actuaries is to convert historic costs into current money terms firstly, in order to more fully understand and extrapolate any trends in average costs. This can then be used as the basis of assessment of the average costs. Such information also provides an improved framework for better gauging the existence of superimposed inflation within past claims experience.

Trowbridge do not appear, from the papers made available, to have examined the distribution of settled claim by size, in particular to examine the potential for the pattern of large claims to distort the average costs.

From the papers provided it appears that Trowbridge have not separated out small and large claims (e.g. claims in excess of $1m in current money terms). Typically the actuary would segment claims in this way and then analyse the trends in small and large claims (and their relative frequencies and trends therein) in forming an overall average cost per claim. This evaluation is also critical where insurance is on an excess of loss basis.

As regards claim inflation the basic approach is standard but my view is that the combined rate selected was not reasonable, as I have noted in Section 3.3. The rate of future superimposed inflation is a key assumption and I would expect:

- Commentary on wider market observations;
- Cognisance of, if not comparison to, other long tail liability classes such as workers compensation generally and public liability generally;
- Consistency with Trowbridge's own presentations to the market place;
- Examination of "actual to expected" experience relating to visible recent inflation;
- Discussion of the combined impact of the real discount rate, i.e. discount less overall inflation in the context of the very long term projection;
- Commentary relating to the views of the relevant claims handling persons;
- A view on overall settlements (as opposed to the more limited observations that come from examining the James Hardie share only which may be distorted by changes in this share over time);
- Discussion of any material or potential changes to medical treatments, diagnostic approaches and interventions; and
- Discussion of any material, or potential, changes to the legal environment.

In all cases such considerations significantly challenge the use of a zero superimposed inflation assumption. The Trowbridge assumption of a zero rate of superimposed inflation does not appear reasonable in light of the above matters.

As I have noted in Section 3.3, there do exist potential compensating factors such as the impact of an ageing population of claimants who generate lower loss of earnings-related settlements thereby depressing the overall rate of future superimposed inflation.

As I have noted previously, the general practice was to offset this against the other factors giving rise to superimposed inflation within one aggregate figure as opposed to separate consideration of each of these factors. I have taken this general approach in my assessment.

4.3.5. Insurance recoveries

The various reports provide limited information relating to the insurance programme. I would ordinarily expect a summary of the insurance programme to be provided. To the extent that cover is on an "excess of loss basis" (i.e. covers individual claim amounts above a specific excess point or deductible) I would expect greater clarity on whether individual claim costs would trigger recoveries.

I would also seek confirmation that the excess points are not subject to indexation (the adjustment of the excess relative to inflation) or if indexation did exist a discussion of how this has been modelled.

There has also been no tracking of emerging experience or actual versus expected analysis of insurance recoveries. No allowance has been made within the estimate of the recoveries for the potential bad debt, or non-recoverability, of these recoveries. Although I note this practice of allowing for non-recoverability has become more standard only in recent years.

No allowance has been made for the potential of disputes between Amaca and Amaba and their insurers. This is a relatively standard practice. Such disputes might relate to the elements of the claim which are covered by the insurance contract, the basis of allocation of exposure and also disputes over disclosure (which are often present in asbestos-related contracts in my experience). In essence, full recoverability has been assumed.

4.3.6. Cashflows and discounting

The approach taken in respect of cashflow modelling and discounting of liabilities is appropriate as a method.

4.3.7. Classes of liability

In general the approach of considering workers compensation claims separate to the liability claims seems reasonable. I would normally expect to see consideration of product liability claims separate from public and other liability claims.

4.3.8. Disease types

In general the approach of considering mesothelioma separately from other disease types seems reasonable and is common.

It would appear that James Hardie had been able to resist claims coming from people who had a fear of contracting asbestos-related diseases as a result of exposure to any products either through manufacturing or handling of products thereafter, such claims, when made, are often referred to as 'unimpaired claims'. Any such claims would require separate identification if they were notified and accepted as claims.

4.3.9. Data gathering and checking

One of the responsibilities of the actuary is to perform checks on the data being used to content themselves as to the veracity of the data on which the valuation is dependent.

In my experience, the actuary would normally refer to the types of validations performed and any issues that arose from this validation process (and explain the extent of the significance of any issues that arose).

There is an absence of reference in the reports to certain checks which ought to be completed, which I feel are on the critical path to the valuation, specifically:

- Cross checking against the data provided for prior reviews; and
- Reconciliations against the general ledger entries (or equivalent) relating to asbestos costs.

There is an absence of any reference in the reports to material observations relating to the data, specifically:

- Identification of the movement in historic data (claim numbers and settlement amounts) within settled claims cohorts;
- Identification of moving claim numbers within claims grouped on a reported basis; and
- Identification of claims ignored (e.g. those with no report date).

It would be usual for such checks to be completed and an understanding of the causes of this to be demonstrated, as well as any potential impact to the assumptions.

Overall, in my opinion, the steps taken with respect to data do not appear, based on the information I have available, to be reasonable.

Further support on this is given in the sections discussing specific reports, particularly in Section 8.

4.3.10. Excluded items

In respect of site clean up costs and 'unimpaired claims', I have concluded that the treatment of excluding potential liabilities associated with these items was reasonable at the time on the basis that:

- It is my understanding that, to date, unimpaired claims have generally not been admitted in Australia; and
- Site clean up costs were not considered material to James Hardie, although in this respect greater disclosure of any claims paid to date would have given greater support to Trowbridge's treatment.

US asbestos claims were known to be problematic and yet the report offers no comment as to the potential exposure. It is noted that the scope identified in 1996 excluded US claims on the grounds they would be speculative. This was reasonable when only 1 such claim was noted to have existed.

However, by 2000, there had been 11 claims filed. It is my opinion that such claims had then become somewhat less speculative and that Trowbridge could have done more in respect of the assessment of the potential for US exposures, in particular:

- To the extent that there were a number of known reported potential claims (11 as at 31 March 2000) the report could have made this clear. This would illustrate that a best estimate was above nil (especially given the legal costs of defending such potential claims);
- Furthermore, Trowbridge could have illustrated potential 'US Scenarios', e.g. by extrapolating using the Australian or a US numbers curve as benchmarks.

I would ordinarily expect that where the actuary has excluded a sub-set of liabilities from their deliberations that they would highlight the need for the client to form their own view and make such allowance as the client felt appropriate.

It should be emphasised to date that there is no evidence that James Hardie have incurred any large class action type claims unlike many other companies who produced asbestos-related products which found their way to the United States.

Section 5

TROWBRIDGE'S 31 MARCH 2000 REPORT

5.1 Background

The March 2000 Trowbridge report (in draft) was issued on 16 June 2000 and documented an actuarial assessment of the future asbestos-related disease liabilities of James Hardie taking into account data as at 31 March 2000.

The authors of the report were Mr Karl Marshall and Mr David Minty and the report estimated a liability of $294.7m. This liability was the present value of all future cashflows discounted at 7% per annum.

The liability made allowance of $10m for Australian wharf claims, whilst no allowance was made for the cashflow benefit of the QBE settlement. No allowance was made for US exposures in spite of 11 claims having been lodged. Trowbridge state that they "have not made any estimate of the potential exposure as there is little information available on which to base any assessment and the areas are therefore considered too speculative for an actuarial assessment".

The report notes other potential exposures such as environmental and site clean-up costs and claims relating to stress resulting from potential exposure to asbestos. No liability was estimated or recommended for any of these exposures.

The report states that data quality was good and has improved. Trowbridge state the results of their valuation are not materially affected by any discrepancies. Trowbridge also state that data reconciliation has been performed and the results are reasonable.

The report addresses sensitivity testing on the following factors:

- The numbers of claims;
- The peak and duration of future notifications;
- The average cost of claims;
- Superimposed inflation;
- Discount rates.

5.2 Key observations on Trowbridge's valuation basis

In this section the valuation basis used by Trowbridge for March 2000 is reviewed. For each assumption, I have considered the emerging experience in the intra-valuation period (1998 to 2000), the change in the basis that Trowbridge have made relative to the 1998 valuation, and I discuss the reasonableness of that change and the assumption, together with matters I feel ought to have been addressed.

5.2.1. Numbers of claims

Analysis of emerging experience

Mesothelioma numbers for the last three years (1998-2000) had risen considerably relative to numbers estimated at the 1998 valuation (see table B.3 of Trowbridge's report and Table 5.1 below). The table below shows the reported mesothelioma claims at each valuation, and highlights where the historic data has "moved". It should be noted that no comment was made by Trowbridge regarding this movement.

Table 5.1: Reported mesothelioma general liability claims at the 1998 and 2000 valuations

Report Year	1998	2000	Change
1991/92	25	29	+4
1992/93	39	45	+6
1993/94	55	59	+4
1994/95	78	78	0
1995/96	67	75	+8
1996/97	78	79	+1
1997/98	90*	101	+11
1998/99	92+	102	
1999/00	92+	94*	

*Projected to ultimate for the additional days of reports to 31 March 1998/2000. Actual 86 at 1998 and 90 at 2000, both years projecting further 4 claims
+Estimates at 1998 valuation.

The reported number of claims for the 1997/98-year of report had risen from an assessed ultimate of 90 to 101. I have inferred that this was in part related to processing delays. It is also noticeable that earlier reporting years also show some movement.

Generally, there ought not be an increase in the numbers of claims reported in a previous year other than potentially to allow for processing delays.

The number of claims reported in 1999 is 10 higher than was forecast at the 1998 valuation whilst the claims for the 2000-year of report appear to be broadly in line with the forecast at the 1998 valuation. However, it should be recognised that there clearly exists potential for further development of the actual experience for 2000 (given the strong development of the 1998-year of notifications since the previous valuation).

Non-mesothelioma claims numbers for the three years (1998-2000) appeared to be considerably below the numbers estimated at the previous valuation (see table C.3 of Trowbridge's report and Table 5.2 below). The historic data also "moved" and the table below highlights this movement. It is noted that no comment has been made by Trowbridge regarding the movement.

Table 5.2: Reported non-mesothelioma general liability claims at the 1998 and 2000 valuations

Report Year	1998	2000	Change
1991/92	26	27	+1
1992/93	39	41	+2
1993/94	77	81	+4
1994/95	38	46	+8
1995/96	66	69	+3
1996/97	65	67	+2
1997/98	74*	69	-5
1998/99	71+	51	
1999/00	71+	68*	

*Projected to ultimate for the additional days of reports to 31 March 1998/2000. Actual was 71 at 1998 and 65 at 2000, both years projecting 3 further claims
+Estimates at 1998 valuation.

The number of claims in 1999 (51) appeared abnormally low, which Trowbridge recognised and reasonably ignored.

Workers Compensation claim numbers appeared to fall considerably in the period 1998-2000, although it should be noted that such claims contribute a relatively small amount to the liabilities in monetary terms.

Trowbridge's valuation basis

For mesothelioma claims, the peak was extended from a 1999-2002 plateau to a 2001-2006 plateau. The end point was extended from 2022 to 2026. Consequently the number of reported mesothelioma claims post 31 March 2000 increased by 21% from 1,355 in the 1998 valuation to 1,638 in the 2000 valuation.

For non-mesothelioma claims, the peak was extended from a 1999-2001 plateau to 2002. The end point was reduced from 2022 to 2021. Consequently the number of reported claims post 31 March 2000 has increased by 27% from 784 to 994.

Other considerations

Trowbridge state that the results of their model, using a Berry curve and the Andrews/Atkins curve, indicates a plateau in notifications has been reached and that this is consistent with their wider observations.

In formulating this view, they do not appear to have factored in:

- Epidemiological studies from around the world
- The nature and timing of Australian or James Hardie's asbestos exposure
- The implications this has for the peak of future claims.

As I have indicated previously, in Section 3.2, all the indications within epidemiological circles in Australia at the time were that there was still considerable further development upwards in respect of mesothelioma and other asbestos-related diseases.

I have also previously noted that had consideration been given to the nature of Australian exposures, and James Hardie's also, relative to UK and US exposures and the peaks that their epidemiological studies were implying, this ought to have led a reasonable actuary to form a conclusion that claims were yet to peak and that the peak of mesothelioma claims was more likely to arrive in around 2010.

5.2.2. Average settlement costs

Analysis of emerging experience

For mesothelioma claims the average costs of settlements had risen considerably to $177,000 in 2000. Furthermore, as the following table shows, the average settlement costs have "moved" relative to the previous valuation.

Table 5.3: Average settlement costs of non-nil general liability mesothelioma claims

Settlement Year	1998 $000	2000 $000
1991/92	175	130
1992/93	127	126
1993/94	141	129
1994/95	144	123
1995/96	127	119
1996/97	154	153
1997/98	170	151
1998/99		127
1999/00		177
Selected	155	180

For non-mesothelioma claims, the average costs had increased from $36,000 in 1998 to $72,000 in 2000 and had returned to the levels seen prior to 1996.

Table 5.4: Average settlement costs of non-nil general liability non-mesothelioma claims

Settlement Year	1998 $000	2000 $000
1991/92	58	56
1992/93	104	106
1993/94	104	118
1994/95	73	81
1995/96	78	69
1996/97	35	33
1997/98	40	36
1998/99		47
1999/00		72
Selected	40	70

Trowbridge's valuation basis

The average cost assumed for a non-nil mesothelioma claim was increased by 16% from $155,000 to $180,000. The average cost assumed for a non-nil non-mesothelioma claim was increased by 75% from $40,000 to $70,000.

The average cost assumed for a non-nil workers compensation claim was unchanged at $60,000.

Other considerations

Trowbridge do not appear to have investigated or rationalised this increase within their report. This is unexpected given the substantial change in the assumptions and the significance of that change. They ought to have considered:

- The incidence of large/small claims;
- The percentage share of James Hardie to each claim and whether the percentage share is increasing. However, it is noted in Trowbridge's comments in the 1998 report that such a field on the database is not reliable; and
- The exhibition of superimposed inflation (judicial inflation).

This would have helped Trowbridge in their assumption setting and in their extrapolation of future trends in claims costs.

Additionally, when setting the average cost assumption by reference to historic average costs, the historic average costs should first be inflated to current money terms. Such an approach is standard actuarial practice in setting future average costs. Trowbridge have not done this, instead retaining average costs in their original money terms.

This makes a difference to my analysis of the data and I have discussed this in Section 5.4.

5.2.3. Average legal costs

Analysis of emerging experience

The average legal costs appear to have dropped considerably over the last 2 years. It is noted in the report that this is due to deferring allocation of costs until claims have been closed. As a consequence, analysis of emerging experience is somewhat restricted in the conclusions that may be formed. The figures shown in recent periods may therefore be under-developed and immature in enabling an assessment to be formed of the level of legal costs to be experienced in the future.

Allowance is made for that element of legal costs which is not directly allocated to claims. This is referred to as unallocated loss adjustment expenses (ULAE) and reflects general claims management overheads.

Table 5.5: Average legal costs of general liability mesothelioma claims

Settlement Year	Non Nil Claims		Nil Claims	
	1998 $ 000	2000 $ 000	1998 $ 000	2000 $ 000
1991/92	56	57	8	6
1992/93	32	35	4	5
1993/94	28	23	26	21
1994/95	29	25	13	9
1995/96	40	32	53	22
1996/97	42	40	15	10
1997/98	57	54	24	13
1998/99		23		14
1999/00		18		3
Selected*	45	30	20	15

*It should be noted that there is an additional $20,000 loading for ULAE in 1998 and $10,000 in 2000 for non-nil claims.

Table 5.6: Average legal costs of general liability non-mesothelioma claims

Settlement Year	Non Nil Claims		Nil Claims	
	1998 $ 000	2000 $ 000	1998 $ 000	2000 $ 000
1991/92	25	18	0	1
1992/93	20	21	0	1
1993/94	51	51	3	3
1994/95	20	17	4	3
1995/96	36	31	2	11
1996/97	31	38	9	9
1997/98	37	23	5	7
1998/99		23		3
1999/00		1		1
Selected*	35	30	5	10

*It should be noted that there is an additional $20,000 loading for ULAE in 1998 and $10,000 in 2000 for non-nil claims only.

Trowbridge's valuation basis

The assumed legal cost of a mesothelioma claim was reduced from $65,000 to $40,000 for a non-nil claim, and from $20,000 to $15,000 for a nil claim.

The assumed legal cost of a non-mesothelioma claim has reduced from $55,000 to $40,000 for a non-nil claim and increased from $5,000 to $10,000 for a nil claim.

Of the reductions in the legal costs of non-nil claims, $10,000 relates to the loading for ULAE having reduced.

The assumed legal cost for a workers compensation claim is unchanged at $10,000 (excluding ULAE) for non-nil claims and $2,000 for nil claims.

Other considerations

When setting the average legal cost assumption by reference to historic average costs, the historic average costs should be inflated to current dollar terms. Such an approach is, in my opinion, the standard market practice when setting average costs. Trowbridge have not done this, instead retaining average legal costs in their original money terms.

The allowance for ULAE made by Trowbridge has substantially changed relative to 1998. They do not appear to have discussed the cause of this change or the extent to which it is reasonable.

5.2.4. Nil settlement rate

Analysis of emerging experience

For mesothelioma claims, the historic nil rate reached 33% in 1998 and since then showed a significant reduction to 20% and then 15% in 2000. It is possible that the 33% was correlated to the high level of claims per event that were filed, although this is not certain by any means. It is possible that such a high claim per event ratio might in part have arisen from claims being filed against each entity of James Hardie by a number of individuals.

Table 5.7: Nil and non-nil settlements for mesothelioma claims

Settlement Year	Number of Nil Settlements	Total Settlements	Percentage Nil %
Earlier	12	45	27%
1991/92	4	23	17%
1992/93	10	29	34%
1993/94	10	62	16%
1994/95	10	68	15%
1995/96	9	72	13%
1996/97	5	47	11%
1997/98	30	92	33%
1998/99	15	74	20%
1999/00	10	68	15%
Total	115	580	20%

In my opinion, the figure in 1997/98 (33%) is an outlier (as is 1992/93), which requires investigation and explanation as to its cause, and also the extent to which it is correlated to the high number of claims per event (1.38, see Table 5.8 below).

Trowbridge state that the number of non-nil claims per event projected is 0.86 (1.15 x 75%) and that this is consistent with the last five years experience. This is used to support the 25% nil rate assumption. No analysis is presented.

It should be noted that the claims per event ratio is on a “reported basis”, and the non-nil settlement rate is on a “settlement basis”, and so the two are not comparable. Nonetheless, I have performed this analysis but do not gain the same support of the 25% nil rate assumption from such analysis set out in the table below:

Table 5.8: Assessment of non-nil mesothelioma claims per event

Year	% Non-Nil	Claims/Event	Non-Nil Claims /Event
1995/96	87%	1.21	1.05
1996/97	89%	1.25	1.11
1997/98	67%	1.38	0.93
1998/99	80%	1.31	1.05
1999/00	85%	1.06	0.90
All Years	80%	1.20	0.96

For non-mesothelioma claims, the nil settlement rate had been volatile and the rate experienced in the most recent year (13%) related to a year of much lower numbers of settlements.

Trowbridge's valuation basis

The nil rate assumed for mesothelioma claims was reduced from 30% to 25%, whilst the nil rate assumed for non-mesothelioma claims was unchanged at 25%. For workers compensation, the nil rate was maintained at 85%.

5.2.5. Inflation

Analysis of emerging experience

As noted in Section 3.3, superimposed inflation continued to be experienced at between 5% per annum and 10% per annum across a number of liability-related portfolios.

Trowbridge's valuation basis

The base rate of wage inflation was set at 4% per annum for the 2000 valuation (unchanged from 1998). A superimposed inflation assumption of 0% per annum was made (also unchanged from 1998).

Other considerations

The report does not describe any approach or analysis to set, or model, superimposed inflation.

It appears to me that they ought to have at least:

- Performed an analysis of James Hardie data to measure superimposed inflation, including segmenting claims by size;
- Considered market data;

- Considered DDB data or other sources;
- Produced this analysis in their report;
- Given reasons why they thought zero was an appropriate number.

It is not apparent from their working papers whether this has been done, although it is certainly the case that no commentary has been entered into on this issue within their report.

Overall, I find little discussion on the rate of superimposed inflation or any actuarial analysis performed to support their view on the rate of future superimposed inflation. Furthermore, as already noted, all of the information in the market suggests that a zero superimposed inflation is not reasonable.

5.2.6. Discount rate

Analysis of emerging experience

ED88 required that the discount rate to be used should be consistent with yields available on high-quality corporate bonds. A rate of 7% per annum appeared consistent with the requirements of ED88 at 31 March 2000.

Trowbridge's valuation basis

The discount rate has not been changed, having remained at 7% per annum.

5.3 Overview of Trowbridge's work

5.3.1. Data

The actuaries ought to have reconciled the data and their analysis with those at the previous valuations, and recognised the movements in historic data or analysis. This omission has led the actuary to use data incorrectly and to extrapolate or imply incorrect assumptions. The actuaries should have identified this and qualified their report accordingly.

An actuary has a responsibility to be familiar with the general economic, legal and social trends in the community. In my opinion, the actuary has not done so adequately and has not given credibility to:

- The evidence of epidemiological studies across the world;
- The exhibition of superimposed inflation within the Australian market in relation to asbestos and other classes' liabilities; and
- The impact of various legal decisions and the extent to which it may provide further upward drift in claims costs.

5.3.2. Liabilities

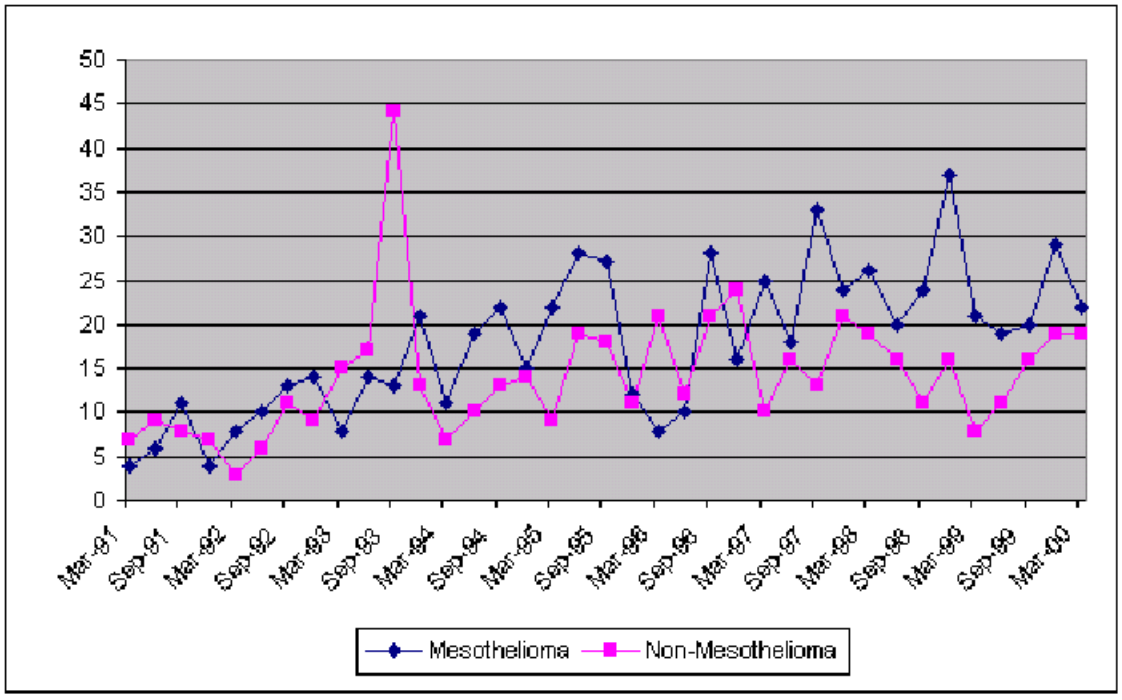
Numbers of claims

In assessing the future level of notifications, Trowbridge have used annual numbers of reports. Given the volume of data and the need to extrapolate suitable trends, especially for a portfolio where so much is reliant on the level and pattern of future notifications, I would have expected the actuary to also have analysed data on a quarterly basis and using rolling averages in assessing the starting point of the future notification curve.

This would have given greater robustness and confidence in the numbers of claims being estimated.

The chart below shows the trend in quarterly numbers of claims reported. Whilst there appears a general upward trend, there is no discernable pattern. However, the development since March 1999, especially for non-mesothelioma, is worth some attention, particularly taking regard to the fact that the March 2000 quarter is likely to be under-developed.

Figure 5.1: Claims reported by quarter of reporting



Trowbridge have used 25 claims per quarter (102 annually) for mesothelioma and 18 claims per quarter (72 annually) for non-mesothelioma as their starting point.

Insurance recoveries

It is my opinion that the actuary has not modelled the insurance recoveries sufficiently, given the relative financial significance of the recoveries (at 12% of gross liability), and that more should have been done in considering:

- The nature of the insurance;
- Deductibles and limits; and
- The mapping of future notifications to exposure periods and the application back to the insurance contracts and exposures.

If Trowbridge had full access to the insurance programme details, then they ought to have modelled it more appropriately; if they did not have access, they should have drawn attention to the insufficiency of this data and qualified their report.

Summary

In my opinion, the assumptions were not in every case appropriate. My concerns particularly relate to:

- The assumed peak and duration of future claims notifications is significantly at odds with epidemiological views prevailing at the time of the valuation;
- The rate of superimposed inflation is not consistent with market views at the time of the valuation;
- The rate of nil settlements does not appear to be supported by the analysis;
- The reliability of the data or data analysis affected the appropriateness of the assumptions (e.g. future reporting of claims and average settlement costs).

It is the responsibility of the actuary to ensure the valuation processes and calculations are carried out materially correctly.

There are some errors in the report and the valuation model. Most notably, the insurance recoveries have been over-discounted due to spreadsheet errors (this had been corrected by the 13 February 2001 valuation). This has resulted in a $5m overstatement in the liability Trowbridge have recommended relative to that which they ought to have recommended on their valuation basis.

5.3.3. Uncertainty

Trowbridge have performed a number of sensitivity tests.

I have already noted concerns in respect of the absence of consistency with epidemiological views. In addition to this, when Trowbridge have performed sensitivity analysis in respect of the number of claims, they have assumed a shortening in the future notification development. It is my experience that whilst there were some different views to those held by Trowbridge, no such views at the time were expressed that the peak and duration would shorten relative to those assumed by Trowbridge.

5.3.4. Reporting

The report does not state whether compliance with PS 300 has been achieved, nor does it consider the areas of non-compliance and the reasons for them.

There is limited discussion in the report of the derivation of the assumption in respect of the rate of superimposed inflation. The actuary has not disclosed any analysis in forming his views on these specified assumptions.

There is an absence of any discussion or assessment of the impact of changes in assumptions in the valuation basis on the result. There is no reconciliation of the actual and expected experience in the intra-valuation period. This would have informed the reader of the material deterioration in experience relative to that forecast in 1998.

5.4 KPMG valuation basis assumptions

5.4.1. Overview

Whenever two actuaries perform a valuation of a portfolio, it is inevitably a consequence of that process that the individual valuation assumptions each actuary will infer will differ; being dependent upon how they each interpret the historic data and the inference they form of the future changes to the historic experience.

As paragraph 9 of the Code of Conduct states, “members must realise that there is room for honest differences of opinion on many matters”.

In forming a view of what a reasonable actuary might do, I have started by assessing the liabilities using my own valuation basis, inferred from the data and analyses I have performed.

It is the case within in any such valuation that there will be 'overs and unders' between two actuaries. However, it is my view that the key consideration when forming of a view on the reasonableness of the liabilities is not through consideration of each assumption by itself but rather the interaction of the various assumptions within the valuation basis and the valuation result in the aggregate. However, as a secondary consideration, it is also important to understand the extent of the contribution to the overall difference of each component.

I recognise the potential for other actuaries to form a different view, and that whilst that view may differ from my own view, it might also be a reasonable view to have formed. I have addressed this matter further in section 5.7.

5.4.2. KPMG's valuation basis

1. *Number of claims*

An exposure based method, using James Hardie's and the market's exposures by asbestos type and tonnage and usage together with the distribution of claims by latency period, suggests a peak in notifications at around 2011 and a final reporting year at around 2046. This model has been derived from consumption and production statistics that were potentially available to Trowbridge in March 2000.

In assessing what my assumption for the peak and duration of the future notifications will be, I have drawn on the various conflicting views available within the market at the time:

- In my experience, the Australian insurance industry had expectations of a peak in 2002-4 or similar, with different companies having alternate views. This is not directly applicable to James Hardie as:
  - It will in part be driven by Trowbridge's presentations to the market;
  - It does not reflect the differing nature of the exposure of James Hardie compared with insurers;
  - Being a producer, James Hardie's product liability exposure will endure for as long as its products are in usage regardless of when they ceased manufacturing. This is a significant difference compared to workers compensation portfolios where exposure more normally ceases at the end date of employment or manufacture of asbestos products.
- The epidemiological studies in the UK and Europe suggested a peak at around 2020;

- The Australian exposure is slightly later than the UK generally (about 4-6 years);
- Our exposure-based model indicates a peak in 2011.

In arriving at my central estimate, I have considered these various views. With the various conflicting views and the uncertainty surrounding some of the reasons for the disparities of views, I have taken the view that my central estimate basis should adopt a peak/plateau of around 2005-2007 until further market analysis or commentary provides further support for one of the views.

I have, in deriving this, given part credibility and recognition to the worldwide views and the exposure model whilst also recognising some of the views in the Australian insurance industry at the time.

I also feel that in respect of non-mesothelioma claims, it is appropriate to assume a peak of about 2 years earlier in these circumstances (i.e. 2003-2005).

I have consequently taken the exposure curve results and modified them accordingly (which has the effect of shortening it slightly relative to the exposure-based model results) to derive the pattern of future notifications assumed.

2. *Average Settlement Costs*

The analysis has first separated out large and small (attritional) claims. A large claim is defined to be in excess of $1m in current money terms. From this, the trends in average settlement costs of both attritional and large claims have been analysed.

A loading for large claims is made. This is done by assessing the average cost of a large claim and assessing the historic incidence rate of such claims (e.g. incidence rate per settlement). From these two assessments, the loading per claim is derived.

For mesothelioma claims, the average cost selected is $185,000, comprising of $170,000 for attritional claims and $15,000 large claims loading. For non-mesothelioma claims, an average cost of $75,000 is selected compared with Trowbridge's selected $70,000 cost. For workers compensation, my view is that an average cost of $80,000 is selected, this being based on the average of all years being $70,000 and of the last 3 years having been $76,000.

Table 5.9: Average claim cost assumptions (2000 money terms)

	KPMG $000	Trowbridge $000
Mesothelioma	185	180
Non-mesothelioma	75	70
Workers Compensation	80	60

3. *Average Legal Costs*

A similar analysis of the legal costs, both for nil and non-nil settlements, has been performed. For nil settlements the average costs are the same as those used by Trowbridge:

Table 5.10: Average nil legal cost assumptions (2000 money terms)

	KPMG $000	Trowbridge $000
Mesothelioma	15	15
Non-mesothelioma	10	10
Workers Compensation	2	2

For non-nil settlements different assumptions have been selected, as shown below:

Table 5.11: Average non-nil legal cost assumptions (2000 money terms)

	KPMG $000	Trowbridge $000
Mesothelioma	44	40
Non-mesothelioma	35	40
Workers Compensation	10	10

4. *Nil Settlement Rate*

As discussed earlier, I do not support the Trowbridge assumed nil rate of 25% for mesothelioma claims. My analysis indicates that a rate of 20% would be the maximum rate a reasonable actuary would support (and that it could reasonably be as low as 15%). On the balance of the analyses available at the time, I have used a nil settlement rate of 20% for mesothelioma claims.

I accord with the 25% rate selected for non-mesothelioma claims by Trowbridge and adopt that.

For workers compensation, Trowbridge appear to have selected 85% as the nil settlement rate. I have selected a rate of 81%.

5. *Inflation*

It is my opinion that the base inflation rate of 4% per annum is a reasonable assumption to use.

It is my opinion that superimposed inflation needs to be allowed for as discussed in Section 3.3.

In arriving at the rate of superimposed inflation to assume over all future years, I have taken into account the levels of superimposed inflation that had been experienced in recent years both in the market and within James Hardie's portfolio of claims, and also considered the potential effect of the ageing population of claimants upon settlement costs.

Allowing for this, I have selected a superimposed inflation assumption of 2% per annum over all future years as consistent with the combination of these various effects.

6. *Discount Rate*

I have taken account of ED88 in selecting the discount rate and have used 7% per annum as representative of the yields on high-quality corporate bonds at March 2000.

Were I to instead use a risk-free rate, which was consistent with professional standards and also AASB1044 when it was ultimately implemented, the rate I would have selected would have been 6.50% per annum.

5.5 KPMG central estimate of asbestos-related disease liabilities (no hindsight)

The liability assessed at 31 March 2000, taking no account of hindsight, is a discounted central estimate liability of $539.7m. This is based on cashflows having been discounted at 7.0% per annum, consistent with ED88. The assessment makes no allowance for the value of the QBE settlement.

Trowbridge's assessment at 31 March 2000 was a discounted liability of $294.7m, which was also discounted at 7% per annum.

If a risk-free rate of 6.50% per annum had instead been used, the central estimate I have assessed would have been $571.2m.

Further details on the breakdown and composition of the liabilities on both an undiscounted and discounted basis are shown in Appendix L.

5.6 Analysis of variation

The sources of change in the liabilities relative to those established by Trowbridge are shown in the table below. It should be noted, and recognised, that the relative contribution of each item depends on the order in which the changes are applied from the Trowbridge results to my assessment.

Table 5.12: Analysis of variation of liabilities

Assumption	Contribution $m	Liability $m
Trowbridge's Recommendation		294.7
Trowbridge's recommendation adjusted for the correction in respect of discounting of insurance recoveries	-5.0	
US Claims	3.0	
Average Costs	14.3	
Numbers*	98.2	
Superimposed inflation*	107.5	
Nil Settlement Rate*	27.0	
Total Difference	**245.0**	
KPMG Assessment		539.7

*The contribution of the three key assumptions to the variation of $245.0m is $232.7m.

5.7 A reasonable actuary's alternative views

5.7.1. Overview

I recognise the potential for other actuaries to form a different view, and that whilst that view may differ from my own view, it might be a reasonable view to have formed. I have been asked to consider what might be considered as reasonable alternative views.

I have addressed this by using an approach which is not uncommon in an audit. Within the approach, I have made an assessment of the central estimate of liabilities, and in doing so I have formed a view on the range around this which, if the recommendation by the valuing actuary fell within this range, I would "sign-off" against. If the valuing actuary made a recommendation which fell outside this range, I would record a "hard difference" (i.e. where I could not reasonably support the actuary's valuation).

This has been done as a two-step process:

- Establishing on an assumption-by-assumption basis, the range of reasonable valuation assumptions, without consideration of the nature of the interaction of the assumptions;
- Consideration of the overall position by considering the interactions between the assumptions, removing inconsistencies and recognising that I would not support a valuation which was using parameters, all of which were at either the aggressive or pessimistic end of the range.

5.7.2. Reasonable assumptions

This section describes the assumptions that I would consider to be assumptions of a reasonable actuary as described in the process in 5.7.1.

Around my central estimate, there are 'low' and 'high' assumptions of reasonable actuaries, which would represent the assumptions which would provide an assessment of liabilities at the low end of a reasonable range and the high end of a reasonable range. It should be noted that not all assumptions have a range around them.

The assumptions in the table below identify what I would consider as a reasonable actuary's basis for the lower end of a reasonable range:

Table 5.13: Reasonable assumptions – lower end of a reasonable range

	Mesothelioma	Non-Mesothelioma	Workers Compensation
Numbers Curve	Berry medium, or equivalent curve		
Average Attritional Costs	160,000	67,000	80,000
Large Claims Allowance	15,000	0	0
Average Legal Costs – Non-nils	43,750	30,000	5,000
Average Legal Costs – Nils	15,000	10,000	2,000
Nil Settlement Rate	23%	30%	81%
Base Inflation	4% per annum		
Superimposed Inflation	2% per annum		
Discount	7.00% per annum		

The assumptions in the table below identify what I would consider to be a reasonable actuary's basis for the upper end of the reasonable range:

Table 5.14: Reasonable assumptions – upper end of a reasonable range

	Mesothelioma	Non-Mesothelioma	Workers Compensation
Numbers Curve	KPMG Adopted Curves		
Average Attritional Costs	180,000	80,000	80,000
Large Claims Allowance	30,000	0	0
Average Legal Costs – Non-nils	43,750	40,000	10,000
Average Legal Costs – Nils	15,000	10,000	2,000
Nil Settlement Rate	15%	20%	81%
Base Inflation	4% per annum		
Superimposed Inflation	4% per annum		
Discount	7.00% per annum		

The following table identifies Trowbridge's valuation basis, and provides some perspective of where each of their assumptions lies in the range of what I have considered reasonable.

Table 5.15: Trowbridge's valuation basis as at March 2000

	Mesothelioma	Non-Mesothelioma	Workers Compensation
Numbers Curve	Modified Andrews / Atkins (weaker than Berry Medium)		
Average Attritional Costs*	180,000	70,000	67,000
Large Claims Allowance*	0	0	0
Average Legal Costs – Non-nils	40,000	40,000	10,000
Average Legal Costs – Nils	15,000	10,000	2,000
Nil Settlement Rate	25%	25%	85%
Base Inflation	4% per annum		
Superimposed Inflation	0% per annum		
Discount	7.00% per annum		

*Trowbridge do not explicitly separate large and attritional costs so comparison should be made between their figure and the combined sum of the attritional and large claims within the reasonable range tables above.

5.7.3. Results

The results of the application of these reasonable range assumptions are set out in the table below. The table shows the full range of potential reserves, from the application of all low-end to all high-end assumptions together; all of the other possible combinations in between have been simulated, without the assignation of probabilities.

It also shows the impact of restricting the range to allow for inter-dependencies between assumptions, together with the consideration that even if each assumption by itself was in the reasonable range, one would not necessarily accord with the selection of all assumptions being at the bottom or top of the range.

Table 5.16: Reasonable range of liabilities

	Low $m	Central $m	High $m	Trowbridge $m
No consideration of interactions or constraints	410	540	820	295
Allowance for interactions and constraints	475	540	625	295

It is my opinion that a reasonable range as at March 2000 is therefore $475m to $625m around the central estimate of $540m.

That the range is more than 10% either side of the central estimate is not a surprise, but rather reflects the uncertainty in the valuation and that other assumptions may be reasonably justified.

Section 6

TROWBRIDGE'S FEBRUARY 2001 UPDATE

6.1 Background

Trowbridge received a letter of engagement dated 30 January 2001 from Allens.

The letter of engagement states that James Hardie wishes to be provided with an update in the light of "additional work that Trowbridge Consulting has undertaken in relation to the future level of asbestos liability in Australia generally that I understand further puts in doubt the existing work". I take this request to relate to the additional research analysis emanating from the Watson & Hurst report, which was presented to the 8th Accident Compensation Seminar in November 2000.

I note the request to keep the report brief, and Trowbridge's advice is provided in the form of a brief letter with a number of exhibits.

It is requested that the liabilities are shown as:

- 10 year cashflows;
- 15 year cashflows; and
- 20 year cashflows.

The letter of engagement also stipulates three scenarios of discount rates to be used by Trowbridge:

- 7% per annum
- 8% per annum
- 9% per annum

The Trowbridge letter does not make any explicit recommendations about the level of liabilities to be provided, but rather leaves the reader to infer both the basis and the period of future cashflows to use.

6.2 Key observations on Trowbridge's valuation basis

The only change made relative to the March 2000 valuation is in relation to the shape (peak and duration) of future notifications of claims. The impact of the change is to increase the level of liabilities required over all future years significantly. However, with cashflows provided to 20 years only, and no readily available comparator from the 31 March 2000 report, this may not have been clear to the readers. No changes have been made to any of the following assumptions:

- The average settlement costs of a claim;
- The average legal costs of a claim;
- The rates of nil settlements;
- The rate of future inflation (base and superimposed);
- The discount rate; and
- The starting level of future notifications.

6.2.1. Numbers of claims

Analysis of emerging experience

There has been no update of emerging experience between March 2000 and February 2001 on which to comment on in addition to comments in section 5.2.1.

Trowbridge's valuation basis

For mesothelioma claims, the peak has been modified from a 2001-2006 plateau to a 2001-2003 plateau. The end point has extended from 2026 to 2040. Consequently the number of reported mesothelioma claims post 31 March 2000 has increased from 1,638 to 2,067.

For non-mesothelioma claims, the peak has been extended from 2002 to a 2000-2005 plateau. The end point has been extended from 2021 to 2034. Consequently the number of reported claims post 31 March 2000 has increased from 994 to 1,015.

Other considerations

Trowbridge uses a "Berry Medium" curve in forecasting its liability.

However, in Trowbridge's November 2000 presentation to the 8th Accident Compensation Seminar, they performed an assessment of the actual number of claims in a period (1981-1996) compared to those which would have been estimated from the various models (including Andrews & Atkins and Berry High) being applied to those sources of statistics. Their research appears to indicate:

- For the Mesothelioma Register data, that the actual experience to date exceeded the "Berry High" assessment of the numbers which should have been received (approx 4,100 vs. 3,500);
- For the NSW DDB, the actual experience to date exceeded the "Berry High" assessment of the numbers which should have been received (approx 1,200 vs. 800); and
- For a collection of 12 insurers, the actual experience to date (at 1999) exceeded the "Berry High" assessment of the numbers which should have been received (approx 720 vs. 240).

The presentation also indicated that actual claim numbers to date far outstripped their previous projection model (Andrews & Atkins) even on its "high" basis. The actuaries also note that Australia appears to be tracking UK experience.

Consequently, it is my view that Trowbridge were fully aware that experience was turning out in excess of a "Berry High" curve and to select a "Berry Medium" curve in those circumstances appears inconsistent and not what a reasonable actuary would infer from the presentation.

Trowbridge did show "Berry High" as a scenario, but the brevity of the letter would not provide a lay reader with sufficient background or understanding of the use of these models in an actuarial projection.

6.2.2. Average settlement costs

Analysis of emerging experience

There has been no update of emerging experience between March 2000 and February 2001 on which to comment on in addition to comments in Section 5.2.2.

Trowbridge's valuation basis

The average cost assumed of a non-nil mesothelioma claim has remained unchanged at $180,000. The average cost assumed of a non-nil non-mesothelioma claim has remained unchanged at $70,000.

6.2.3. Average legal costs

Analysis of emerging experience

There has been no update of emerging experience between March 2000 and February 2001 on which to comment on in addition to comments in Section 5.2.3.

Trowbridge's valuation basis

The assumed legal cost of a mesothelioma claim remained at $40,000 for a non-nil claim, and $15,000 for a nil claim.

The assumed legal cost of a non-mesothelioma claim remained at $40,000 for a non-nil claim and $10,000 for a nil claim.

The assumed legal cost of a workers compensation claim remained at $10,000 for a non-nil claim and $2,000 for a nil claim.

6.2.4. Nil settlement rate

Analysis of emerging experience

There has been no update of emerging experience between March 2000 and February 2001 on which to comment on in addition to comments in Section 5.2.4.

Trowbridge's valuation basis

The nil rate assumed for mesothelioma claims has remained at 25%. The nil rate assumed for non-mesothelioma claims was also unchanged at 25%. The nil rate assumed for workers compensation remained at 85%.

6.2.5. Inflation

Analysis of emerging experience

There has been no update of emerging experience between March 2000 and February 2001 on which to comment on in addition to comments in Section 5.2.5. The market did however continue to experience superimposed inflationary pressures at rates consistent with previous periods.

Trowbridge's valuation basis

The base rate of inflation has been maintained at 4% per annum. Additionally, there has been no change to the superimposed inflation assumption of 0% per annum.

6.2.6. Discount rate

Analysis of emerging experience

No amendment to the experience has been considered. I do note that the risk-free discount rate at 31 January 2001 was of the order of 5.9% per annum.

Trowbridge's valuation basis

The discount rates used (7%, 8% and 9%) were specified. The 7% was the same as the discount rate previously adopted.

6.3 Overview of Trowbridge's work

6.3.1. Procedures

The 13 February 2001 letter does not show a reconciliation of the results with the previous investigation. Given the lack of commentary, it might be inferred by some readers that the liability is broadly unchanged at $286.5m compared with $294.7m at the March 2000 valuation. It is also not clear from the report, or to any readers, that the liability now makes no allowance for the wharf claims, for which a $10m liability was established at the 31 March 2000 valuation. Table 6.1 below sets this out.

Table 6.1: Assessment of movement in Trowbridge liabilities: March 2000 to February 2001 (KPMG analysis)

	Contribution $m	Liability $m
Trowbridge's March 2000 Recommendation		294.7
Correction in respect of discounting of insurance recoveries	(5.0)	
Claim numbers increased	37.9	
Elimination of $5m legal cost already assumed paid	5.0	
Removal of Wharf Claims Liability	(10.0)	
Trowbridge's February 2001 calculation using all future cashflows		322.6
Impact of truncating to 20 years	(36.1)	
Total Difference	**(8.2)**	
Trowbridge's February 2001 advice		286.5

There has been a reasonably substantial increase in the estimate of total future liabilities owing to a change in the pattern of future notifications of claims (the duration of the curve has been substantially extended and the curve has been assumed to decay much more slowly than that which had previously been assumed; and the peak for non-mesothelioma claims has also been increased). This increase in the liabilities has then been offset by the restriction to 20 years of cashflows.

The report does not generally deal with variability and sensitivity. However, the numbers of claims have been sensitivity tested for the application of a "Berry Medium" and a "Berry High" curve, and the discount rate has been sensitivity tested at 7%, 8% and 9% per annum.

The report does not articulate any clear conclusions on the actuarially assessed liabilities.

6.3.2. Data

It is the actuaries responsibility to ensure the report makes clear the data used, and that they have the necessary and sufficient data to set liabilities.

The report does not make clear the data used, or draw attention to the reader that the data is at 31 March 2000 and that there has been no update.

In my opinion, the letter ought to have contained greater disclosure and been qualified accordingly.

6.3.3. Liabilities

In my opinion the absence of allowance for future superimposed inflation is inappropriate, as I have already discussed more generally.

It is the actuary's responsibility under PS 300 to propose appropriate assumptions.

It is the responsibility of the actuary to carry out the valuation calculations and processes correctly. There are a number of errors in the appendices.

The undiscounted liabilities in each table are incorrect in the following respects:

- The columns headed "net meso" are actually gross of reinsurance recoveries;
- The columns headed "net non-meso" are actually gross of reinsurance; and
- The columns headed "total-net (inc WC)" are actually gross of reinsurance.

This error is true for all three exhibits.

I note that no such error occurs within the discounted liabilities and nor does this error occur in relation to the individual (detailed) year-by-year cashflows, which I understand were used within the investment model.

At the 31 March 2000 valuation, the cashflows projected were:

Table 6.2: Analysis of discrepancies

	Actual (March 2000) $m	Reported (February 2001) $m	Overstatement $m
10 year	253.2	288.3	35.1
15 year	382.8	435.9	53.1
20 year	486.6	554.2	67.6

Appendix G shows an analysis and comparison of these discrepancies, identifying the figures reported by Trowbridge and the figures they ought to have reported.

The signing actuaries have the responsibility to ensure that the valuation and the reports and any presentation materials are correct and accurate.

As already noted, an analysis of change in the valuation would be typical and aid reconciliation and understanding of movements.

6.3.4. Uncertainty

The letter provides illustration of sensitivity in respect of the numbers of future claims (by way of using a "Berry High" curve) and the discount rate only.

No further discussions or illustrations on sensitivity testing are made. I would have expected that, as a minimum, the same sensitivity tests be performed as at the 31 March 2000 valuation. That said, I note the scope of the letter of engagement to keep the report brief.

6.3.5. Reporting

The letter of engagement requests that the report be kept brief, that the actuary provides the cashflows and provisions on specified cashflow bases.

In my view, the letter is unnecessarily brief and addressed little by way of what is required of an actuary. The letter falls considerably short of an Actuarial Report. The letter does not state that compliance with PS 300 has not been fulfilled.

The letter does not address the nature of the data being used. Furthermore, it does not adequately inform the reader of the risks and uncertainties within the valuation. The report contains factual errors and the report includes no qualifications in relation to the valuation.

The letter does not adequately discuss the basis of assumptions and how they have been derived, or the extent to which the revised assumptions are consistent with the Watson & Hurst presentation. The reader would interpret in the absence of any other information that Trowbridge are signing off that they have no concerns, limitations or restrictions.

Finally, the letter makes no conclusions or recommendations and leaves the onus on the client to formulate conclusions of the appropriate basis, without necessarily having sufficient supporting information within the report to judge some of the assumptions.

The actuaries are responsible for this report and, in my opinion, they ought to make it clear to the management of James Hardie of their professional duties and obligations.

In summary, the key shortcomings are:

- The letter is not sufficiently detailed and falls considerably short of an actuarial report;
- Data has not been updated and no comments have been made;
- There are errors in the report;
- There is no analysis of variation or reconciliation of movements;
- There is limited sensitivity testing;
- A number of the assumptions do not appear reasonable;
- There are no explicit recommendations in the report.

6.4 KPMG valuation basis assumptions

I have considered what my views on the valuation basis would be on the basis of no further information or data being available at February 2001.

The only assumptions which I feel warrant a change, in the absence of taking into account further data or having visibility of the data supporting the analysis of Watson & Hurst in respect of average claims sizes from the insurance industry or DDB, are the numbers of future notifications.

1. *Numbers of claims*

I previously identified within my 31 March 2000 valuation that the use of an exposure curve from the market and James Hardie's exposures led us to a potential peak in the notification curve of 2011. I also noted other factors in this deliberation, such as:

- The bases of assumptions of certain insurers;
- The nature of Australian exposures relative to UK exposures;
- UK epidemiological studies.

Taking all the evidence together, I assumed a peak of 2005-2007 for mesothelioma for the 31 March 2000 valuation, reflecting some uncertainty amongst the various views, and of 2003-2005 for non-mesothelioma.

Between the previous valuation (31 March 2000) and this valuation (13 February 2001), information came to the market (from Mr Watson and Mr Hurst) which indicated that the market experience was much worse than anything they had previously modelled and far exceeded the use of a Berry curve and other curves previously used by actuaries. Indeed, their analysis appears to suggest it has been much higher than their "Berry High" model.

This information would lend greater credibility and support to the results of the exposure-based model results, or to the UK and Australian epidemiological views at that time, and away from the Berry medium curve and other previous curves, such as Andrews & Atkins.

It is my opinion that, in the light of this additional information, I would now give significantly more credibility to the results of the exposure-based model and therefore increase the assumed peak for mesothelioma claims to 2011, but that the overall duration of the curve would not be significantly changed.

2. *Average settlement costs*

I have not changed the assumptions relative to the March 2000 valuation. Having inflation adjusted historic average settlements into current money terms and analysed trends therein, I have adopted slightly different average costs for each claim type compared with those selected by Trowbridge. The assumptions are shown in the following table.

Table 6.3: Average claims cost assumptions (2000 money terms)

	KPMG $000	Trowbridge $000
Mesothelioma	185	180
Non-mesothelioma	75	70
Workers Compensation	80	60

3 *Average legal costs*

I have not changed the assumptions relative to the March 2000 valuation.

Table 6.4: Average nil legal cost assumptions (2000 money terms)

	KPMG $000	Trowbridge $000
Mesothelioma	15	15
Non-mesothelioma	10	10
Workers Compensation	2	2

Table 6.5: Average non-nil legal cost assumptions (2000 money terms)

	KPMG $000	Trowbridge $000
Mesothelioma	44	40
Non-mesothelioma	35	40
Workers Compensation	10	10

4. *Nil settlement rate*

I have not changed the assumptions relative to the March 2000 valuation.

I have assumed a nil settlement rate of 20% for mesothelioma claims. The 25% nil rate selected for non-mesothelioma claims by Trowbridge appears reasonable. For workers compensation, Trowbridge appear to have selected 85% as the nil settlement rate. I have selected a nil settlement rate of 81%.

5. *Inflation*

I have not changed my assumptions relative to the March 2000 valuation. It is my opinion that the base inflation rate of 4% per annum is a reasonable assumption to use and that an appropriate rate of superimposed inflation is 2% per annum over all future years.

6. *Discount rates*

In accordance with ED88, I have selected a discount rate of 7% per annum, although I note that if I were to use a risk-free rate consistent with those prevailing at the time, a rate of 5.90% per annum would be reasonable.

6.5 KPMG central estimate of asbestos-related disease liabilities (no hindsight)

The overall result of my valuation at February 2001 is for a discounted central estimate of $694.2m, based on a discount rate of 7.00% per annum. The assessment makes no allowance for the value of the QBE settlement.

Trowbridge's assessment of the liabilities was $286.5m for 20 years of cashflows and $322.6m for all years at a 7% discount rate.

Using a risk-free rate of 5.90% per annum, my assessment of the liabilities would instead be $804.9m.

Further details on the breakdown and composition of the liabilities on both an undiscounted and discounted basis are shown in Appendix M.

6.6 Analysis of variation

The table below analyses the sources of change in the liabilities relative to those established by Trowbridge. It should be noted, and recognised, that the relative contribution of each item (in dollar terms) depends on the order in which the changes are applied from the Trowbridge results to my assessment.

Table 6.6: Analysis of variation of liabilities

Assumption	Contribution $ m	Liability $ m
Trowbridge's calculation		286.5
Additional Cashflows	36.1	
Trowbridge's calculation using all future cashflows		322.6
Inclusion of Wharf Claims	9.4	
US Claims	3.6	
Average Costs	10.9	
Numbers*	156.0	
Superimposed inflation*	156.4	
Nil Settlement Rate*	35.3	
Total Contribution	**371.6**	
KPMG Assessment		694.2

*The three key assumptions previously identified have contributed $347.7m of the total variation of $407.7m

6.7 A reasonable actuary's alternative views

6.7.1. Overview

As discussed in 5.7.1, I recognise the potential for other actuaries to form a different view, and that whilst that view may differ from my own view, it might be a reasonable view to have formed.

6.7.2. Reasonable assumptions

This section describes the assumptions that I would consider to be assumptions of a reasonable actuary as described in the process in 5.7.1.

Around my central estimate, there are 'low' and 'high' assumptions of reasonable actuaries, which would represent the assumptions which would provide an assessment of liabilities at the low end of a reasonable range and the high end of a reasonable range. It should be noted that not all assumptions have a range around them.

The assumptions in the table below identify what I would consider as a reasonable actuary's basis for the lower end of a reasonable range:

Table 6.7: Reasonable assumptions – lower end of a reasonable range

	Mesothelioma	Non-Mesothelioma	Workers Compensation
Numbers Curve	Berry high, or equivalent curve		
Average Attritional Costs	160,000	67,000	80,000
Large Claims Allowance	15,000	0	0
Average Legal Costs – Non-nils	43,750	30,000	5,000
Average Legal Costs – Nils	15,000	10,000	2,000
Nil Settlement Rate	23%	30%	81%
Base Inflation	4% per annum		
Superimposed Inflation	2% per annum		
Discount	7.00% per annum		

The assumptions in the table below identify what I would consider to be a reasonable actuary's basis for the upper end of the reasonable range:

Table 6.8: Reasonable assumptions – upper end of a reasonable range

	Mesothelioma	Non-Mesothelioma	Workers Compensation
Numbers curve	KPMG's revised adopted curve		
Average Attritional Costs	180,000	80,000	80,000
Large Claims Allowance	30,000	0	0
Average Legal Costs – Non-nils	43,750	40,000	10,000
Average Legal Costs – Nils	15,000	10,000	2,000
Nil Settlement Rate	15%	20%	81%
Base Inflation	4% per annum		
Superimposed Inflation	4% per annum		
Discount	7.00% per annum		

The following table identifies Trowbridge's valuation basis, and provides some perspective of where each of their assumptions lies in the range of what I have considered reasonable.

Table 6.9: Trowbridge's valuation basis as at February 2001

	Mesothelioma	Non-Mesothelioma	Workers Compensation
Numbers curve	Berry Medium		
Average Attritional Costs*	180,000	70,000	60,000
Large Claims Allowance*	0	0	0
Average Legal Costs – Non-nils	40,000	40,000	10,000
Average Legal Costs – Nils	15,000	10,000	2,000
Nil Settlement Rate	25%	25%	85%
Base Inflation	4% perannum		
Superimposed Inflation	0% perannum		
Discount	7.00% perannum		

*Trowbridge do not explicitly separate large and attritional costs so comparison should be made between their figure and the combined sum of the attritional and large claims within the reasonable range tables above.

6.7.3. Results

The results of the application of these reasonable range assumptions are set out in the table below. The table shows the full range of potential reserves, from the application of all low-end to all high-end assumptions together.

It also shows the impact of restricting the range to allow for inter-dependencies between assumptions, together with the consideration that even if each assumption by itself was in the reasonable range, one would not necessarily accord with the selection of all assumptions being at the bottom or top of the range.

Table 6.10: Reasonable range of liabilities

	Low $ m	Central $ m	High $ m	Trowbridge $ m
No consideration of interactions or constraints	492	694	1100	323
Allowance for interactions and constraints	600	694	825	323

It is my opinion that a reasonable range as at February 2001 is therefore $600m to $825m around the central estimate of $694m.

That the range is more than 10% either side of the central estimate is not a surprise, but rather reflects the uncertainty in the valuation and that other assumptions may be reasonably justified.

Section 7

QUANTIFYING THE FINANCIAL IMPACT OF THE EXTRA 9 MONTHS' DATA BEING PROVIDED

7.1 Background

On Monday 6 August 2001, Trowbridge presented the results of its analysis as at 30 June 2001 to the Board of Amaca Limited. Various explanations and comments were requested of Trowbridge and four letters followed across the passing months as set out below:

- 29 August 2001. Change in assessment of potential asbestos-related liabilities;
- 29 August 2001. Use of emerging data in assessment of potential asbestos-related liabilities;
- 26 September 2001. Application of updated data to assessment of potential asbestos-related liabilities;
- 20 March 2002. Assessment of potential asbestos-related liabilities.

The letters effectively responded to queries relating to:

- The overall change in results between the 13 February 2001 letter and the 30 June 2001 results;
- The effect that additional data would have had on Trowbridge's 13 February 2001 assessment.

The letters were signed by David Minty and Karl Marshall with the exception that David Minty and Adam Driussi signed the 20 March 2002 letter. (Mr Driussi is also a Fellow of the Institute of Actuaries of Australia.)

7.2 29th August 2001 documents ("Use of emerging data in assessment of potential asbestos-related liabilities" and "Change in assessment of potential asbestos-related liabilities")

7.2.1. Overview

In answering the question as to the impact of the extra data, the results of the 30 June 2001 valuation provide effectively an upper bound, being an increase of less than $300m. Given that this also provides the greatest detail available for us to examine, I commence with an examination of the 30 June 2001 results as summarised in Trowbridge's letter of 29 August 2001.

On a "total cost basis", the increase in liabilities is stated as being $223.6m, being the difference between the $355.3m opening liability (restated for a 6% discount rate) and the $578.9m closing liability. The majority of this increase ($220m) relates to just three of the assumptions, as can be seen in the table below. (I note that the $578.9m liability is not consistent with that reported to the Board in the June 2001 valuation, which quoted a figure of $574.3m; I cannot ascertain the reason for the restatement.)

The table below tracks the change of the liability to assumption changes based on figures presented in the 26 September 2001 (please note certain figures were not consistent with those presented by Trowbridge in the 29 August 2001 letter).

Table 7.1: Trowbridge analysis of change reconciliation (KPMG analysis)

	Liability $ m	Change $ m	Total Change $ m
Liability reported (truncated at 20 years)	286.5		
Extension to full years' cashflows		36.1	
Opening liability	322.6		
Restated for 6% discount	355.3	32.7	32.7
Increase in claim numbers*	426.3	71.0	103.7
Change in curve shape*	479.3	53.0	156.7
Change in average claim cost*	575.3	96.0	252.7
Waterside workers	585.3	10.0	262.7
Waterside workers change	580.5	(4.8)	257.9
Other valuation basis changes (including the impact of rolling forward to June 2001)	574.3	(6.2)	251.7

*These three changes sum to $220 million

7.2.2. Quantification and analysis of contribution to movements in liabilities

1. Discount rate

The liabilities at 13 February 2001 have been reassessed at a discount rate of 6% per annum, being the rate used for the June 2001 valuation. This has added almost $32.7m to the liabilities, including all future years' cashflows.

2. *Projected numbers of claims*

This was estimated to have contributed $71m to the increased liability. I understand it to have primarily arisen from the increased reported claims in 2000 relative to that which had been forecast. I generally feel this is attributable to the emerging data.

3. *Shape of the mesothelioma pattern – peak and curve shape*

This was estimated to have contributed $53m to the increased liability. In Trowbridge's November 2000 market presentation, it appears that:

- UK development patterns of numbers were broadly similar in pattern to the Australian market developments;
- UK views (Peto et al, Health & Safety Executive) indicated a peak of mesothelioma deaths at around 2020;
- Based on the Mesothelioma register, the numbers of claims to date were higher than Trowbridge's implied "A&A Low", "A&A High" (A&A was Andrews & Atkins of Trowbridge, who presented their assessment of the future levels of asbestos claims emerging to the market in 1993) and "Berry High" curves;
- Based on the NSW Dust Diseases Board data, the numbers of claims to date were higher than their implied "A&A Low", "A&A High" and "Berry High" curves. In fact, Trowbridge's market analysis showed they were some 50% higher than the "Berry High" curves; and
- Based on insurance company data (comprising the 12 insurers used within the presentation), the number of claims to date were almost three times the "Berry High" curve estimates to date.

The presentation made by Trowbridge in November 2000 appears to suggest that if one is to use a Berry Curve for modelling that a "Berry High" curve would be the one which is supported by the analysis of experience performed by Trowbridge.

The emerging experience would therefore, in my opinion, make little difference in contributing to this change. The resulting $53m increase is not therefore, in my opinion, a consequence of emerging experience in the most recent nine months.

4 *Average cost of claims*

This was estimated to have contributed $96m to the increase in the required liability.

There are, in essence, four assumptions contribute to the average cost:

- The average settlement cost of a non-nil claim;
- The legal costs associated with settling a non-nil claim;
- The legal costs associated with settling a nil claim; and
- The proportion of claims assumed to be settled for nil cost.

My analysis indicates that the average cost increased by $42,000 from $169,000 to $211,000 (i.e. a 25% increase which is 21% above the wage inflation rate of 4%).

Of this, the analysis of change can be allocated as follows (noting that the order of analysis can have some impact on the allocations):

Change in proportion of nil's =	$12,000
Change in average settlement cost =	$37,000
Change in average legal cost =	-$7,000

The change in the proportion of claims being nil is not, in my opinion, a result of emerging experience, but rather reflects a change in view against the background of unchanging information, i.e. taking late recognition for previous experience.

At the March 2000 report, the weighted average nil proportion over all years for mesothelioma claims was 20% (and for the last three years was approximately 23%) and Trowbridge selected a proportion of 25%. At the June 2001 report, the weighted average was now 19% and they selected 20%.

The change in the average cost is a mixture of emerging new experience as well as updates to previous years' settled experience (which has moved considerably, especially for the 1999/00 settlement year where costs have risen by $3.9m or $68,000 per claim).

The settlement costs by settlement year as reported in the March 2000 and June 2001 reports are shown below for General Liability mesothelioma claims:

Table 7.2: Average settlement cost of non-nil general liability mesothelioma claims by settlement year

Settlement Year	As at March 2000 $ 000	As at June 2001 $ 000	% change	$ change
1993/1994	129	139	8%	10
1994/1995	123	134	9%	11
1995/1996	119	129	9%	10
1996/1997	153	153	0%	0
1997/1998	151	163	8%	12
1998/1999	127	142	11%	14
1999/2000	177	244	38%	68
2000/2001		220		
2001/2002 *		235		
Average all years (93-99)	139	159	14%	20
Average all years	139	173	24%	34
Average (97-99)	152	184	22%	32
Average (last 3)	152	229	51%	77
Selected	180	230	28%	50

*3 months' data only

Whilst this historic information has moved due to emerging information on previously closed claims for older years, it is largely a consequence of the increased costs in respect of a large claim for the 1999/2000 year. This change in assumption also, in part, reflects a shortcoming in Trowbridge's valuation methodology; being the absence of separation and consideration of large and small claims.

In monetary terms, I estimate that $68m of the $96m change relates to emerging experience and the remaining $28m relates to the late recognition of the nil settlement rate.

7.2.3. Conclusions

For the $219m change in the liabilities which might be attributed to 'extra data' through to 30 June 2001, the table below represents my assessment of the true extent of contribution that relates to emerging data:

Table 7.3: Analysis of impact of emerging data on Trowbridge's valuation

	KPMG Assessment $ m	Trowbridge Assessment $ m
Projected number of claims	71.0	71.0
Shape and peak of notification curve	0.0	53.0
Average Claims Costs	68.0	96.0
Other	(1.0)	(1.0)
Total	138.0	219.0

Of the remaining amount of $81m, $53m relates to the late recognition of using a "Berry High" curve and $28m relates to the late recognition of the change in the nil settlement rate for mesothelioma claims.

7.3 Analysis of changes in experience resulting from extra data – Trowbridge

7.3.1. Overview

In their letter of 26 September 2001, Trowbridge provides a table setting out a comparison of the various assessments. The table below is a summary giving some key figures are discussed below.

Table 7.4: Trowbridge assessment of impact of new data

	13 February 2001 Letter $ m	Data to 31 December 2000 $ m	30 June 2001 Report $ m
20 Year Cashflows			
6% discount	309.6	404.1	480.5
7% discount	286.5	373.2	443.5
All Future Payments			
6% discount	355.3	486.0	573.7
7% discount	322.6	437.6	516.8

It should also be noted that the 13 February 2001 letter had omitted an allowance for the waterside workers claims for $10m as at 13 February and $5.2m as at 30 June 2001.

The key change here is between the figure of $286.5m and a figure of $491.2m ($486.0m plus $5.2m). The table below tracks this change.

Table 7.5: Trowbridge analysis of change resulting from 31 December 2000 data (analysis by KPMG)

	Liability $ m	Change $ m	Total Change $ m
Liability reported (truncated at 20 years)	286.5		
Extension to full years' cashflows	322.6	36.1	
Restated for 6% discount	355.3	32.7	68.8
Increase in claim numbers*	428.6	73.3	142.1
Change in curve shape*	428.6	0.0	142.1
Change in average claim cost	486.0	57.4	199.5
Waterside workers	496.0	10.0	209.5
Waterside workers change	491.2	(4.8)	204.7

*allocation between these two factors is difficult to ascertain

7.3.2. Comments and observations

The change in the 20-years cashflows is $122.7m (being 404.1-286.5+5.2) and for all future years is $168.6m (being 486.0-322.6+5.2). I would not attribute all the changes in these figures to the impact of new data. The figures in brackets below represent the assessed contribution to **full years** cashflows.

- Discount Rate ($32.7m): As at 13 February 2001 it was clear that the yield curve had moved substantially. In my view the shift to an emphasis on a lower discount rate is not triggered by new data.
- Higher Claims Numbers ($73.3m): As discussed in Section 7.2.2 this component of the change seems to be genuinely attributable to the change in data.
- Change in peak and shape of curve ($0m): As discussed in Section 7.2.2 the shift in shape (peak and duration) does not follow from the provision of extra data.

- Average Claims Size ($57.4m): Without detail of the 31 December 2000 data it is unclear whether Trowbridge would have visibility to the movement in historic average settled cost statistics. Given Trowbridge's indication that they would have moved average claim costs to those used in the 30 June 2001 valuation (and slightly above for non-mesothelioma claims) I presume that this was the case. Given this I conclude, as set out in Section 7.2.2, that only $41m, i.e. 70% or so, of the shift results from emerging experience.

- Wharf Claims ($5.2m): This appears to be an omission from the 13 February 2001 letter and not dependent upon new data.

7.3.3. Overall results

The Trowbridge letters of 26 September 2001 and 20 March 2002 would lead the reader to conclude that the extra data would have led to them submitting a figure of approximately $373.2m (being based on 20 years of cashflows and a 7% discount rate), $91.9m higher than the $286.5m figure in the 13 February 2001 advice.

The letters are also unclear in that they do not necessarily draw the reader to add the $5.2m due to the omission of the Waterside Workers claims.

7.4 Impact of extra data to KPMG's assessment (no hindsight)

I have been asked to consider the extent to which the valuation at 13 February 2001 would have changed had I received the extra data to 31 December 2000. In formulating that view, I consider that the only assumptions which would have been modified in light of the extra information would be:

- Numbers of claims;

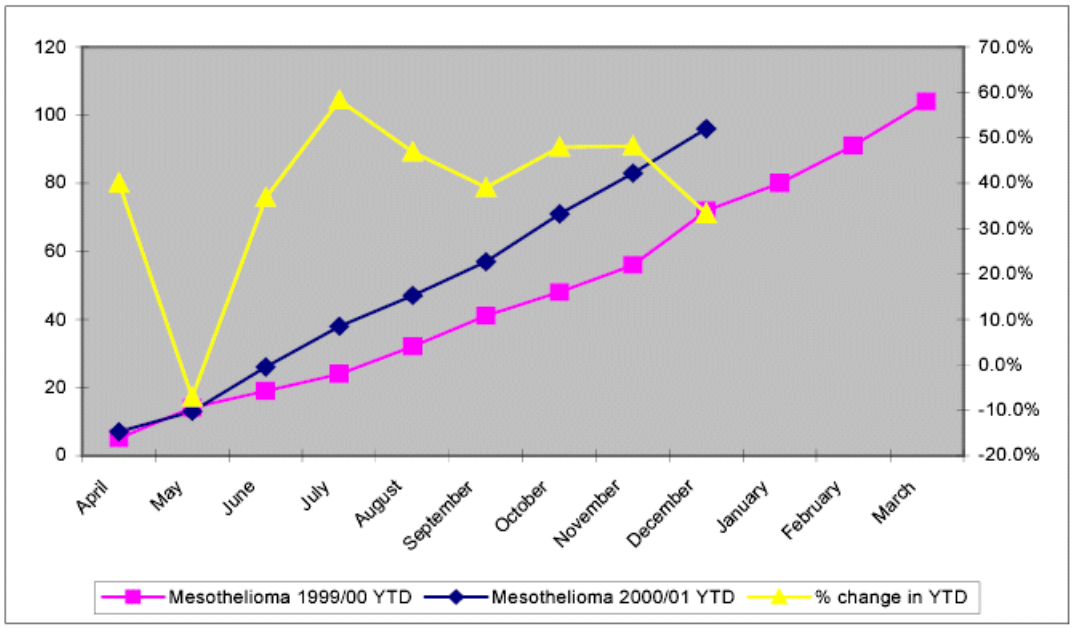
- Average costs;

- Large claims allowance.

In assessing how the assumptions used would have changed in response to the extra data, I have considered the information that was available at 30 June 2001, based on data to 31 March 2001.

I note that this clearly includes data which would not be available at 13 February 2001. However, I have analysed James Hardie's internal monthly management reports for the period April 2000 to March 2001.

Figure 7.1: Number of mesothelioma claims reported 1999/00 to 2000/01 (James Hardie management reports)



I recognise that any allowance for the impact of the emerging experience in the 9 months to 31 December 2000 requires actuarial judgment of whether there is sufficient evidence to revise my assumptions in the light of this additional experience. It is my view that there exists such evidence, and as such I have concluded that:

- The numbers of claims reported showed a consistent trend pattern throughout the financial year, and that I would have extrapolated broadly the same trends and conclusions of the "full year" position at December and March (the reports showed 157 claims and 220 claims respectively).
- The average costs of claims, whilst volatile from month to month, are generally stable in "year to date" positions at December and March (being $164,000 and $165,000 respectively for General Liability claims). This is an average of all claims regardless of disease type and excludes legal costs.

As such, I believe it is reasonable to utilise the data as at 31March 2001 as a basis for the assessment of the financial impact of the extra data being used.

In respect of claim numbers, I have assumed that the claims reported in the financial year 2000/2001 can be factored into the assessment of future notifications. The average cost per non-nil claim, excluding legal costs, has been re-assessed in light of the additional information available, being for the most recent settlement year (2000/2001) together with any updates to settlements from previous years, such as the updated settlement costs for 1999/2000. The updated assumptions are:

Table 7.6: Revised assumptions for numbers and average costs owing to new data

	Initial number of notifications	Attritional Average Claim Cost $000
Mesothelioma	127	220
Non-mesothelioma	94	85
Workers Compensation	39	85

During 2000/2001, there were a number of additional large claims, together with a claim previously settled for $0, which was reopened and closed for $3m. In light of the emerging experience, I have allowed for an increase in the incidence rate of large claims, but have not modified the assumption of the average cost of a large claim. The large claim allowance has increased to $22,500 per claim.

I have recalculated the results of the valuation model, taking into account these revised assumptions. The central estimate of the liabilities at 13 February 2001, taking into account the additional data, is $1044.5m, based on a discount rate of 7% per annum.

This is an increase of $350.3m (or 50%). The table below shows a comparison of the impact of new data for Trowbridge's and KPMG's assessments.

Table 7.7: Comparison of impact of new data

	KPMG Assessment $ m	Trowbridge Assessment $ m
February 2001	694.2	322.6
February 2001 with extra data	1,044.5	491.2
Increase	350.3	168.6
% Increase	50%	52%

Section 8

TROWBRIDGE'S INTERIM VALUATIONS AND OTHER PAPERS (JUNE 2001 TO JUNE 2002)

8.1 Overview

8.1.1. Purpose

This section provides a brief overview of the valuations as at June 2001 and June 2002 and provides key observations only. This allows the reader of the report to identify the pace of change between March 2000 and 30 June 2003, the latest valuation date.

This section does contain a full discussion of the data observations as at June 2001 and June 2002 that are relevant to my views on the liabilities.

I have not repeated an analysis or review of the liabilities, as at these interim valuation dates, as such a detailed review at these dates has not been requested.

8.1.2. Valuation bases

Appendix F identifies the key basis changes. The key changes are:

- Average mesothelioma claim cost increase from $180,000 (February 2001) to $230,000 (June 2001) and to $280,000 (June 2002);
- The nil settlement rate for mesothelioma claims reduces from 25% (February 2001) to 20% (June 2001);
- Total number of notifications projected increased from 2,797 (February 2001) to 3,878 (June 2001) for mesothelioma claims and from 1,821 (February 2001) to 1,942 (June 2001) for non-mesothelioma claims.

8.2 June 2001 Valuation

8.2.1. Data observations (settled claims)

As discussed in Sections 5.2 and 7.2 of the report, historic settled data has been changing between successive valuations. Changes to the extent seen would not be anticipated given the description given of the data.

The tables below extend the information given in Table 7.2 and set out the visible changes in past settled claim data between March 2000 and June 2001.

Table 8.1: Average settlement costs of non-nil general liability mesothelioma claims

Settlement Year	As at March 2000 $ 000	As at June 2001 $ 000	% change	Change $ 000
1993/1994	129	139	8%	10
1994/1995	123	134	9%	11
1995/1996	119	129	9%	10
1996/1997	153	153	0%	0
1997/1998	151	163	8%	12
1998/1999	127	142	11%	14
1999/2000	177	244	38%	68
2000/2001		220		

Table 8.2: Total settlement costs of general liability mesothelioma claims

Settlement Year	As at March 2000 $ 000	As at June 2001 $ 000	% change	Change $ 000
1993/1994	6,727	6,685	-1%	-42
1994/1995	7,111	7,101	0%	-10
1995/1996	7,492	7,366	-2%	-126
1996/1997	6,418	6,418	0%	0
1997/1998	9,373	9,303	-1%	-70
1998/1999	7,518	7,522	0%	4
1999/2000	10,251	14,168	38%	3,917
2000/2001		21,514		

Table 8.3: Number of non-nil settlements of general liability mesothelioma claims

Settlement Year	As at March 2000	As at June 2001	% change	Change
1993/1994	52	48	-8%	-4
1994/1995	58	53	-9%	-5
1995/1996	63	57	-10%	-6
1996/1997	42	42	0%	0
1997/1998	62	57	-8%	-5
1998/1999	59	53	-10%	-6
1999/2000	58	58	0%	0
2000/2001		98		

In order to understand this change, I have re-examined the underlying databases as at 15 March 2000 and 21 May 2001.

Csets00.xls [Source: CD-TRO.025] – This spreadsheet contains claims data underlying claims settled tables found in the March 2000 report. The data appears to have been extracted on 15 March 2000.

Csets01.xls [Source: CD-TRO.027] – This spreadsheet contains claims data underlying claims settled tables found in the June 2001 report. The data appears to have been extracted on 21 May 2001.

To verify that these databases are those used in the valuations, I have undertaken the following steps to examine the extent of consistency between the above databases and the reports:

- Tables in the spreadsheet tabulating historic settlement information were found to be identical to those presented in the reports.
- The workings of the spreadsheet tables were traced to identify the source data underlying the calculations.

I conclude that the above databases are those used in the valuations.

In the investigations of the databases, the following are the findings regarding the changes in past information on settled claims:

- The number of settled claims in past settlement years may increase or reduce when retabulated at the next valuation as a result of claims being split, or split claims subsequently re-combined, in the data.

  "Split claims" are claims which belong to the same claimant with the same prefix in their claim numbers. For example, claims 2252 S1 and 2252 S2 in the March 2000 database, both of which belong to the same claimant, were combined into claim 2252 in the June 2001 database. For the combined claim, monetary amounts, such as legal and settlement costs, are the sum of the corresponding split claims.

- Further to the above, the splitting and re-combining of claims would also distort the number of nil and non-nil settlements, adding to the uncertainty when formulating the assumed future nil settlement rate. For example, claims 1882 S1 and 1882 S2 in the March 2000 database, both of which settled at nil, were combined into claim 1882 in the June 2001 database, which was shown also settled at nil. The number of nil settlements would be reduced as a result of this re-combining.

- A claim previously settled at nil cost can become settled at a non-nil amount at the next valuation date, at the same "settlement date". In particular, the mesothelioma claim with claim number 2317 was shown as settled at nil on 7 March 2000 as at March 2000, and then subsequently shown to have settled at $3 million on 7 March 2000 as at June 2001. The average non-nil settlement cost per claim for the historic year 1999/00 increased from $177,000 to $244,000 as a result. There are no references to this data anomaly in the valuation reports. It is not clear whether Trowbridge has considered and documented this issue elsewhere.

8.2.2. Data observations (reported claims)

The table below shows reported claims information as per Trowbridge's March 2000 report and June 2001 report. Once again I would expect minor changes in this historic information, for example due to:

- Data corrections

- Claim reallocations (e.g. from non-mesothelioma to mesothelioma)

Table 8.4: Comparison of reported claims: March 2000/February 2001 and June 2001

	Mesothelioma		Non-Mesothelioma	
Report Year	March 2000/ February 2001	June 2001	March 2000/ February 2001	June 2001
1991/1992	29	24	27	24
1992/1993	45	39	41	37
1993/1994	59	53	81	75
1994/1995	78	76	46	38
1995/1996	75	66	69	61
1996/1997	79	73	67	63
1997/1998	101	100	69	64
1998/1999	102	94	51	43
1999/2000	94	91	68	68

Given the extent of the change, the underlying databases have been reexamined as discussed in Section 8.2.1 above. In particular, the data found in the following spreadsheets was examined:

- Creps00.xls [Source: CD-TRO.025]

This spreadsheet contains claims data underlying claims reported tables found in the March 2000 report. The data appears to have been extracted on 15 March 2000.

- Creps01_annually.xls [Source: CD-TRO.027]

This spreadsheet contains claims data underlying claims reported tables found in the June 2001 report. The data appears to have been extracted on 21 May 2001.

The following reconciliation was undertaken between the spreadsheets and the reports:

- Tables of numbers of reported claims excluding wharf claims split by disease type reconciled to the tables in the report;
- The reports only show total claim numbers including wharf claims across all disease types. This number reconciles with the spreadsheets.

The changes to past claims reported information appears to be due to the following reasons:

'Disease Type' change: Some claims change disease type from "Mesothelioma" to "Non-mesothelioma" and vice versa between March 2000 and June 2001

Split claims: These refer to claims that are split to handle differing claim types. On a number of occasions, one claim is split into two or three split claims or alternatively two or three claims are aggregated into one.

No 'Report Date': In their analysis of the data Trowbridge exclude claims with no "Date claim received". Some claims that were excluded in March 2000 due to this missing field were included in June 2001 due to the field being populated.

Claims reported after data extraction: The data for the March 2000 report appears to have been extracted on 15 March 2000. Therefore, any claims reported between 15 March and 31 March 2000 (which belong to the 1999/2000 report year) will not be included in the data extraction. These claims do however appear in the June 2001 data extraction.

"X" added to claim number: In some instances a claim that existed in March 2000 exists twice in June 2001, once with the same claim number and once with an "X" added to the claim number.

This is not certain because:

- Only samples of data have been examined rather than the entire dataset. The focus has been on particular report years where the change in historic data is most significant.
- It is unclear whether the inconsistency in the data is due to system error, extraction error or errors in the Trowbridge analysis.

Such changes to past data may have had a considerable effect on the valuation results.

8.2.3. Conclusions

The key findings are as follows:

- At March 2000, there were 136 claims with no report date. By June 2001, 17 had been notified and included in the historic reported numbers; the others had been removed from Trowbridge's dataset.
- Some of those claims removed reappeared at a later valuation.

- The reported numbers change over time, most notably for the more recent reporting years as a result of the missing report date.
- At June 2002, there were 195 claims with no report date. By June 2003, 12 had been included in the valuation.
- Based on the samples examined it appears that in most cases where the split claims issue contributes to the change in past claims reported information, the change occurs due to split claims being aggregated into one claim rather than the opposite scenario.

Given these findings I have the following concerns:

- The reported curve at any point in time is not mature. This has two effects:
  - There are potentially claims which are notified which are not considered within Trowbridge's valuation; and
  - The curve is systemically under-developed leading to an underestimate of future notifications using Trowbridge's model.
- The slope of the curve of notifications is potentially distorted by the incidence of split claims and those claims currently without a report date, leading to potentially inappropriate assumptions.
- The historic definition, and therefore counting, of claims is distorted by the relative incidence of splitting and aggregating of claims.
- The average cost is potentially distorted by the changes in the splitting or aggregating of claims. This could lead to Trowbridge implying inappropriate assumptions or inappropriate trends in assumptions.
- The nil settlement rate can potentially be distorted by the aggregation or splitting in respect of split claims.
- The splitting and re-combining of claims can distort the historic information on the number of settlements and thus increase the uncertainty in formulating assumptions such as average settlement cost and proportion of nil claims.

I believe that the potential impact of the data anomalies can be material, and should be quantified or otherwise disclosed to the audience of the actuarial advice. It is not clear whether Trowbridge has considered and documented this issue elsewhere.

8.2.4. Actual versus expected analysis

The table below sets out an actual versus expected analysis between the 13 February 2001 analysis and that of 30 June 2001.

Table 8.5: Analysis of change from February 2001 to June 2001 (analysis by KPMG)

	$m
Actual position at 31 March 2000	322.6
Expected payments in 15 months to 30 June 2001	28.0
Expected cost of unwind of discount	27.3
Expected position at 30 June 2001	321.9
Actual Position at 30 June 2001	574.3
Variation	252.4

Of this variation of $252.4m, $55.8m relates to a change in the discount rate from 7% per annum to 6% per annum. The remaining $196.6m relates to the impact of changing bases of assumption and emerging experience.

8.3 June 2002 Valuation

8.3.1. Data observations (settled claims)

The following table shows that even in the period June 2001 to June 2002, the settlement data continued to move, so that this was not a one-off issue between March 2000 and June 2001.

Table 8.6: Average settlement cost of non-nil general liability mesothelioma claims

Settlement Year	As at June 2001 $000	As at June 2002 $000	% change	Change $000
1993/1994	139	142	2%	2
1994/1995	134	135	1%	1
1995/1996	129	129	0%	0
1996/1997	153	155	2%	3
1997/1998	163	178	9%	15
1998/1999	142	151	6%	9
1999/2000	244	257	5%	13
2000/2001	220	234	7%	14
2001/2002		285		

8.3.2. Data observations (reported claims)

The following table shows that there were some minor movements in historic reported claims, albeit that they were fewer than had occurred in the previous intra-valuation period.

Table 8.7: Reported general liability claims for June 2001 and June 2002

	Mesothelioma		Non-Mesothelioma	
Report Year	June 2001	June 2002	June 2001	June 2002
1991/1992	24	24	24	24
1992/1993	39	39	37	37
1993/1994	53	53	75	75
1994/1995	76	78	38	38
1995/1996	66	66	61	60
1996/1997	73	73	63	63
1997/1998	100	99	64	64
1998/1999	94	94	43	45
1999/2000	91	91	68	67
2000/2001	125	126	88	90

8.3.3. Actual versus expected analysis

The table below sets out an actual versus expected analysis between 30 June 2001 and 30 June 2002.

Table 8.8: Analysis of change from June 2001 to June 2002 (Trowbridge analysis)

	$m
Actual position at 30 June 2001	574.3
Expected payments to 30 June 2002	38.3
Expected cost of unwind of discount	33.9
Expected position at 30 June 2002	569.9
Actual Position at 30 June 2002	751.9
Variation	182.0

Of the $182m deterioration, almost $132m relates to mesothelioma claims and $48m relates to non-mesothelioma claims.

Furthermore, of the $182m change, $84m related to the change in the numbers of claims and $98m related to average costs.

For mesothelioma, changes to the numbers assumptions added $57m and changes to the average claim size added $75m. The peak increased by 2 years and the overall duration by 10 years together with increased future notifications owing to the emerging recent experience. The average cost assumed was increased by $50,000 to $280,000.

For non-mesothelioma, changes to the numbers assumptions added $25m whilst changes to the average claims size added $23m. The average cost assumed was increased by around $30,000 to $100,000.

Section 9

KPMG VALUATION AS AT 30 JUNE 2003

9.1 Overview

I have been requested by Allens to perform an actuarial assessment of the liabilities of the MRCF as at 30 June 2003.

I have not sought nor have I been provided with any update to the data available to Trowbridge at their most recent valuation of June 2003. In essence, I am performing my assessment of the valuation at 30 June 2003 taking into account only the data and information available to Trowbridge, but I have been asked to factor in hindsight in respect of legal and medical developments, together with knowledge of any other significant changes I have become aware of in the insurance industry based on wider experience.

I have assumed, as part of using hindsight, that the State Government will overturn the recent Orica vs. CGU decision. It should be noted that Trowbridge made no allowance for the original Orica vs. CGU decision, as the legal opinion was only passed after their report was presented to the Board of Amaca.

It is my understanding that had the recent decision in this respect not been subject to over-turn by the State Government, that the impact of the Orica decision would have been to reduce the extent to which the workers compensation policies (depending on the policy wording) respond to claims, and that as such, one likely consequence would have been a greater co-joining and increased share of the liabilities being borne by the product suppliers, manufacturers and producers (and their insurers).

I have also addressed the issue of sensitivity testing in order to more fully inform the reader of the potential variability around the central estimate.

9.2 Data analysis

For this section, I will provide a review of the experience in recent financial years, which will be used to support the assumptions I am proposing as the central estimate. These assumptions, and the bases and reasoning on which they are set, will be discussed in detail in Section 9.3.

The key assumptions required are:

- The number of future notifications;
- The attritional average claims cost;

- The large claim size and incidence rates
- The average legal cost for non-nils and for nils;
- The nil settlement rate;
- The rate of future inflation;
- The discount rate.

9.2.1. Numbers of notifications

The table below shows the number of reported claims by report year and by disease type:

Table 9.1: Numbers of reported claims

	General Liability				
Report Year	**Mesothelioma**	**Lung Cancer**	**Asbestosis**	**ARPD/Other**	**Workers Compensation**
1991/92	24	2	14	8	29
1992/93	41	7	21	9	35
1993/94	53	7	41	27	66
1994/95	80	7	16	16	28
1995/96	66	10	28	22	34
1996/97	73	10	37	17	42
1997/98	101	10	35	19	52
1998/99	93	11	24	10	30
1999/00	92	11	44	12	36
2000/01	127	22	52	20	39
2001/02	155	17	91	41	61
2002/03	169	22	94	50	52

There has been a significant rise in the level of notifications in the last three report years, especially for mesothelioma and asbestosis.

It should also be noted that there is consistent upward development in the most recent notification years, in particular for mesothelioma and especially for 2001/02.

Table 9.2: Trends in reported mesothelioma claims by year

Report Year	0	1	2	3	4	5
1997/98				100	99	101
1998/99			94	94	93	
1999/00		91	91	92		
2000/01	125	126	127			
2001/02	144	155				
2002/03	129					

As such, it is important to allow for this further potential development when estimating the future number of notifications.

9.2.2. The attritional average claims cost

Attritional and large claims have been segmented and inflated into current money terms. A large claim is defined as a claim in excess of $1m in current money terms.

The attritional claims average settlement costs in un-inflated money terms are shown in the table below.

Table 9.3: Average attritional settlement costs

Settlement Year	Mesothelioma $000	Lung Cancer $000	Asbestosis $000	ARPD/Other $000
1991/92	155		81	34
1992/93	133	5	202	13
1993/94	144	47	109	138
1994/95	134	19	87	193
1995/96	129	60	66	118
1996/97	132	30	33	14
1997/98	152	20	49	36
1998/99	148	34	34	91
1999/00	209	83	64	144
2000/01	232	101	88	53
2001/02	255	121	99	111
2002/03	264	73	91	76

There are two noticeable factors to observe from this table:

- The average costs, particularly for mesothelioma, appear to have had a step-change from 1998/99 to the following four years. The average cost has increased from $148,000 to $209,000 in 1999/00. This effect is also generally observable for lung cancer and asbestosis (albeit previous years did exhibit some degree of volatility owing to the smaller number of claims).

- The rate of inflation in average costs for mesothelioma by settlement year has been:

Table 9.4: Rates of inflation of average mesothelioma claims

Settlement Year	Rate of Inflation
1999/00	41%
2000/01	11%
2001/02	10%
2002/03	3%

The rate of inflation apparent in the table may have been affected by:

- Changing percentage share borne by Amaca/Amaba;

- Changing mix of claims by size;

- Base and superimposed inflation.

9.2.3. Large claims allowance

A large claim is defined as a claim in excess of $1m in current money terms.

There are eight such claims settled in the 7 years to 2002, all of which are mesothelioma claims. The table below shows the list of claims and their costs.

Table 9.5: List of large settled claims in actual money terms

Report Year	Settlement Year	Claim Cost	Legal Cost	Total Cost
1996/97	1996/97	1,120,000	94,704	1,214,704
1996/97	1997/98	1,674,198	485,533	2,159,731
1999/00	1999/00	3,000,000	95,118	3,095,118
2000/01	2001/02	1,120,000	59,816	1,179,816
2001/02	2001/02	1,079,394	49,515	1,128,910
2001/02	2001/02	1,500,000	220,243	1,720,243
2002/03	2002/03	1,100,000	55,721	1,155,721
2001/02	2002/03	1,580,000	59,395	1,639,395

The average claim cost in current money terms is $1,670,000.

The historic rate of incidence of large settlements relative to non-nil settlements has been shown in the table below.

Table 9.6: Incidence of large claims

Settlement Year	Large	Other Non-Nils	Total Non-Nils	Incidence Rate
1996/97	1	41	42	2.4%
1997/98	1	57	58	1.8%
1998/99	0	56	56	0%
1999/00	1	57	58	1.8%
2000/01	0	98	98	0%
2001/02	3	92	95	3.3%
2002/03	2	128	130	1.6%

9.2.4. Average legal costs

The table below shows the average legal cost by claim type in un-inflated money terms for non-nil settlements.

Table 9.7: Average legal costs – non-nil settlements

Settlement Year	Mesothelioma $000	Lung Cancer $000	Asbestosis $000	ARPD/Other $000
1991/92	69		23	14
1992/93	38	15	31	10
1993/94	29	272	34	34
1994/95	28	12	23	23
1995/96	36	26	41	33
1996/97	40	16	29	15
1997/98	60	11	41	40
1998/99	46	15	40	55
1999/00	37	35	32	43
2000/01	27	52	40	17
2001/02	27	22	19	18
2002/03	24	24	21	18

It is noticeable that average legal costs appear to have fallen considerably in the most recent two to three years.

The table below shows the historic average legal costs associated with nil settlements, in un-inflated money terms.

Table 9.8: Average legal costs – nil settlements

Settlement Year	Mesothelioma $000	Lung Cancer $000	Asbestosis $000	ARPD/Other $000
1991/92	2	0	1	3
1992/93	5	0	0	2
1993/94	38	0	4	2
1994/95	9	5	6	3
1995/96	34	1	3	1
1996/97	7	182	7	12
1997/98	44	0	3	14
1998/99	36	128	39	15
1999/00	20	0	3	8
2000/01	12	0	13	2
2001/02	7	12	3	6
2002/03	10	5	46	2

9.2.5. Nil settlement rates

The table below shows the rate of nil settlements historically, as a percentage of the total settlements for the year.

Table 9.9: Nil settlement rates: 1992-2003

Settlement Year	Mesothelioma	Non-Mesothelioma	Workers Compensation
1991/92	16%	38%	89%
1992/93	33%	20%	80%
1993/94	16%	43%	76%
1994/95	18%	35%	60%
1995/96	11%	19%	84%
1996/97	11%	29%	69%
1997/98	35%	24%	85%
1998/99	22%	38%	90%
1999/00	12%	13%	79%
2000/01	10%	14%	86%
2001/02	27%	29%	86%
2002/03	10%	12%	79%

The nil settlement rates have generally been quite volatile across all classes of liability and disease types, with some notable spikes in the experience.

9.2.6. Inflation

As noted earlier in Section 3.3 and Section 9.2.2, the historic levels of inflation of mesothelioma claims have generally exceeded base inflation for the last four years.

During 2002 and 2003, studies were produced by PricewaterhouseCoopers ("Report to the Insurance Issues Working Group of Heads of Treasuries") and Trowbridge ("Public Liability Insurance – Analysis for Meeting of Ministers" etc), which considered and measured superimposed inflation as historically exhibited within the insurance industry.

These studies reconfirm the previous comments I have made in relation to the rates of superimposed inflation seen within my client portfolios during the late 1990s and early 2000s.

Trowbridge's study of public liability insurance experience indicated superimposed inflation of around 6% per annum, whilst PwC identified superimposed inflation of between 8% per annum and 12% per annum in the 1990s, depending on the exact period chosen.

9.2.7. Discount rates

The requirements of AASB 1044 imply the need to use a risk-free rate of return. I have considered the yields on Commonwealth bonds as being broadly representative of a risk-free return.

As at 30 June 2003, the yield curve at annual durations is as shown in the table below:

Table 9.10: Yield curve at 30 June 2003

Duration	Yield (%)
1	4.49%
2	4.33%
3	4.70%
4	5.10%
5	5.33%
6	5.43%
7	5.50%
8	5.54%
9+	5.56%

9.3 KPMG valuation basis assumptions

This section deals with the specification of the assumptions for my central estimate of the liabilities of MRCF at 30 June 2003.

As already stated elsewhere, future medical and legal developments have the potential to affect the appropriateness of these assumptions going forward. More details on the assumptions used are available in Appendix G.

9.3.1. Numbers of claims

I have used the relative shape from the exposure-based model results to assess the future number of notifications. The peaks and durations implied are shown in the table below.

Table 9.11: Assumed curve parameters

	Peak	Duration
Mesothelioma	2011	2040
Lung Cancer	2011	2039
Asbestosis	2009	2036
ARPD/Other	2009	2037

I have applied the relative shapes of the curves to the number of notifications in 2003 to project the pattern of future notifications. The table below shows the future number of notifications implied:

Table 9.12: Future and total number of notifications

	Future	Total
Mesothelioma	4,374	5,514
Non-mesothelioma	2,603	3,572
Workers Compensation	926	1,777

9.3.2. Attritional average settlement costs

Based on the historic average costs in inflated money terms, the average costs assumed are as follows:

Table 9.13: Attritional average claims cost assumptions

	Average Claim Size
Mesothelioma	260,000
Lung Cancer	100,000
Asbestosis	95,000
ARPD/Other	85,000
Workers Compensation	85,000

9.3.3. Large claims allowance

For mesothelioma claims, the average cost has been assumed to be $1.67m in current money terms. This has been based on the average inflated cost of the eight settled large claims. The incidence rate is assumed to be 2.5% by number in the future.

As a consequence, the large claim loading is $41,750 per claim in current money terms. This is to be added to the attritional average claim cost assumed for mesothelioma claims.

No large claim loading is applied in respect of other disease types.

9.3.4. Average legal costs

The average legal costs assumed are as follows:

Table 9.14: Average legal cost assumptions

	Non-Nils	Nils
Mesothelioma	33,000	15,000
Lung Cancer	30,000	15,000
Asbestosis	25,000	15,000
ARPD/Other	25,000	15,000
Workers Compensation	10,000	2,000

The legal costs for mesothelioma include a separate loading in relation to the large claims allowance based on historic legal cost loadings for large mesothelioma claims.

9.3.5. Nil settlement rates

I have assumed the average nil settlement rate for mesothelioma claims will be 17.5%. This has been based on the 4-year average to 2002 of 19% and the 5-year average to 2003 of 16%.

In respect of non-mesothelioma claims, I have assumed the average nil settlement rate to be 25%. This has been based on the 4-year average to 2002 of 27% and the 5-year average to 2003 of 22%.

For workers compensation (being the retained exposures) I have assumed a nil settlement rate of 82.5%.

9.3.6. Inflation

Future inflation of claims has been assumed to be 6% per annum, comprising 4% per annum base inflation and 2% per annum superimposed inflation weighted over all future years.

9.3.7. Discount rates

I have used the yield curve described in Section 9.2.7 and the actual yield implied by it, rather than a 5% per annum rate over all future years. This implies a negative real rate of return of 1% per annum.

9.4 KPMG valuation of liabilities

9.4.1. Central estimate of liabilities

The overall result of the valuation at 30 June 2003 is for a discounted central estimate of $1,573.4m. This is based on the utilisation of a yield curve at 30 June 2003, rather than a single discount rate.

It should be noted that the provision at June 2003 could be affected by the following factors:

- The emerging experience in relation to reported claims and average costs in the period since June 2003;
- Changes in the yields available on Commonwealth Government bonds which would affect the discount rates selected; and
- Impact of any exceptional judicial or epidemiological developments in the period since June 2003.

Trowbridge's assessment of the liabilities as at 30 June 2003 was $1,089.8m based on a discount rate of 5% per annum. KPMG's assessment of the liabilities at a discount rate of 5% per annum would be $1,627.1m.

The following table shows how the change in the assessment of liabilities between my previous assessment and this current assessment has resulted.

Table 9.15: Analysis of change in assessment of liabilities: February 2001 to June 2003

Assumption	Contribution $m	Liability $m
KPMG Assessment at February 2001		694.2
less Expected Payments	(89.4)	
plus Unwinding of Discount	148.0	
Expected KPMG Assessment at June 2003		752.8
Numbers	168.0	
Average Costs	336.1	
Nil Settlement Rate	28.3	
Discount rate restated to June 2003	288.2	
Actual KPMG Assessment at June 2003		1,573.4

Further details on the breakdown and composition of the liabilities on both an undiscounted and discounted basis are shown in Appendix N.

9.4.2. Sensitivity testing

It is widely recognised that the assessment of liabilities is subject to uncertainty and that in the case of asbestos-related disease liabilities this uncertainty is exacerbated, particularly with the exposure to legal and medical developments and the long-tail nature of the liabilities.

As such, whilst the assessment above reflects the central estimate, there is considerable potential for the ultimate cost of these liabilities to vary considerably from my assessment.

This uncertainty has been reflected by performing sensitivity testing of the valuation model and results to changes in a number of the assumptions.

I have sensitivity tested the central estimate assessment of the liabilities by considering scenarios for each of the assumptions.

The scenarios tested for each assumption are described below.

1. *Numbers*

I have tested the numbers rising or falling by 10% or 20% over all future years.

This is consistent with recent years where the number of mesothelioma claims rose by 20% in 2002 and 10% in 2003.

2. *Average costs*

I have tested the base average costs to rise or fall by 10%. No changes to legal costs have been made.

3. *Nil settlement rate*

I have tested the nil rates by varying them by 2.5 percentage points around the central assumption for mesothelioma and 5 percentage points for other disease types.

4. *Inflation*

I have tested both a 4% per annum superimposed inflation assumption and an assumption where superimposed inflation runs at 6% per annum for the next five years (based on recent levels of inflation) and then trending to 2% per annum over the next five years.

5. *Discount rates*

I have tested this only by considering an alternative of a 0% per annum discount rate, i.e. showing the results on an undiscounted basis.

The results of the analysis are shown in the table below.

Table 9.16: Sensitivity testing KPMG's 2003 valuation results

		Discounted Net Liabilities $m	Difference to Central Estimate** $m
Central Estimate Basis		1,573.4	
Scenario 1	Discount rate at 0% per annum	3,403.1	1,829.6
Scenario 2	Nil settlement rates increase: mesothelioma up by 2.5%, non-mesothelioma & workers compensation up by 5%	1,516.1	-57.3
Scenario 3	Superimposed inflation – 6% for 5 years, then linearly decrease over the next 5 years and remain at 2% long term	1,958.1	384.6
Scenario 4	Average claim size – increased by 10% for all claim types	1,709.9	136.5
Scenario 5	Notification curve – increased by 10% at all future periods	1,722.7	149.3

**If one were to wish to combine two or more scenarios together, adding the monetary changes indicated above would not necessarily reflect the true combined effect of the revised scenarios but would provide a broad indication of the financial impact.

9.5 Analysis of variation

I have analysed the sources of change in the liabilities relative to those established by Trowbridge.

It should be noted and recognised that the relative contribution of each item (in dollar terms) depends on the order in which the changes are applied from the Trowbridge results to the KPMG results.

Table 9.17: Analysis of variation of liabilities

	Contribution $m	Liability $m
Trowbridge's Recommendation		1,089.8
Average Costs	89.1	
Numbers*	47.5	
Nil Settlement Rate*	44.2	
Superimposed Inflation*	356.5	
Discount Rate	(53.7)	
Total Contribution	**483.6**	
KPMG Assessment		1,573.4

*The three key assumptions previously identified have contributed $448.2m of the total variation of $483.6m

9.6 Assessment of claimant and defendant legal costs

9.6.1. Overview

I have been requested to provide an assessment of the legal costs relating to defendant and claimants costs as at 30 June 2003, consistent with the valuation result identified in Section 9.4.1.

9.6.2. Results

Defendant legal costs

The undiscounted value of the legal costs in respect of General Liability is $481.4m and for Workers Compensation is $7.9m; that is a total of $489.3m.

The discounted value of legal costs for General Liability is $226.2m and for Workers Compensation is $4.1m; that is a total of $230.3m. Both assessments are discounted at the rate of discount described in Section 9.2.7.

A breakdown of the composition of the valuation of the liabilities is shown in Appendix N.

Claimant legal costs

In addition to the defendant legal costs, there remain other legal costs which are borne in the settlement of a claim. The legal costs of the claimant are met by James Hardie or out of the MRCF.

Unlike the defendant legal costs, these costs are not explicitly identified but rather are included within the overall claim settlement figure recorded in the data systems.

I have therefore been required to make a judgment as to the proportion of a claim settlement relating to claimant legal costs.

I have assumed that the relative proportion of the total claim settlement relating to claimant legal costs is 15% of net claims costs. I note that this is an average of all claims, all claim types and all sizes.

This assumption has been based on advice I have received from James Hardie in relation to their own experience, together with a factoring in of some moderate increasing trends in the proportion relating to legal costs, reflecting the increasing complexity of claims in the general environment.

The table below provides an overall summary of the legal costs associated with my assessment of the liabilities as at 30 June 2003.

Table 9.18: Legal costs – claimant and defendant

	General Liability $m	Workers Compensation $m	Total $m
Undiscounted			
Defendant	481.4	7.9	489.3
Claimant	431.5	6.4	437.9
Total	912.9	14.3	927.2
Discounted			
Defendant	226.2	4.1	230.3
Claimant	198.5	3.3	201.8
Total	424.7	7.4	432.1

This table indicates that the total legal costs consumed in the settlement of asbestos-related liabilities amounts to around $432m on a discounted basis, which is approximately 27% of the overall net cost.

Section
10

ASSESSMENT OF AMACA LIABILTIES ARISING FROM PRODUCTS SOLD: 1980-1987

10.1 Overview

I have been requested to provide an assessment of the liabilities of Amaca in relation to products sold or manufactured in the period 1980 to 1987, consistent with my assessment of the liabilities in aggregate.

I have been requested to perform this assessment of liabilities both at 30 June 2003 and at February 2001, but on the assumption that the extra data was to be taken into consideration at February 2001.

The assessment includes provision for the insurance contracts (to the extent that the exposure period cover relates to these product sales) and also makes allowance for the Workers Compensation claims, albeit that such an allowance is extremely small.

10.2 Methodology

The approach I have taken is to first map back the future claims (IBNR claims at the valuation date) from a notification year to an exposure "year". I have done this by making use of the relative shape of the exposure-based model.

The exposure "year" is the period for which the plaintiff was exposed to the product, and from which event the loss has occurred.

The complexity that arises in such an assessment is that the disease can often be attributed to any of a number of years of exposure. The general market practice is to apportion a loss to each year that was potentially on-risk in a pro-rata manner.

My models are based around exposure and notification year considerations, rather than product sales or manufacturing years. Given the purpose of the task is to estimate the liabilities resulting from products sold or manufactured in the period 1980-1987, I have had to make explicit allowance and assumptions for the extent of the assessed 1980-1987 exposure which results from products sold outside the period 1980-1987.

I have done this by assuming that the average working lifetime of a product sold in this period is 10 years. This allows me to attribute the claims allocated by exposure year to a year in which the product is sold or manufactured in an approximate manner.

I have then taken the number of future notifications that arise from the products sold in the period 1980-1987 and applied the average claim and legal costs, together with an allowance for inflation from valuation date to date of settlement. These assumptions have been taken from my valuation basis at 13 February 2001, with the allowance for the extra data, and my valuation basis at June 2003.

I have then ascertained the extent of insurance recoveries commensurate with the gross liabilities to arrive at a net liability assessment.

10.3 Areas of uncertainty and approximation

The nature of this assessment, particularly the allocation to a year of manufacture or sale, is that it is an approximate one and there does exist a risk that, even if the overall valuation were to prove exactly correct, that the ultimate costs of the liabilities to Amaca in relation to the products sold in the period 1980-1987 could differ to that which I have assessed.

Another area of uncertainty is in respect of the insurance contracts. In particular, there is potential that the insurance contracts relating to these periods may not respond as assumed within the valuation, owing to disputes or burden of proof falling on the insured in respect of the exposure period.

There is an additional risk in relation to contracts with HIH and its associated companies who are in liquidation.

I also note the presentation to the Commission of additional insurance contracts for the period 1980-1987 which had not previously been presented. I have reviewed these contracts and their policy terms when assessing the impact on Amaca's liabilities in relation to the period 1980-1987.

10.4 Results

I have provided an assessment at 13 February 2001, taking into account the extra data, and at 30 June 2003.

10.4.1. Assessment at February 2001

My assessment of the undiscounted liabilities of Amaca at February 2001, in relation to the products sold in the period 1980-1987, is $314.7m (net). The corresponding discounted figures are $74.4m (net), of which $1.6m relates to Workers Compensation.

The table below shows an approximate allocation of these costs to each year of sales of products.

Table 10.1: Net liabilities by year of product sales – February 2001

	Undiscounted $m	Discounted $m
1980	91.9	21.7
1981	77.2	18.2
1982	61.5	14.5
1983	45.2	10.7
1984	28.2	6.7
1985	10.7	2.5
1986	0.0	0.0
1987	0.0	0.0
1980-1987	**314.7**	**74.4**

A detailed breakdown of the composition of the valuation of the liabilities relating to products sold or manufactured by Amaca in the period 1980-1987 is shown in Appendix O.

10.4.2. Assessment at June 2003

My assessment of the undiscounted liabilities of Amaca at June 2003, in relation to the products sold in the period 1980-1987, is $335.3m (net). The corresponding discounted figure is $125.7m (net), of which $1.5m relates to Workers Compensation.

The table below shows an approximate allocation of these costs to each year of sales of products.

Table 10.2: Net liabilities by year of product sales – June 2003

	Undiscounted $m	Discounted $m
1980	97.9	36.7
1981	82.2	30.8
1982	65.6	24.6
1983	48.1	18.1
1984	30.0	11.3
1985	11.4	4.3
1986	0.0	0.0
1987	0.0	0.0
1980-1987	**335.3**	**125.7**

A detailed breakdown of the composition of the valuation of the liabilities relating to products sold or manufactured by Amaca in the period 1980-1987 is shown in Appendix P.

Appendix
A

CHRONOLOGY OF TROWBRIDGE ADVICES TO JAMES HARDIE, MRCF AND THE MARKET

Date Produced	Name	Title
Dec-93	Tim Andrews, Geoff Atkins	Asbestos Diseases — the insurance cost
Oct-96	**David Minty, Geoff Atkins**	**VALUATION REPORT AT 31 MARCH 1996**
Dec-96	Geoff Atkins, Bruce Watson, Daniel Smith	Recent Trends in Asbestos-Related Diseases
Sep-98	**David Minty, Geoff Atkins**	**VALUATION REPORT AT 31 MARCH 1998**
Jun-00	**David Minty, Karl Marshall**	**VALUATION REPORT AT 31 MARCH 2000**
Nov-00	Bruce Watson, Mark Hurst	Watson & Hurst presentation to 8th AC Seminar
Feb-01	**David Minty, Karl Marshall**	**VALUATION REPORT**
Aug-01	**David Minty, Karl Marshall**	**VALUATION REPORT AT 30 JUNE 2001**
Aug-01	David Minty, Karl Marshall	Change in Assessment of Potential Asbestos Liabilities
Sep-01	David Minty, Karl Marshall	Application of updated data to assessment of potential asbestos related liabilities
Mar-02	David Minty, Adam Driussi	Assessment of potential asbestos-related liabilities
Oct-02	**David Minty, Geoff Atkins**	**VALUATION REPORT AT 30 JUNE 2002**
Jul-03	David Minty, Chris Cuff	Asbestos Related Diseases in Australia
Sep-03	**David Minty, Geoff Atkins**	**VALUATION REPORT AT 30 JUNE 2003**

Appendix B

CHRONOLOGY OF TROWBRIDGE REPORTS, LEGAL DEVELOPMENTS AND EPIDEMIOLOGICAL STUDIES

Date Produced	Name	Title	Observations
Jan-77	Griffiths vs Kerekemeyer		Plaintiff can claim for compensation for domestic services provided by friends/family
Jan-91	G. Berry	Prediction of mesothelioma, lung cancer, and asbestosis in former Wittenoom asbestos workers	Peak to occur in 2001
Jan-92	Van Gerven vs Fenton		Argued that the G vs K claims should be reduced for the level of services that would ordinarily be provided even if the plaintiff were not injured.
Dec-93	Tim Andrews, Geoff Atkins	Asbestos Diseases — the insurance cost	
Mar-95	Peto, Hodgson, Matthews & Jones	Continuing Increase in Mesothelioma Mortality in Britain	UK Peak to occur in 2020 at 2700- 3300 claims
Oct-96	**David Minty, Geoff Atkins**	**VALUATION REPORT AT 31 MARCH 1996**	**No comment**
Dec-96	Geoff Atkins, Bruce Watson, Daniel Smith	Recent Trends in Asbestos-Related Diseases	Many references to their work for a particular large asbestos manufacturer client (James Hardie) which should restrict its use as support to Hardie's emerging experience
Sep-98	**David Minty, Geoff Atkins**	**VALUATION REPORT AT 31 MARCH 1998**	**No comment**
Dec-98	NSW changes act to cover deceased parties & provide benefits to the estate		No comment

Jan-99	Peto, Decarli, Negri et al	The European Mesothelioma Epidemic	Worst affected are people born in late 1940s. Contrast US where worst affected are those born in 1920s and has a peak earlier 2000s. Peaks in UK and Europe c2015. Incidence rates by country emerging
Jan-99	Sullivan vs Gordon		Reinforced G vs K, over-turning the Van Gerven vs Fenton case
Nov-99	Crimmins vs. SIFC		Court agreed that ASIA owed a duty of care to waterside workers to protect them from asbestos exposure
Dec-99	Rolls Royce vs. Hay		Duty of Care owed by Rolls Royce (the employer) and James Hardie (the manufacturer) in equal proportions
Apr-00	Holtby vs. Brigham & Cowan		Where a claimant suffered asbestosis or similar from exposure during work with multiple employers, only a proportionate contribution could be made against each employer to the extent they could be seen as responsible
May-00	Victoria changes act to cover deceased parties and provide benefits to the estate		No comment
Jun-00	Hodgson, Darn ton	The Quantitative Risk of Mesothelioma and Lung Cancer in relation to Asbestos Exposure	Comparisons of various studies on different Mesothelioma cohorts across the world (including Berry, US and UK studies)
Jun-00	**David Minty, Karl Marshall**	**VALUATION REPORT AT 31 MARCH 2000**	**No comment**
Nov-00	Bruce Watson, Mark Hurst	Watson & Hurst presentation to 8th AC Seminar	
Feb-01	**David Minty, Karl Marshall**	**VALUATION REPORT**	**No comment**
Aug-01	**David Minty, Karl Marshall**	**VALUATION REPORT AT 30 JUNE 2001**	**No comment**
Aug-01	David Minty, Karl Marshall	Change in Assessment of Potential Asbestos Liabilities	No comment

Sep-01	David Minty, Karl Marshall	Application of updated data to assessment of potential asbestos related liabilities	No comment
Mar-02	David Minty, Adam Driussi	Assessment of potential asbestos-related liabilities	No comment
Oct-02	**David Minty, Geoff Atkins**	**VALUATION REPORT AT 30 JUNE 2002**	**No comment**
Jul-03	David Minty, Chris Cuff	Asbestos Related Diseases in Australia	Analysis and forecast of market impact of future asbestos claims. Based largely on Trowbridge's own assessment from their clients. Work carried out on behalf of Amaca
Sep-03	**David Minty, Geoff Atkins**	**VALUATION REPORT AT 30 JUNE 2003**	**No comment**
Oct-03	Orica vs. CGU		Increased likelihood that claims will fall onto Product and Public Liability insurances away from WC cover, and that producers/manufacturers and suppliers of asbestos products increasingly exposed to being co- joined and taking increased proportions of claims
Dec-03	Hodgson & Darnton	HSE (UK) — Predicted deaths from mesothelioma; Mesothelioma Mortality in Great Britain: Estimating the future burden	Peak 2013 (range 2011-2015). Peak deaths at 2200. Lower than Peto /Hodgson previous work. Additional Exposure / claims modelling contributed to this analysis
Jan-04	Pelucchi, Decarli, Negri et al	The Mesothelioma Epidemic in Western Europe: an update	Peaks in W Europe appear to be levelling off sooner than previously forecast, now 2003-2013. Notable level of change from Sweden. France, Italy and Germany lower increases in last 5 years than previously forecast.
Jan-04	Peto, Treasure, Swift, Waller	Radical Surgery for mesothelioma	Indicates peak in range 2015-2020 at c 2000 males (or 2300 in total). Slight sooner and considerably lower in peak than previous analysis
Jan-04	Berry, Musk et al		Indicates that experience still heavy, but lighter than previously assessed. Provides distribution of latency periods from first exposure.

Appendix C

INSTITUTE OF ACTUARIES OF AUSTRALIA PROFESSIONAL STANDARD 300 (PS 300)

The Institute of Actuaries of Australia
A.C.N. 000 423 656

PROFESSIONAL STANDARD 300
ACTUARIAL REPORTS AND ADVICE ON OUTSTANDING CLAIMS IN GENERAL INSURANCE

A. INTRODUCTION

Application

1. This standard applies to actuaries preparing estimates of the liabilities for outstanding claims of general insurance companies, reinsurers, self insurers, insurance pools and statutory authorities involved in general insurance activities and providing advice on the provisions to be set aside to meet those liabilities in the balance sheet and for tax purposes.

2. This standard does not apply to outstanding claims advice for life or health insurance entities.

Legislation

3. This standard applies particularly to advice which is expected to be used to fulfil requirements under the Insurance Act 1973, the Corporations Act (in particular the accounting standards AASB1023 and AAS26), the Income Tax Assessment Act (including the taxation ruling IT2663 applying to direct insurers) and the various State and Commonwealth Acts under which Accident Compensation Schemes and State Government Insurance Offices operate.

First Issued

4. This standard was first issued in May 1994. It replaces the guidance note “Outstanding Claims in General Insurance — Note on Professional Practice” which was issued in 1985 and subsequently titled Guidance Note 350.

Latest Revision

5. Guidance Note 350 has been upgraded to a Professional Standard to complement the recently implemented accounting standards, taxation ruling and ISC requirements and amended to conform with the revised format for Professional Standards implemented in 1992.

B. DEFINITIONS

6. An insurer's **liabilities** for outstanding claims at a given date (the valuation date) are the present value of claim payments to be made after the valuation date, on claims which, under the terms of its contracts, arose on or before the valuation date plus the present value of the insurer's internal costs of administering and settling those payments.

7. **Outstanding claims** include claims which have been reported and have not yet been finalised, claims which have been incurred but not yet reported (IBNR), and claims which have been administratively finalised and which may be reopened.

8. **Claim payments** refer to payments to or on behalf of the claimant, and any third party costs such as investigation, medical and legal fees associated with each claim.

9. **Recoveries** refer to amounts or expected amounts to be recovered by an insurer in respect of particular claims. A distinction is made between reinsurance recoveries and non-reinsurance recoveries (salvage, subrogation, sharing agreements, etc).

10. A **central** estimate of the liabilities is an estimate which is intended to contain no deliberate or conscious over or under estimation. The nature of insurance claims is such that the actual value of the liabilities is unknown and it is usually very difficult to determine the central estimate with a reasonable degree of precision. For this reason the inherent uncertainty in the central estimate must also be considered.

11. An outstanding claim **provision** is an amount set aside in the insurer's accounts, to provide for outstanding claim liabilities. In order to deal with uncertainty a distinction is drawn in this document between the 'provision' (the amount set aside in the accounts) and the 'liability' (the unknown actual value of the outstanding claims).

12. A **prudential margin** refers to the amount by which the provision set aside in the accounts is greater than the actuarial central estimate of the liabilities due to the inherent uncertainty in the determination of the actuarial central estimate.

13. A **risk free rate of return** refers to the expected rate of return on a matched portfolio of investments with minimal risk.

14. **Short tail** classes of business refer to those classes of business where the claims are typically settled within one year of the date of occurrence of the events which give rise to them. **Long tail** classes of business refer to those classes of business where the claims are typically settled more than one year after the date of occurrence of the events which give rise to them.

C. PROCEDURES

15. Often, the insurer will not know, until well after the valuation date, exactly how much each claim is going to cost or when the payments will be made. It is, therefore, necessary to estimate the amount and timing of payments, on the basis of the available information, particularly the past behaviour of similar claims.

16. The steps which an actuary should take when advising on outstanding claims liabilities are similar to those for other actuarial investigations.

(1) Clarify the terms of reference and purpose of the report.
(2) Collect the necessary data.
(3) Analyse the experience.
(4) Select a valuation model.
(5) Select valuation assumptions.
(6) Do the valuation calculations.
(7) Reconcile the results with the previous investigation.

(8) Analyse variability and sensitivity.
(9) Reach conclusions.
(10) Present a written report.

17. It may be necessary to go through part of the process several times to determine an appropriate central estimate and prudential margin, for example collecting and analysing additional data. Steps may be combined or taken out of sequence. It may be appropriate to repeat parts of the process with different models or assumptions.

18. The actuary may be called upon to justify the work undertaken. The actuary should therefore compile and retain documentation which shows that the work conforms to this standard, the accounting standards and the taxation ruling as appropriate.

19. An approximation to an assumption or method is acceptable provided it does not materially affect the result. A difference is material if it is significant in the context of the purpose for which the advice is given. The actuary should choose a standard of materiality which should reasonably satisfy each anticipated user of the advice.

D. DATA

20. The actuary should be familiar with the relevant aspects of the procedures for the administration and accounting of the insurer's claims and policies.

21. The actuary should be conversant with the general characteristics of the insurance portfolio which may have a material bearing on the estimation of the liabilities. This may include familiarity with the contractual terms and legislated benefits payable under policies written as well as other attributes, such as deductibles, policy limits and reinsurance arrangements.

22. The actuary also has a responsibility to be familiar with the general economic, legal and social trends in the community which may have a bearing on the liabilities.

23. The actuary should be familiar with the insurer's assets and its investment policy.

24. It is the actuary's responsibility to ensure that the data utilised is appropriate, and sufficient for the valuation. The actuary should, where possible, take reasonable steps to verify the overall consistency of the valuation data with the insurer's financial records.

E. LIABILITIES

Analysis

25. The estimation of liabilities will require the subdivision of the data into groups of claims exhibiting similar characteristics. When determining appropriate subdivisions a balance must be found between homogeneity and statistical reliability.

26. The claims experience should at least be analysed with respect to the development over time of claims or cohorts of claims. Depending on the availability and reliability of the data, analysis should include some or all of

– the rate of reporting claims
– the rate of settlement
– the development of payments
– the adequacy of case estimates
– other analyses relevant to the circumstances.

27. The experience would normally be analysed without distinguishing between reported, IBNR and reopened claims. However in some circumstances it may be appropriate to analyse IBNR and reopened claims separately from those reported.

28. The experience should normally be analysed on a gross basis. Analysis of the reinsurance and other recovery experience should be appropriate to the circumstances. In some situations it may be more appropriate to analyse the experience net of reinsurance and/or other recoveries. Separate estimates of the recovery amounts may still have to be made. In making such judgments, the actuary should be aware that the net valuation result will usually be the most important.

29. The analysis should take into account any special features of or changes to the experience such as changes in deductibles, aggregate limits, claims handling procedures, the mix of business within the portfolio, and the impact of large claims paid and outstanding. The analysis should investigate any trends in the development of the experience, particularly those from causes other than inflation.

Valuation Model

30. Selection of the most appropriate valuation model to estimate the liabilities is the responsibility of the actuary. The actuary may investigate more than one model before arriving at an estimate. The model or models should take into account the available data, the nature of the portfolio, and the results of the analysis of experience.

Claims Experience Assumptions

31. Selection of the claims experience assumptions should have regard to the valuation model and the analysis of the experience. These assumptions should include trends in the claims experience (other than inflation) and assumptions about reinsurance or other recoveries.

32. The actuary need not change assumptions from those of the prior valuation unless the effect of the change is material. The actuary should not spread the effect of any changes over more than one valuation. The effect of any change should be disclosed.

Inflation

33. Future claim payments may well be greater, as a result of wage or price inflation, court awarded interest or other economic or environmental causes, than payments at current levels on similar claims. Any such claim escalation should be allowed for when estimating the outstanding claim liabilities.

Discount Rate

34. In arriving at an appropriate discount rate assumption the actuary should consider matters including market rates, the risk free rate, the assets held by the insurer and the insurer's investment policy. The actuary's attention is drawn to the Accounting Guidance Release AAG 13 "Determination of Interest Rates for Measuring Certain Liabilities at Present Value" in the context of the accounting standards.

35. The risk free rate of return should normally be the starting point for determining the appropriate discount rate. The actuary should where appropriate explain the reasons for adopting a higher or lower rate than the risk free rate.

36. For short tail classes, the actuary may choose on the grounds of materiality not to make specific allowance for discounting.

Expenses

37. Appropriate allowance for future costs of administering and settling claims (in addition to those included in payments on individual claims) should be made having regard for the insurer's level of expenses, organisational structure and future administrative developments. The complexity of the approach used to determine the allowance should be commensurate with the materiality of the amount of the allowance.

Valuation Results

38. It is the actuary's responsibility to ensure that the valuation calculations are carried out accurately. The resulting estimate of the liabilities should normally be a central estimate. However if in the actuary's opinion it is inappropriate to make a central estimate, the reasons should be explained and the nature of the estimate(s) described.

39. The actuary has a responsibility to consider the reasonableness of the estimates produced by the valuation procedures employed and to quantify the effects of any changes in the valuation basis since the previous actuarial valuation. Explanation should be sought where possible for any major departures from past results.

Uncertainty

40. Outstanding claim liabilities are often difficult to estimate. The extent of the liabilities depends on future economic, social and environmental factors outside the control of the insurer as well as on unknown past and future events and the insurer's own actions. It is part of the actuary's task to respond to uncertainty, both as a technical matter and in the presentation of results.

41. There are a number of components of this uncertainty, including:

– The model(s) chosen for analysis and projection will never exactly match the actual claim process.
– Past claim fluctuations will result in uncertainty in estimating the parameters of the model, even if a perfect model could be found.
– Undetected errors in the data may result in errors in estimating the parameters of the model.
– Future economic and environmental conditions are not known and may be different from those assumed.
– Future claim fluctuations will result in uncertainty in the projected payments, even if the true parameter values could be found for a perfect model.

42. Assessment of uncertainty will generally require use of one or more of:

– statistical analysis;
– sensitivity analysis – making changes to the model assumptions and/or the models themselves;
– analysis of the outcomes of previous valuations;
– analysis of different scenarios; and
– judgment.

43. In many cases, the range of reasonable uncertainty will be very large. The conclusions which may be drawn at different ends of this range may be totally different (eg large profits vs insolvency). While it is the actuary's responsibility to provide the principal with a single central estimate of the liabilities, it is also important to explain the practical consequences of the uncertainty of this estimate.

F. PROVISIONS

44. The precise amount required to meet an insurer's liability for outstanding claims is almost always unknown but a fixed amount must be set aside as a provision in the accounts at the balance date. The directors of the entity have the ultimate responsibility for the provision, not the actuary. In some cases the actuary may be asked to advise on the provisions to be set aside or to comment on those adopted.

45. The uncertainty of liability estimates and the inherent variability of conditions affecting future claim payments usually results in a desire to establish provisions in excess of the central estimate of liabilities.

46. The extent of any prudential margin included in the provision to allow for uncertainty in estimation is a matter of judgment and will depend on such matters as:

– the actuary's confidence in the valuation approach and assumptions
– the quality and depth of the historical data available
– statistical fluctuations af fecting ultimate claim costs
– actual outcomes of past provisions for the insurer concerned and other insurers.

47. The actuary should not recommend or support a provision which is less than the central estimate of the liabilities.

48. The actuary should not recommend or support a provision which is excessive.

49. When advising on prudential margins the actuary should have regard to their reasonableness and consistency over time, between classes of business and between reports for different purposes.

50. Provisions for taxation purposes should be calculated on the same basis as that considered reasonable for the provisions in the accounts under the relevant accounting standard. The only variation should be for matters specified in Taxation Rulings, Taxation law or otherwise accepted by the taxation authorities (and based on independent taxation advice). It should be noted that the component of the provisions representing the estimated liability for indirect claims handling expenses may not be included for provisions under the taxation ruling IT2663.

G. REPORTING

51. The actuary should prepare, date and sign a written report. The report should state:

– who has commissioned the report and, if different, the addressee(s) of the report
– the name of the actuary and the capacity in which the actuary is acting
– the purpose of the report or the terms of reference given
– the extent, if any, to which the report falls short of, or goes beyond, its stated purpose
– the extent of compliance with this standard and the reasons for not complying fully with this standard
– any restrictions on the actuary.

52. The report should deal with:

– the nature, accuracy and interpretation of the data
– the analysis of experience
– the valuation model and key assumptions
– any changes in the method and key assumptions since the last similar report
– comparisons of actual experience with that expected under the assumptions in the last similar report
– the results of the valuation
– uncertainty of the valuation result.

53. The report should describe the steps taken by the actuary to verify the accuracy of the data, any limitations on the extent or quality of the data and the extent to which the actuary has relied upon the insurer or the insurer's auditor for checking.

54. The assumptions and methods should be stated clearly and their derivation explained. Any qualifications should also be clearly stated.

55. Where the legislation, accounting standards or other rulings require the actuary to use specific assumptions, particularly if they are materially different from those the actuary would otherwise use under this standard, the actuary must clearly state the circumstances, discuss whether or not the assumptions are reasonable and consistent with this standard, and discuss the implications of divergence from this standard.

56. Where the principal requires the actuary to use specific assumptions or the actuary is relying upon an interpretation of legislation, accounting standards or other rulings supplied by the principal or its advisers, the actuary must clearly state the circumstances, discuss whether or not the assumptions are reasonable and consistent with this standard, and discuss the implications of divergence from this standard.

57. Sufficient detail of the valuation results should be available in the report or separately to enable the insurer to comply with the disclosure requirements under the accounting standards, and complete Insurance Act and Income Tax returns unless requested otherwise.

58. In some circumstances it may be necessary to prepare a short statement or certificate regarding the valuation. Considerable care is required to ensure that the statement contains the necessary relevant information and will not be misleading nor quoted out of context. The certificate should include a reference to the actuary's full report and the qualifications stated therein.

END OF PROFESSIONAL STANDARD 300

Appendix
D

INSTITUTE OF ACTUARIES OF AUSTRALIA CODE OF CONDUCT

THE INSTITUTE OF ACTUARIES OF AUSTRALIA
A.C.N. 000 423 656

CODE OF CONDUCT

APPLICATION

All members

FIRST ISSUED

November 1976

LATEST REVISION

April 1998

GENERAL

1. The Institute of Actuaries of Australia is a professional body which, through its members, has an obligation in the public interest to provide the best possible service and advice. In order to achieve this it is essential that the highest standards of conduct are maintained by all members of the Institute when they give advice of a professional nature.

2. Professional conduct involves the member's own sense of integrity in relationships not only with those to whom professional services are rendered but also with other members of the profession and with the public. In all these relationships each member must be concerned with his or her own personal conduct as well as that of his or her colleagues.

3. Members must realise that even when they are not practising in an actuarial field the public may judge them as if they were providing professional actuarial advice. Members should appreciate that when making such judgement, the public will not know when a member is acting as a Fellow or Accredited Member (referred to as an "actuary" in this Code) and when the member is not.

4. Although the professional conduct of each actuary is the responsibility of that actuary, a special responsibility rests with the Senior Actuary in any firm to take all reasonable steps to ensure that professional colleagues and the firm act in accordance with the principles set out in this Code.

5. Members must all times deal courteously with their employer or client when acting in a professional capacity. All members, in whatever field they practise, must act with honesty and in a manner to maintain the dignity and reputation of the profession and to fulfil its responsibility to the public. Experienced actuaries have a duty at all times to guide less experienced members in the application of this Code in their dealings with the public and with other members of the profession.

6. This Code sets out the main principles to which the Institute expects all members to conform. The Institute will from time to time issue standards, in the form of Professional Standards, Guidance Notes, and Mandatory Guidance Notes, to illustrate the application of these principles to particular situations. The Institute relies on the conscience of each member and the collective conscience of the whole membership to ensure that the principles are applied effectively.

   It should also be noted that Article 63 of the Institute's Articles of Association refers to any conduct likely to bring discredit upon the Institute or the profession of actuary and this could clearly involve conduct other than conduct specifically covered in the Code.

7. A member who is in doubt as to the attitude which should be adopted or the steps which should be taken in a particular case or who would like the advice of experienced actuaries in regard to any matter of conduct, should formally communicate with the President. The President will then advise the member of an appropriate experienced actuary or actuaries with whom the member should confer. The President and actuary/ies offering such advice must keep in contact with the member until the member considers that advice is no longer required.

   Members may, without first approaching the President, obtain advice from one or more experienced actuaries on an informal basis. Experienced actuaries must, where appropriate, provide advice and must keep in contact with the member until the member considers that advice is no longer required.

8. Where a member formally seeks advice from the President under Section 7, takes that advice, and is subsequently challenged, the Council of the Institute is obliged to offer further assistance in an

appropriate manner. Such assistance can take many forms, ranging from an offer to arrange for further advice to the issuing of official statements.

9. Members must recognise that there is room for honest differences of opinion on many professional matters. Where such differences occur, a member must avoid unjustifiable or improper criticism or malicious injury to the reputation of another member.

10. A member who believes that there has been a breach of this Code must bring the matter to the attention of the President. Such alleged breaches will be dealt with in accordance with the Articles of Association.

ACTUARIAL ADVICE

11. Actuarial advice is advice given by an actuary in areas of work in which actuaries are commonly understood to have expertise and which is relied upon by an employer or client because it is based on the training and experience of an actuary.

A member who is not an actuary should only perform work associated with actuarial advice that is consistent with the Code, or any Standard or Guidance Note.

12. All actuarial advice must be, and be seen to be, the responsibility of one or more individual actuaries, except where the advice relies upon the advice of an expert for which responsibility is not or cannot be taken, in which case the report must give details of the advice received, name the expert and where appropriate attach the advice received.

Where the actuary/ies assume responsibility for the advice they have received from an expert no mention need be made of the advice received.

13. Actuaries who provide any person or organisation with actuarial advice must disclose to that person or organisation the capacity in which they are acting in so doing.

14. All actuarial advice must be unbiased. If there are any constraints on the independence of the advice, the nature of those constraints must be disclosed to the employer or client to whom that advice is given.

15. If there is reason to believe that an actuary's advice will be transmitted in whole or in part to a third party, the actuary must take all reasonable steps to ensure that authorship and responsibility are acknowledged to the third party, that any significant implications of the advice are stated, that the advice is not presented in a way likely to give a misleading impression, and that any constraints on the actuary's independence are disclosed.

16. An actuary must have proper regard for the trust which is implicit in the relationship between the actuary and the employer or client. The actuary must be, and be seen to be, in a position to ensure that the information used and advice given remains confidential and that the employer or client is made aware if this is not the case.

17. An actuary must not provide actuarial advice to any person or organisation when the actuary has reason to believe this advice may be used to evade the law or in a manner that is contrary to the public interest or the interest of the profession.

18. Many problems submitted to an actuary in a professional capacity arise in fields of work which are well established and which have been in existence for a number of years. An actuary with insufficient practical experience in relation to such a problem must not act except in co-operation with, or with the guidance of, an experienced actuary.

19. Some problems arise in areas of work that are new. Even though an actuary may not have practical experience in such an area, the actuary may give advice if he or she has reasonable grounds for considering that he or she is competent to do so.

20. In any situation where an actuary has, might have, or might be thought to have a conflict of interest, the actuary must not act unless there has been a full disclosure of the situation to all parties involved and the parties have expressly agreed to the actuary acting. Even then, before acting the actuary must give careful consideration to the interpretation that third parties can make of this action.

21. If an actuary does not wish to conform to a Mandatory Guidance Note, then that actuary must decline to provide advice in that area.

22. An actuary must disclose to a client and obtain the client's consent to any direct or indirect compensation that the actuary, a firm of which the actuary is a partner, the actuary's employer, or any other party related to the actuary, may receive from any source other than the

client as a consequence of the actuary giving actuarial advice to that client.

CONTENTS OF REPORTS

23. When providing actuarial advice in an area which is the subject of a Professional Standard, Guidance Note, or Mandatory Guidance Note published by the Institute, any report which is the responsibility of an actuary must state that the report has complied with the particular standard. In the event of departures from Professional Standards and Guidance Notes (other than Mandatory Guidance Notes), the report must state the extent to which the report does not comply and provide a justification for the departures.

24. An actuary is expected to include in any report a statement indicating to whom the report is addressed, a statement describing or clearly identifying the data and the actuarial methods and assumptions employed, and a statement drawing attention to any important implications of those methods.

25. Actuaries should exercise their best judgement to ensure that any advice provided is based on sufficient and reliable data, on adequate and appropriate assumptions, and on sound actuarial principles.

26. If, nevertheless, an actuary carries out a study which in the actuary's opinion deviates from the requirements of Section 25, any resulting report, recommendation or certificate submitted by the actuary must include an appropriate qualification.

PUBLICITY

27. Publicity which increases public awareness of the nature and training of actuaries and the value and scope of the work that they can perform is desirable and in the public interest.

28. Actuaries are permitted to advertise or obtain publicity for their services provided that the content and nature of such advertising or publicity is not false, misleading, or deceptive, or is in contravention of the Trade Practices Act 1974 or any other applicable legislation.

29. A member may not use a title dependent on elective or appointive qualification within the Institute, such as “President” or “Member of Council”, to promote or to advertise actuarial or other services for the commercial advantage of the member or the member’s firm.

ACTUARIAL FIRMS

30. An actuary must not provide actuarial advice for or on behalf of a firm which describes itself in such terms as “Consulting Actuaries” or “Actuaries” unless the firm satisfies Council that its Australian operation acts in accordance with the principles set out in this Code and is predominantly under the control of actuaries who are working for it on a full time or close to full time basis.

END OF CODE OF CONDUCT

Appendix E

BIBLIOGRAPHY

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Appendix F

ANALYSIS OF TRENDS IN TROWBRIDGE'S VALUATION BASIS ASSUMPTIONS: 1996-2003

Trowbridge Assumptions for James Hardie General Liability Claims

	31-Mar-96		31-Mar-98		31-Mar-00	
	Meso	Non-Meso	Meso	Non-Meso	Meso	Non-Meso
Economic Assumptions						
Base Inflation (AWE), p.a.	4%	4%	4%	4%	4%	4%
Superimposed Inflation, p.a.	0%	0%	0%	0%	0%	0%
Discount Rate	8%	8%	7%	7%	7%	7%
Notification Pattern Assumptions						
Peak	2001/02	1996-2000	2000/01	1998-2000	2000-2005	2001/02
Last Notification	2021/22	2021/22	2021/22	2021/22	2025/26	2020/21
Total no of future reported claims	1,505	839	1,538	926	1,638	994
Total no of reported claims to date	314	326	483	477	730	606
Total Ultimate Claims reported	1,819	1,165	2,021	1,403	2,368	1,600
Claims Cost Assumptions						
Average Claim Cost (Non-nil Claims)			$155,000	$ 40,000	$ 180,000	$ 70,000
Legal Cost - Non-Nils			$ 65,000	$ 55,000	$ 40,000	$ 40,000
Legal Cost - Nils			$ 20,000	$ 5,000	$ 15,000	$ 10,000
Proportion of claims that are nil			30%	25%	25%	25%
Average Claims Cost (All Claims)	$120,000	$ 60,000	$108,500	$ 30,000	$ 135,000	$ 52,500
Average Cost (inc legal costs)	$160,000	$ 100,000	$160,000	$ 72,500	$ 168,750	$ 85,000
Insurance Recoveries						
Undiscounted Reserves	$57,335,219		$56,597,239		$77,100,093	
Discounted Reserves	$27,790,978		$26,990,750		$34,664,031	

[Additional columns below]

[Continued from above table, first column(s) repeated]

	13-Feb-01		30-Jun-01	
	Meso	Non-Meso	Meso	Non-Meso
Economic Assumptions				
Base Inflation (AWE), p.a.	4%	4%	4%	4%
Superimposed Inflation, p.a.	0%	0%	0%	0%
Discount Rate	7%	7%	6%	6%
Notification Pattern Assumptions				
Peak	2001-2003	2000-2005	2005/06	2001/02
Last Notification	2039/40	2033/34	2040/41	2040/41*
Total no of future reported claims	2,067	1,015	3,053	1,285
Total no of reported claims to date	730	606	825	657
Total Ultimate Claims reported	2,797	1,621	3,878	1,942
Claims Cost Assumptions				
Average Claim Cost (Non-nil Claims)	$ 180,000	$ 70,000	$230,000	$ 71,429
Legal Cost - Non-Nils	$ 40,000	$ 40,000	$ 30,000	$ 30,000
Legal Cost - Nils	$ 15,000	$ 10,000	$ 15,000	$ 10,000
Proportion of claims that are nil	25%	25%	20%	30%
Average Claims Cost (All Claims)	$ 135,000	$ 52,500	$184,000	$ 50,000
Average Cost (inc legal costs)	$ 168,750	$ 85,000	$211,000	$ 74,000
Insurance Recoveries				
Undiscounted Reserves	$97,548,909		$136,800,000	
Discounted Reserves	$43,956,242		$66,600,000	

[Additional columns below]

[Continued from above table, first column(s) repeated]

	30-Jun-02	30-Jun-03

	Meso	Non-Meso	Meso	Non-Meso
Economic Assumptions				
Base Inflation (AWE), p.a.	4%	4%	4%	4%
Superimposed Inflation, p.a.	0%	0%	0%	0%
Discount Rate	6%	6%	5%	5%
Notification Pattern Assumptions				
Peak	2007/08	2002/03	2009/2010	2003/2004
Last Notification	2049/50	2040/41	2050/51	2050/51
Total no of future reported claims	3,271	1,519	4,192	2,575
Total no of reported claims to date	955	802	1,141	939
Total Ultimate Claims reported	4,226	2,321	5,333	3,544
Claims Cost Assumptions				
Average Claim Cost (Non-nil Claims)	$280,000	$ 100,000	$ 280,000	$ 90,000
Legal Cost - Non-Nils	$ 30,000	$ 30,000	$ 30,000	$ 25,000
Legal Cost - Nils	$ 10,000	$ 10,000	$ 10,000	$ 10,000
Proportion of claims that are nil	20%	30%	20%	20%
Average Claims Cost (All Claims)	$224,000	$ 70,000	$ 224,000	$ 63,000
Average Cost (inc legal costs)	$250,000	$ 94,000	$ 250,000	$ 83,500
Insurance Recoveries				
Undiscounted Reserves	$176,800,000		$225,600,000	
Discounted Reserves	$86,100,000		$115,200,000	

* Lung Cancer 2040, Other 2020

Appendix G

ANALYSIS OF TRENDS IN KPMG'S VALUATION BASIS ASSUMPTIONS: 2000-2003

KPMG Actuaries Assumptions for James Hardie General Liability Claims

	31-Mar-96		31-Mar-98		31-Mar-00		13-Feb-01	
	Meso	Non-Meso	Meso	Non-Meso	Meso	Non-Meso	Meso	Non-Meso
Economic Assumptions								
Base Inflation (AWE), p.a.					4%	4%	4%	4%
Superimposed Inflation, p.a.					2%	2%	2%	2%
Discount Rate					7%	7%	7%	7%
Notification Pattern Assumptions								
Peak					2006/07	2004/05	2010/11	2007/08
Last Notification					2042/43	2038/39	2046/47	2042/43
Total no of future reported claims					2,449	1,377	3,330	1,712
Total no of reported claims to date					730	606	730	606
Total Ultimate Claims reported					3,179	1,983	4,060	2,318
Claims Cost Assumptions								
Average Claim Cost (Non-nil Claims)					$185,000	$ 75,000	$185,000	$ 75,000
Legal Cost - Non-Nils					$ 40,000	$ 35,000	$ 40,000	$ 35,000
Legal Cost - Nils					$ 15,000	$ 10,000	$ 15,000	$ 10,000
Proportion of claims that are nil					20%	25%	20%	25%
Average Claims Cost (All Claims)					$148,000	$ 56,250	$148,000	$ 56,250
Average Cost (inc legal costs)					$183,000	$ 85,000	$183,000	$ 85,000
Insurance Recoveries								
Undiscounted Reserves					$172,354,045		$255,846,267	
Discounted Reserves					$67,645,893		$85,386,468	

[Additional columns below]

[Continued from above table, first column(s) repeated]

	30-Jun-01		30-Jun-02		30-Jun-03	
	Meso	Non-Meso	Meso	Non-Meso	Meso	Non-Meso
Economic Assumptions						
Base Inflation (AWE), p.a.					4%	4%
Superimposed Inflation, p.a.					2%	2%
Discount Rate					5%	5%
Notification Pattern Assumptions						
Peak					2010/11	2007/08
Last Notification					2048/49	2043/44
Total no of future reported claims					4,374	2,603
Total no of reported claims to date					1,141	969
Total Ultimate Claims reported					5,515	3,572
Claims Cost Assumptions						
Average Claim Cost (Non-nil Claims)					$301,738	85K-100K
Legal Cost - Non-Nils					$ 33,000	25K-30K
Legal Cost - Nils					$ 15,000	$ 15,000
Proportion of claims that are nil					18%	25%
Average Claims Cost (All Claims)					$248,934	64K-75K
Average Cost (inc legal costs)					$278,784	86K-101K

Insurance Recoveries	
Undiscounted Reserves	$336,623,206
Discounted Reserves	$160,774,095

Appendix H

ANALYSIS OF DISCREPANCIES IN 13 FEBRUARY 2001 LETTER

These figures are as described in Section 5.4.1. They relate to undiscounted liabilities.

Reported by Trowbridge

	Net Meso - General Liability			Net Non-Meso - General Liability			Total (Net) - Inc WC		
	Current	Medium	High	Current	Medium	High	Current	Medium	High
10 years	211,889,833	217,365,387	229,374,642	69,814,806	69,082,562	71,298,922	288,296,642	293,405,868	307,631,484
15 years	317,668,190	342,313,443	373,220,565	108,920,861	104,862,897	116,464,296	435,906,966	457,746,109	500,254,629
20 years	403,099,279	459,434,965	518,891,553	139,580,660	131,968,416	161,308,230	554,233,398	605,685,002	694,481,404

Figures that ought to have been reported

	Net Meso - General Liability			Net Non-Meso - General Liability			Total (Net) - Inc WC		
	Current	Medium	High	Current	Medium	High	Current	Medium	High
10 years	185,483,276	190,269,568	200,777,366	61,114,343	60,471,115	62,409,830	253,189,622	257,698,603	270,145,115
15 years	278,090,321	299,631,030	326,690,604	95,350,998	91,788,139	101,944,622	382,759,234	401,988,937	439,204,994
20 years	352,881,299	402,122,877	455,262,212	122,192,284	115,507,967	141,520,826	486,627,042	531,912,464	611,064,658

Errors As Reported

	Net Meso - General Liability			Net Non-Meso - General Liability			Total (Net) - Inc WC		
	Current	Medium	High	Current	Medium	High	Current	Medium	High
10 years	26,406,556	27,095,818	28,597,276	8,700,463	8,611,447	8,889,092	35,107,019	35,707,265	37,486,369
15 years	39,577,868	42,682,413	46,529,961	13,569,863	13,074,759	14,519,674	53,147,731	55,757,172	61,049,635
20 years	50,217,980	57,312,089	63,629,342	17,388,376	16,460,449	19,787,404	67,606,356	73,772,537	83,416,746

Current refers to the 31 March 2000 Valuation basis

Medium refers to the “Berry Medium” Curve Valuation basis

High refers to the “Berry High” Curve Valuation basis

The Berry Medium curve was specified as being Trowbridge’s ‘best estimate’ basis.

Source: Reported by Trowbridge — 13 February 2001 Letter, Pages 6-8 of the Summary Appendices

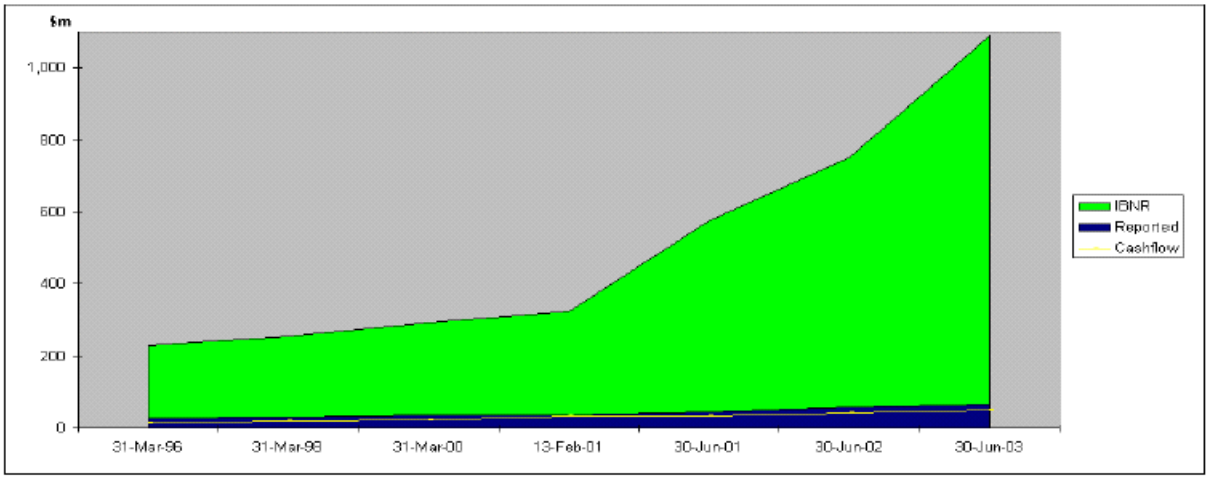
Figures that ought to have been reported — KPMG Analysis of February 2001 Trowbridge Spreadsheet Models

Appendix I

GRAPHS OF TRENDS IN PAYMENTS, LIABILITIES AND ULTIMATE COSTS — USING TROWBRIDGE'S LIABILITY ASSESSMENTS

Note:

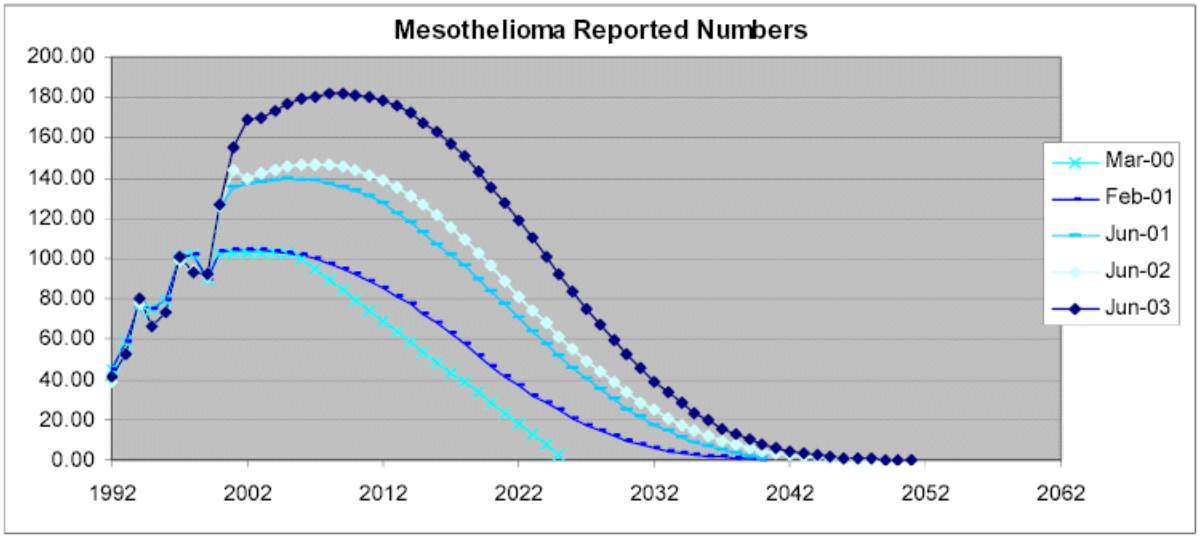
- Reported and IBNR are discounted, net of insurance recoveries, and include legal costs
- Cashflow are historic payments for the year ending the valuation date, undiscounted, gross of insurance recoveries, and include legal costs

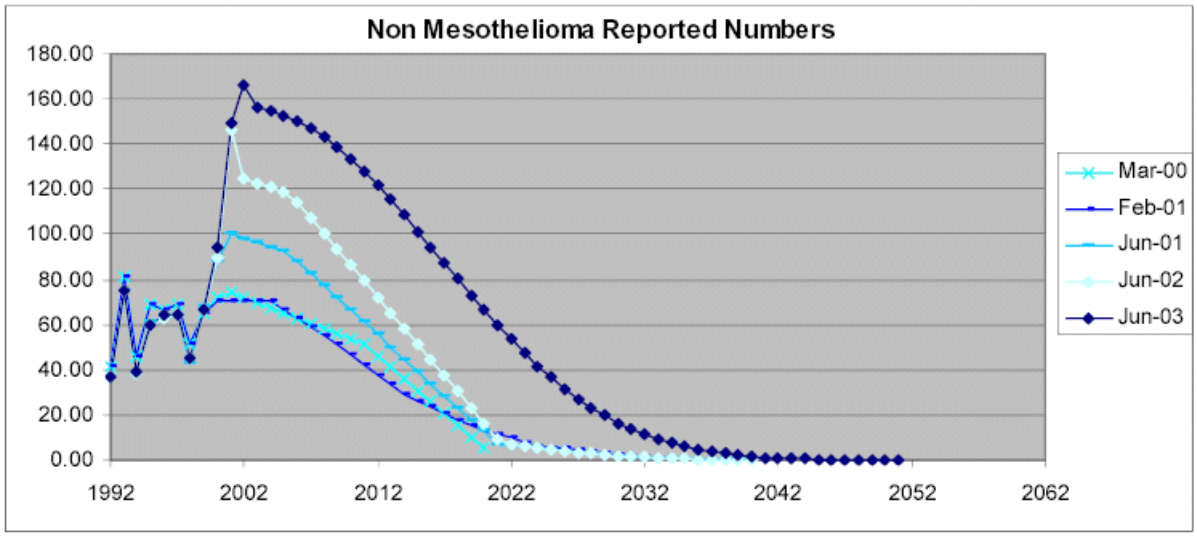


Source: Liabilities — Trowbridge Valuation Reports 1996-2003, Management Summary : "Summary of Results" section Cashflows — 30 June 2003 Report, Appendix A.3

Appendix
J

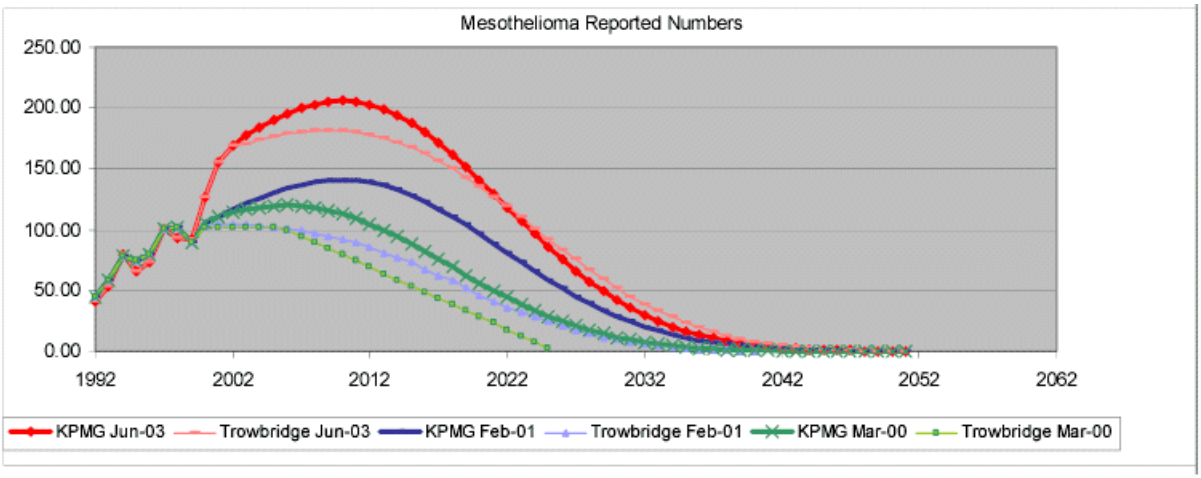
GRAPHS OF CLAIMS NUMBERS REPORTED AND PROJECTED FUTURE – TROWBRIDGE

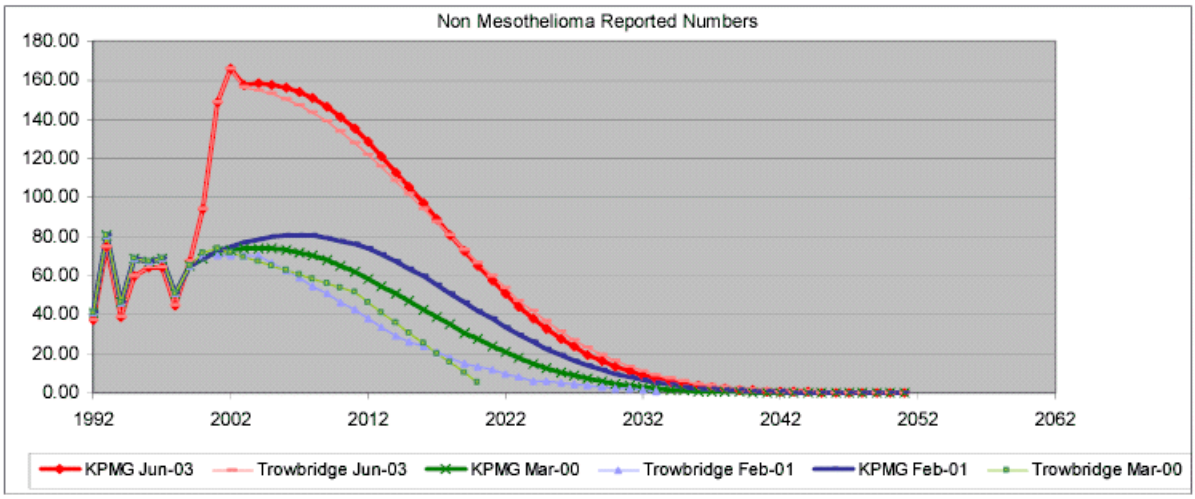




Appendix K

GRAPHS OF CLAIMS NUMBERS REPORTED AND PROJECTED FUTURE – KPMG COMPARED TO TROWBRIDGE





Appendix L

KPMG CENTRAL ESTIMATE – MARCH 2000

DISCOUNTED VALUE OF CASHFLOWS

# years	Mesothelioma Claims	Non-Mesothelioma Claims	Legal Costs	Insurance Recoveries	Net General Liability
5	84,051,171	18,753,957	31,166,062	16,740,062	117,231,127
10	168,835,206	38,143,056	62,844,920	33,713,163	236,110,019
15	243,174,868	55,377,460	90,740,825	48,222,932	341,070,221
20	297,889,130	68,073,853	111,278,350	57,558,591	419,682,742
All	**356,824,186**	**81,950,466**	**133,502,451**	**67,645,893**	**504,631,209**

[Additional columns below]

[Continued from above table, first column(s) repeated]

# years	Workers Compensation	Wharfside Claims	US Claims	Net Liabilities
5	4,518,314	1,926,037	928,376	124,603,854
10	8,152,556	5,078,762	2,448,032	251,789,370
15	11,434,314	7,983,515	3,848,163	364,336,212
20	13,901,587	10,121,423	4,878,664	448,584,416
All	**16,622,862**	**12,424,116**	**5,988,592**	**539,666,779**

UNDISCOUNTED CASHFLOWS

# years	Mesothelioma Claims	Non-Mesothelioma Claims	Legal Costs	Insurance Recoveries	Net General Liability
5	100,174,298	22,279,116	37,107,531	19,937,873	139,623,071
10	241,378,331	54,614,995	89,889,849	48,213,977	337,669,198
15	414,351,751	94,714,293	154,797,139	81,834,833	582,028,350
20	591,981,715	135,937,281	221,474,360	112,143,716	837,249,640
All	**943,354,008**	**219,119,701**	**354,193,954**	**172,354,045**	**1,344,313,618**

[Additional columns below]

[Continued from above table, first column(s) repeated]

# years	Workers Compensation	Wharfside Claims	US Claims	Net Liabilities
5	5,466,832	2,397,994	1,155,866	148,643,764
10	11,528,327	7,669,244	3,696,680	360,563,449
15	19,168,849	14,428,018	6,954,501	622,579,718
20	27,183,317	21,368,743	10,300,024	896,101,724
All	**43,303,073**	**35,093,245**	**16,915,421**	**1,439,625,357**

Appendix M

KPMG CENTRAL ESTIMATE – FEBRUARY 2001

DISCOUNTED VALUE OF CASHFLOWS

# years	Mesothelioma Claims	Non-Mesothelioma Claims	Legal Costs	Insurance Recoveries	Net General Liability	Workers Compensation	Wharfside claims	US Claims	Net Liabilities
5	85,387,153	18,875,272	31,571,090	16,973,504	118,860,011	4,554,358	1,437,160	953,538	125,805,066
10	179,792,218	39,482,967	66,343,050	35,691,418	249,926,816	8,539,459	4,000,675	2,654,399	265,121,349
15	274,125,406	59,474,433	100,832,705	53,167,154	381,365,390	12,633,002	6,678,483	4,431,092	405,107,967
20	354,606,622	76,076,471	129,931,176	66,558,331	494,055,938	16,201,306	8,963,079	5,946,894	525,167,216
All	**469,055,595**	**98,174,473**	**170,609,572**	**85,386,468**	**652,453,171**	**21,414,226**	**12,211,436**	**8,102,139**	**694,180,972**

UNDISCOUNTED CASHFLOWS

# years	Mesothelioma Claims	Non-Mesothelioma Claims	Legal Costs	Insurance Recoveries	Net General Liability	Workers Compensation	Wharfside claims	US Claims	Net Liabilities
5	101,919,414	22,438,546	37,637,089	20,242,983	141,752,066	5,514,117	1,791,643	1,188,734	150,246,461
10	259,655,968	56,879,881	95,740,364	51,519,443	360,756,770	12,181,695	6,090,428	4,040,925	383,069,819
15	479,997,818	103,760,102	176,275,624	92,065,077	667,968,467	21,748,800	12,345,206	8,190,894	710,253,367
20	742,378,465	157,504,540	271,113,008	135,713,719	1,035,282,293	33,388,877	19,793,327	13,132,631	1,101,597,128
All	**1,474,443,042**	**296,967,218**	**530,295,626**	**255,846,267**	**2,045,859,619**	**66,289,994**	**40,557,186**	**26,909,199**	**2,179,615,998**

Appendix N

KPMG CENTRAL ESTIMATE – JUNE 2003

DISCOUNTED VALUE OF CASHFLOWS

# years	Mesothelioma	Lung Cancer	Asbestosis	APRD & Other	Legal Costs	Total Insurance Recoveries
5	246,378,319	9,430,319	32,537,790	15,526,003	48,599,069	40,773,816
10	518,394,104	19,218,679	61,902,949	30,981,152	99,370,790	74,702,936
15	781,827,249	29,276,242	84,687,647	44,859,880	146,573,150	106,046,454
20	994,251,642	37,805,419	98,824,552	54,961,586	183,060,089	130,777,883
All	**1,258,703,304**	**49,558,574**	**110,168,553**	**65,493,748**	**226,184,046**	**160,774,095**

[Additional columns below]

[Continued from above table, first column(s) repeated]

# years	Net General Liability	Workers Compensation	Wharfside Claims	US Claims	Net Liabilities
5	311,697,683	6,479,749	1,589,739	—	320,300,583
10	655,164,738	11,325,657	1,589,739	—	668,613,546
15	981,177,713	15,662,581	1,589,739	—	998,963,445
20	1,238,125,405	18,779,014	1,589,739	—	1,259,027,570
All	**1,549,334,129**	**21,964,246**	**1,589,739**	**—**	**1,573,421,526**

UNDISCOUNTED CASHFLOWS

# years	Mesothelioma	Lung Cancer	Asbestosis	APRD & Other	Legal Costs	Total Insurance Recoveries
5	277,144,607	10,563,873	36,464,593	17,412,324	54,590,849	45,853,062
10	671,563,899	24,787,815	78,911,109	39,815,497	128,175,814	94,906,608
15	1,170,138,592	43,842,308	121,792,603	66,024,865	217,421,629	154,196,607
20	1,694,830,704	64,934,296	156,508,929	90,919,752	307,469,938	215,257,809
All	**2,768,382,514**	**113,594,175**	**199,287,135**	**132,333,547**	**481,357,673**	**336,623,206**

[Additional columns below]

[Continued from above table, first column(s) repeated]

# years	Net General Liability	Workers Compensation	Wharfside Claims	US Claims	Net Liabilities
5	350,323,184	7,188,221	1,625,000	—	359,681,649
10	848,347,526	14,217,634	1,625,000	—	864,735,403
15	1,465,023,391	22,405,408	1,625,000	—	1,489,599,042
20	2,099,405,812	30,083,518	1,625,000	—	2,131,659,572
All	**3,358,331,837**	**42,562,447**	**1,625,000**	**—**	**3,403,064,527**

Appendix O

KPMG ASSESSMENT OF COST TO AMACA IN RELATION TO PRODUCT SALES IN THE PERIOD 1980-1987 – FEBRUARY 2001 (WITH EXTRA DATA)

DISCOUNTED VALUE OF CASHFLOWS

# years	Mesothelioma Claims	Non-Mesothelioma Claims	Legal Costs	Insurance Recoveries	Net General Liability
5	4,359,411	803,556	1,250,000	807,657	5,605,310
10	11,735,297	2,188,233	3,376,253	2,178,645	15,121,138
15	22,012,127	4,111,239	6,335,939	4,087,727	28,371,578
20	33,395,134	6,194,453	9,593,102	6,193,956	42,988,733
ALL	**56,792,323**	**10,283,481**	**16,200,529**	**10,488,748**	**72,787,586**

[Additional columns below]

[Continued from above table, first column(s) repeated]

# years	Workers Compensation	Wharfside claims	US Claims	Net Liabilities
5	143,346	—	—	5,748,657
10	331,642	—	—	15,452,780
15	603,445	—	—	28,975,023
20	913,838	—	—	43,902,571
ALL	**1,576,129**	**—**	**—**	**74,363,714**

UNDISCOUNTED CASHFLOWS

# years	Mesothelioma Claims	Non-Mesothelioma Claims	Legal Costs	Insurance Recoveries	Net General Liability
5	5,269,202	968,840	1,509,781	975,781	6,772,043
10	17,723,061	3,308,353	5,100,564	3,290,910	22,841,068
15	41,917,593	7,833,252	12,067,410	7,784,995	54,033,259
20	79,266,804	14,664,042	22,752,570	14,695,017	101,988,399
ALL	**241,367,977**	**42,672,294**	**68,370,613**	**44,391,453**	**308,019,432**

[Additional columns below]

[Continued from above table, first column(s) repeated]

# years	Workers Compensation	Wharfside claims	US Claims	Net Liabilities
5	174,469	—	—	6,946,511
10	492,812	—	—	23,333,880
15	1,133,257	—	—	55,166,516
20	2,152,523	—	—	104,140,923
ALL	**6,641,850**	**—**	**—**	**314,661,283**

Appendix P

KPMG ASSESSMENT OF COST TO AMACA IN RELATION TO PRODUCT SALES IN THE PERIOD 1980-1987 — JUNE 2003

DISCOUNTED VALUE OF CASHFLOWS

# of years	Mesothelioma	Lung Cancer	Asbestosis	APRD/Other	Legal Costs
5	9,816,679	316,284	1,105,342	515,818	1,818,941
10	26,349,670	867,929	2,729,099	1,379,154	4,811,985
15	47,647,671	1,627,642	4,415,055	2,417,315	8,530,578
20	69,309,354	2,447,407	5,748,267	3,379,393	12,175,552
All	**106,517,438**	**4,035,986**	**7,189,479**	**4,756,791**	**18,134,493**

[Additional columns below]

[Continued from above table, first column(s) repeated]

# of years	Total Insurance Recoveries	Net General Liability	Workers Compensation	Wharf Claims	US Claims	Net Liabilities
5	1,580,811	11,992,252	190,693	—	—	12,182,945
10	4,210,322	31,927,516	469,650	—	—	32,397,166
15	7,534,450	57,103,811	799,908	—	—	57,903,719
20	10,852,395	82,207,578	1,100,814	—	—	83,308,392
All	**16,412,990**	**124,221,199**	**1,520,227**	—	—	**125,741,425**

UNDISCOUNTED CASHFLOWS

# of years	Mesothelioma	Lung Cancer	Asbestosis	APRD/Other	Legal Costs
5	11,156,282	359,065	1,254,454	586,709	2,066,657
10	35,296,937	1,166,284	3,617,626	1,846,840	6,434,943
15	75,830,213	2,613,941	6,809,146	3,818,767	13,505,853
20	129,582,664	4,650,866	10,098,810	6,201,095	22,543,978
All	**288,406,512**	**11,602,693**	**15,746,337**	**11,872,951**	**47,807,189**

[Additional columns below]

[Continued from above table, first column(s) repeated]

# of years	Total Insurance Recoveries	Net General Liability	Workers Compensation	Wharf Claims	US Claims	Net Liabilities
5	1,796,297	13,626,870	215,415	—	—	13,842,286
10	5,634,830	42,727,800	622,545	—	—	43,350,344
15	11,958,329	90,619,590	1,249,608	—	—	91,869,198
20	20,188,574	152,888,838	1,994,458	—	—	154,883,295
All	**43,844,756**	**331,590,927**	**3,712,481**	—	—	**335,303,408**