

**Review of Northern Territory
Workers Compensation Scheme
as at 30 June 2004
Report to Scheme Monitoring Committee**

December 2004

Trowbridge Deloitte Limited
A.B.N. 56 092 651 057
505 Bourke Street
Melbourne VIC 3000

Tel: +61 3 9208 6555
Fax: +61 3 9208 6599
www.trowbridge.com
Consultants & Actuaries

Trowbridge Deloitte

20 December 2004

Mr Mark Crossin
Chairman
Scheme Monitoring Committee
NT WorkSafe
GPO Box 4160
DARWIN NT 8001

Dear Mark

**Review of Northern Territory Workers' Compensation Scheme
as at 30 June 2004**

We are pleased to enclose our report outlining the findings of our seventh annual review of the Northern Territory Workers' Compensation Scheme (the Scheme). The report has been prepared for the Scheme Monitoring Committee to assist with the fulfilment of its obligations under Section 145 of the Work Health Act 1986. The report includes:

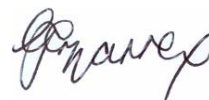
- a review of the experience in the last twelve months
- an assessment of the outstanding claims liabilities of the insured Scheme
- a comparison of the assessed liabilities with the amounts reported by the insurers in their statutory returns
- an assessment of the indicative historical and current "break-even premiums" that we estimate insurers would have needed to charge in order to make neither loss nor profit on the business.

We look forward to presenting our findings to the Committee. In the meantime, please do not hesitate to contact us if you have any questions regarding this report.

Yours sincerely



David Minty



Gillian Harrex

Fellows of the Institute of Actuaries of Australia

Review of Northern Territory Workers' Compensation Scheme as at 30 June 2004

Part I	Executive Summary	i
---------------	--------------------------	----------

Part II Detailed Findings

1	Introduction	1
2	Scheme and Insurance Environment	4
3	Economic & Other Assumptions	6
4	Valuation Approach, Experience and Assumptions	13
5	Outstanding Claims Valuation	23
6	Premiums	28
7	Sensitivity of Results	32
8	Reliances and Limitations	34

Part III Appendices

A	Information Provided	
B	Claim Numbers	
C	Claim Payments	
D	PPCI Development Years 1-8	
E	PPCI For the Tail	
F	Valuation Results, including Scheme Cost	
G	Glossary of Terms	

Part I Executive Summary

1 Purpose and Scope

This report is designed to assist the Scheme Monitoring Committee (the Committee) in monitoring the ongoing viability and performance of the Northern Territory Workers' Compensation Scheme ("the Scheme") and to assist in the monitoring of premium rates.

Following a review by the Committee and the Minister for Employment, Education and Training, the Honourable Syd Stirling MLA, we understand our full report will be made available for public access in electronic form on the NT Government website. Your attention is particularly drawn to the inherent limitations of our report for use by other parties as set out in Section 9 of this Executive Summary.

This Executive Summary highlights the results of our review and particular points of interest from the investigation. It is deliberately brief and should be considered in the context of the report as a whole.

Our previous annual review of the Scheme was carried out at 30 June 2003.

2 Scheme Experience During 2003/04

Excluding claims managed by the Nominal insurer (which largely comprise claims under policies written by the former HIH insurance group), during the financial year ended 30 June 2004:

- Gross claim payments amounting to \$47.8 million were made by insurers, with reinsurance recoveries of \$1.5 million. Payments net of recoveries were 13% higher overall than in 2002/03.
- 2,601 new claims were reported to the Scheme, some 11% less than in 2002/03. Three of these new claims were in respect of accidents or injuries that occurred more than eight years ago
- insurers wrote almost \$72 million of premiums, 1% more than in 2002/03
- insurers' central estimates of their outstanding claims liability reached \$144 million, up 12% from last year.

3 Valuation Results

Our estimate of the Scheme outstanding claim liabilities as at 30 June 2004 is shown in Table 1. The table also compares our assessment of the liability with the central estimates from the reports provided to insurers by their actuaries.

Table 1 - Valuation Results as at 30 June 2004

	Trowbridge	Insurers
	\$000	\$000
Gross Central Estimate ¹	166,932	144,296
<i>less</i> Reinsurance Recoveries ²	(5,008)	(9,382)
Net Central Estimate	161,924	134,913
<i>plus</i> Claims Handling Expense ³	9,715	7,483
	171,639	142,396
<i>plus</i> Prudential Margin ⁴	25,746	
Total Provision ⁵	197,385	160,139

¹ Allows for future inflation of 9% pa (incorporating normal wage related inflation of 4% pa and superimposed inflation of 5% pa), and is discounted at 5.75% pa

² 3% of gross claim payments

³ 6% of net central estimates

⁴ 15% of net central estimates plus expenses

⁵ We were not supplied with the provision figure for one major insurer

For the second time, we were provided with insurers' central estimates of claim liabilities, and in most cases, the provisions that were included in their accounts. One large insurer only provided details of the central estimates of claims liabilities and so it is not possible to compare the provisions actually held in the insurers' accounts with our total provision on a 'like with like' basis.

Our estimated net central estimate of \$162 million is 4% higher than the \$156 million we estimated last year. It is some \$27 million, or 20%, higher than the combined insurer central estimates of \$135 million, the same percentage difference to insurers' central estimates as last year.

We have made the following changes to the actuarial assumptions used in our last valuation, based on our analysis of the Scheme's emerging experience.

- The discount rate was increased from 5% per annum to 5.75% per annum, reflecting an increase in the yields available on Commonwealth Government bonds between June 2003 and June 2004
- The assumed average claim sizes and payment patterns have been modified, although by relatively small amounts
 - The average size applying in the first eight development years is \$13,065. This is slightly below the assumed size from the previous

valuation (after the addition of one year's wage and superimposed inflation)

- ▶ For the "tail" we have adopted an average claim size of \$1,830 for accident years up to and including 1998/99, which represents a stabilisation after allowance for one year's wage and superimposed inflation.
- ▶ For the tail we have adopted an average claim size of \$2,300 for accident years 1999/00 and later. This represents about a 9.6% real increase over last year's assumption, after allowance for one year's wage and superimposed inflation. This increase is due to a greater number of open claims in the tail at this valuation.
- The assumed level of reinsurance recoveries has been increased from 2% to 3% of gross claim payments based on an analysis of recent experience and the actuarial reports provided to us.

We have maintained the following assumptions used in last year's investigation:

- allowance for superimposed inflation in the 'tail' (claims more than 8 years since accident date) of 3% per annum and the expected annual rate of tail claim closure of 20%
- claims handling expenses of 6% per annum
- combined inflation (both normal and superimposed) of 9% per annum in the first 8 years
- a prudential margin of 15% of the net central estimate including claim handling expenses.

4 Recommendations

The recommendations outlined below are similar to those made at the time of preparing our 30 June 2003 review. We would like to acknowledge the progress made in relation to the reconciliation of some aspects of the data and the provision of additional information by insurers about their outstanding claim provisions. However a number of concerns remain, including:

1. *Exposure data:* The employee data provided to NT WorkSafe continues to be unsatisfactory, with data apparently being collected on an inconsistent basis from year to year. We recommend that NT WorkSafe review with each insurer the way in which employee data is collected to ensure that it is consistent with other measures of workforce participation in the Territory, noting the differences that may exist between workers' compensation coverage and other employee statistics.

2. *Reconciliation between NT WorkSafe data and Forms A & B summary data:* We note that this data reconciled satisfactorily this year at a group level but that the results by individual accident years continues to show considerable variation. These differences add uncertainty to the valuation results. We recommend that NT WorkSafe review the way in which policy and claim data is obtained from insurers so that NT WorkSafe data and that of insurers in aggregate can be readily reconciled, as occurs in other Australian workers' compensation systems. This may require major changes to the present data collection system.
3. The way in which premium information is collected means that the Scheme Actuary cannot usefully comment on movements in premium rates at the level of industry groups. We recommend that NT WorkSafe determine with insurers and the Scheme Actuary how such data will be collected and presented. This will enable the Scheme Monitoring Committee to undertake the following requirements of the Work Health Act:
 - (a) Section 145 (1) (aa) to "monitor premium rates offered for workers compensation in the Territory" and
 - (b) Section 145 (1A) to "consider and report on the effectiveness of the premiums offered by insurers (a) in encouraging employers to develop and maintain safe working practices; and (b) in penalising employers which do not ensure the maintenance of safe working practices".

5 Principal Conclusions of our Investigation

1. While our analysis is necessarily limited by the problems with exposure data referred to above, claim frequency appears to have continued to reduce and is shown in Table 2 below.

Table 2 - Claim Frequency (excluding HIH)

Financial Year	Net Earned Premium (1)	Ultimate Claims (2)	Claims per \$1M EP (2)/(1)*1000
	\$000	\$000	\$000
2000/01	49,988	2,880	58
2001/02	60,149	2,907	48
2002/03	66,165	2,884	44
2003/04	70,704	2,700	38
Average	61,752	2,842	46

2. Average claim sizes (based on payments in the first eight years after a claim occurs) continue to increase each year at a rate above wage inflation levels. This may indicate either the presence of a relatively high

level of superimposed inflation in the Scheme or that the reduction in claim frequency has been due mainly to the elimination of small claims. Also contributing to the higher average claim size are two large claims in the 2004 accident year notified by one insurer.

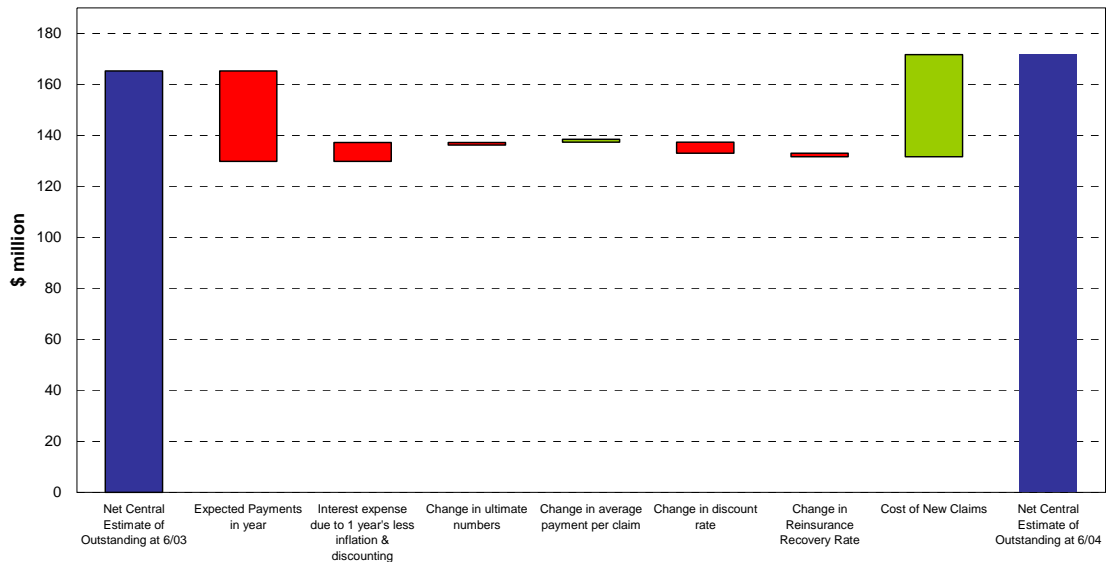
3. Claim finalisation rates have been much lower than expected, which appears to be a direct result of a change in the claims management for one particular insurer. According to the report provided by this insurer, they have been taking a more conservative approach to finalisations to prevent a large number of re-opened claims from emerging in the future and so may not ultimately translate into more claims in the tail.
4. Our net central estimate of the liability for outstanding claims is \$162 million, which is \$27 million higher than the total of the insurers' central estimates shown in their own actuarial reports. Our review of those reports indicates that this may be due to different assessment of the cost of long-term claimants. We note that NT liabilities form a small proportion of the assets of private sector insurers regulated by APRA and that the solvency regime for such insurers has been significantly strengthened in recent years, so the difference may not be a material concern in terms of policyholder protection.
5. Although our assessment of the outstanding liabilities is higher than insurer reserves, allowing for expenses and the cost of servicing the capital required to comply with the requirements of APRA would suggest that business written since the 2000/01 financial year should be returning an adequate (but not excessive) profit for insurers (taken as a whole), as discussed in Section 7.
6. Significant changes in the insurance market in Australia in recent years have affected the willingness of insurers to underwrite classes of business such as workers' compensation. While there has been only a small rise in premiums collected in the latest year (in line with moderating premium increases in other states and other long-tail classes of insurance business), the maintenance of premium rates at around their present levels will be dependent on regular review and intervention in the Scheme structure by the Government and NT WorkSafe as issues affecting scheme cost arise, as well as looking to constantly improve risk, injury and claim management practices by employers and insurers.

6 Movement in Incurred Claims Cost

Table 1 shows our net central estimate of the outstanding claim liabilities is \$172 million, including claims handling expenses. As at 30 June 2003 the net central estimate was \$165 million.

Figure 1 below shows the impact of the various changes in assumptions on the net central estimate of liabilities (including expenses).

Figure 1 – Movement in Net Central Estimate (including expenses)



The primary sources of increase are through the “unwind” of the discount (as the payments are one year closer to payment) and the addition of a new year’s claims. The other changes have a relatively small impact on the movement in the liability.

7 Comparison of Premiums to Costs

Table 3 below compares our estimate of the “Break-even Premium” with the actual average rate charged (calculated from the insurer Form B returns). The break-even premium is the amount we estimate insurers need to charge to cover claims costs and expenses. Note that information relating to the HIH Group has been excluded from the analysis for all prior years.

Table 3 – Estimated “Break-even Premiums” compared to Premiums Charged

Accident Year	Wages ¹	Gross Incurred Costs ²	Expenses, Commission	"Break-even Premium Rate"	Average Prem Rate charged by Insurers
	\$m	\$m	\$m	%	%
1997/98	1,437	29.3	6.5	2.5	1.6
1998/99	1,586	33.9	7.5	2.6	1.9
1999/00	1,859	36.7	8.2	2.4	2.4
2000/01	1,924	39.8	8.8	2.5	2.9
2001/02	2,130	42.6	9.5	2.4	3.1
2002/03	2,170	45.1	10.0	2.5	3.2
2003/04	2,201	47.1	10.5	2.6	3.1
2004/05 ³ (forecast)	2,289	50.4	11.2	2.7	

¹ Source: ANZSIC Data supplied to Worksafe by Insurers in Annual Returns- excluding HIH Group

² Including 4% inflation, 5% superimposed inflation, and discounted to middle of accident year at 5.75% pa

³ Assumes 4% waggeroll growth, 0% growth in claim numbers, 5.75% pa discount rate, 4% inflation, 5% superimposed

The actual rate charged by insurers has stabilised over the last three or four years. Based on our assessment, we expect that business written since 30 June 2000 should ultimately be profitable for insurers (as a whole) after allowing for the need to establish margins in provisions in excess of the central estimates as required by APRA. However, because of the long-tail nature of this class of business, the final result will not be known for many years.

We have the following comments on the break-even premium analysis:

- Allowing for expenses and the cost of capital would suggest that business written since the 2000/01 financial year should be returning an adequate (but not excessive) profit for insurers (taken as a whole)
- The break-even premium is estimated to be reasonably stable in recent years, despite the existence of superimposed inflation in the average claim costs of the Scheme. One possible explanation is the steady reduction in the number of claims being reported.

8 Uncertainty

Estimation of outstanding claims liabilities is not an exact science. The estimation of future payments is inherently imprecise, particularly with respect to liabilities settled over lengthy periods of time. Although we have prepared estimates in conformity with what we believe to be the likely future experience, the experience could vary considerably from our estimates.

Additional information will be revealed over time and those estimates and assumptions will be revised resulting in gains or losses in future periods. Our estimated liabilities together with a prudential margin are intended to assist the understanding of the operation of the business in light of this uncertainty.

9 Reliances and Limitations

We have relied on data provided by NT WorkSafe and Scheme insurers. While we have conducted reasonableness checks regarding the accuracy of the information we have not independently verified it, and have noted a number of issues as set out in our recommendations above. Material errors or omissions in the information provided may materially impact our estimates.

The nature of workers' compensation liabilities means that there is inherent uncertainty in any estimates of outstanding claim liabilities. Variations over time are normal and are to be expected.

The purpose of the report is outlined in Section 1 above. It is not intended for any other purpose. In particular, sections of the report that analyse premium adequacy, are intended as a monitoring tool only. Use of this information for any other purpose (eg. premium pricing) is not appropriate.

The report should be considered as a whole. Consultants from Trowbridge Deloitte are available to answer any queries, and the reader should seek such advice before drawing conclusions on any issue in doubt.

This report is intended for the use of the Scheme Monitoring Committee. While it may be included on the NT Government website as an aid to understanding the development of the Scheme, Trowbridge Deloitte accepts no responsibility for any action by third parties which may be taken based on any aspect of this report.

10 Accounting and Professional Standards

The following prudential and professional standards are relevant to the preparation of reports regarding insurance company outstanding claim liabilities:

- APRA's Prudential Standard GPS210 – Liability Valuation for General Insurers
- IAA's Professional Standard 300 – Actuarial Reports and Advice on General Insurance Technical Liabilities
- IAA's Guidance Note GN353 - Evaluation of General Insurance Technical Liabilities.

Further, the accounting standard AASB1023 has implications for the way in which entities set provisions for outstanding claims.

This investigation and report are intended to comply with these Standards and Guidance Notes to an extent that we consider reasonable, given the purpose of our investigation.

11 Glossary of Terms

Appendix G includes a Glossary of Terms that are used throughout the report and this Executive Summary.

Part II Detailed Findings

1 Introduction

We have been asked by the Scheme Monitoring Committee (the Committee) to make an assessment of the Northern Territory Workers' Compensation Scheme (the Scheme) at 30 June 2004. The purpose of the investigation is to assist the Committee in fulfilling its obligations under Section 145 of the Work Health Act 1986 (the Act) to:

- monitor the viability and performance of the Workers' Compensation Scheme, and
- monitor the premium rates offered for Workers' Compensation in the Territory.

1.1 Purpose and Scope

This report is to assist the Scheme Monitoring Committee (the Committee) in monitoring the ongoing viability and performance of the Northern Territory Workers' Compensation Scheme ("the Scheme") and to assist in the monitoring of premium rates.

Following a review by the Committee and the Minister for Employment, Education and Training, the Honourable Syd Stirling MLA, we understand our full report will be made available for public access in electronic form on the NT Government website. Your attention is particularly drawn to the inherent limitations of our report for use by other parties as set out in Section 8 of this Detailed Findings.

This is the seventh annual Scheme report that Trowbridge Deloitte has prepared for the Committee. Our previous report as at 30 June 2003 is hereafter referred to as "the previous investigation".

1.2 Structure of the Report

The report is set out as follows:

1. Introduction
2. Scheme and Insurance Environment
3. Valuation Approach & Assumptions

4. Economic & Other Assumptions
5. Outstanding Claims Valuation
6. Premiums
7. Sensitivity of Results
8. Reliances & Limitations

The report is supported by a series of technical appendices.

1.3 Accounting and Professional Standards

The following prudential and professional standards are relevant to the preparation of reports regarding insurance company outstanding claim liabilities:

- APRA's Prudential Standard GPS210 – Liability Valuation for General Insurers
- IAA's Professional Standard 300 – Actuarial Reports and Advice on General Insurance Technical Liabilities
- IAA's Draft Guidance Note GN353 - Evaluation of General Insurance Technical Liabilities.

Further, the accounting standard AASB1023 has implications for the way in which entities set provisions for outstanding claims.

This investigation and report are intended to comply with these Standards and Guidance Notes to an extent that we consider reasonable, given the purpose of our investigation.

1.4 Data Provided

We have been provided with copies of the Form A and B returns submitted by the authorised insurers, and have relied on the accuracy of the information provided in these returns. We were also supplied with extracts or copies of the actuarial investigations at 30 June 2004 for participating insurers.

The employee data provided to NT WorkSafe continues to be unsatisfactory, with data apparently being collected on an inconsistent basis from year to year, resulting in large movements in employee numbers. For this reason, we have been unable to form an accurate assessment of claim frequency (claims/employees) in the Scheme.

We were also supplied with a summary of payments in 2004 by head of damage and year of accident, taken from the record of WorkSafe. We note that this data reconciled satisfactorily this year at a group level but that the results per individual accident years continues to show considerable variation. These differences add uncertainty to the valuation results.

Further explanation of the data provided is provided in Appendix A.

2 Scheme and Insurance Environment

2.1 Scheme Benefits

The Scheme provides a range of benefits to injured workers, including:

- weekly income-replacement benefits, related to pre-injury Normal Weekly Earnings (NWE)
- all reasonable medical and related expenses
- lump sum impairment benefits, to the more seriously injured claimants
- limited access to commutations and redemptions of future benefits
- lump sum death benefits, and weekly benefit to dependents.

There has been no access to common law benefits since inception of the Scheme in January 1987.

2.2 Insurance Environment

In recent years there have been considerable changes in the insurance environment in Australia. Significant elements include:

- consolidation of insurance companies into a smaller number of groups, resulting in fewer providers in many classes of insurance, including workers' compensation. For instance, AMP, CGU, FAI, GIO, HIH, Lumley, Mercantile Mutual, SGIC, SGIO and SIO have all ceased independent operation in the last 10 years.
- a corresponding reduction in the number of insurers operating in regions, such as the Northern Territory, particularly with the collapse of HIH and FAI as well as the CGU merger with IAG.

The maintenance of premium rates at around their present levels will be dependent on regular review and intervention in the Scheme structure by the Government and WorkSafe as issues affecting scheme cost arise, as well as constantly improving injury and claim management practices by insurers.

2.3 Past Legislative Changes

During 2002/03, amendments were made to the Act. These changes included:

- an increase in death benefits

- tying benefits payable more than two years after an accident to a claimant's capacity to work
- increasing the focus on rehabilitation and return to work procedures.

At this investigation, as well as the previous investigation, we have not made any explicit allowance for the impact of these reforms, as we are yet to observe the impact of these changes, and we would expect any impact to be limited to the most recent accident years.

3 Economic & Other Assumptions

Table 3.1 provides a summary of the economic and other assumptions used in this investigation and the previous review. The basis for these assumptions is described in this section.

Table 3.1 – Summary of Economic and Other Assumptions

	This Valuation	Previous Valuation
	%pa	%pa
Discount Rate	5.75%	5.00%
Wage Inflation	4.0%	4.0%
Superimposed Inflation years 1-8	5.0%	5.0%
Superimposed Inflation in tail	3.0%	3.0%
Reinsurance Recoveries ¹	3.0%	2.0%
Claims Handling Expenses ²	6.0%	6.0%
Prudential Margin ³	15.0%	15.0%

¹ Percentage of gross central estimate

² Percentage of net central estimate

³ Percentage of net central estimate plus claims handling expenses

3.1 Discount Rate

We consider it reasonable for valuation purposes to use a single discount rate for all future years in calculating the present value of expected future claim payments. To comply with the general insurance prudential standard GPS210 (governing the measurement and reporting of the insurance liabilities for general insurers) and AASB1023 (the relevant accounting standard), we believe this rate should be:

- a current rate - it should reflect market conditions at the valuation date
- a prospective rate - it represents the rate which can be earned between the balance date and when claims are settled (not the rate which has been earned in the past)
- risk-adjusted - to reflect the level of risk in a portfolio of assets that would closely match the liabilities.

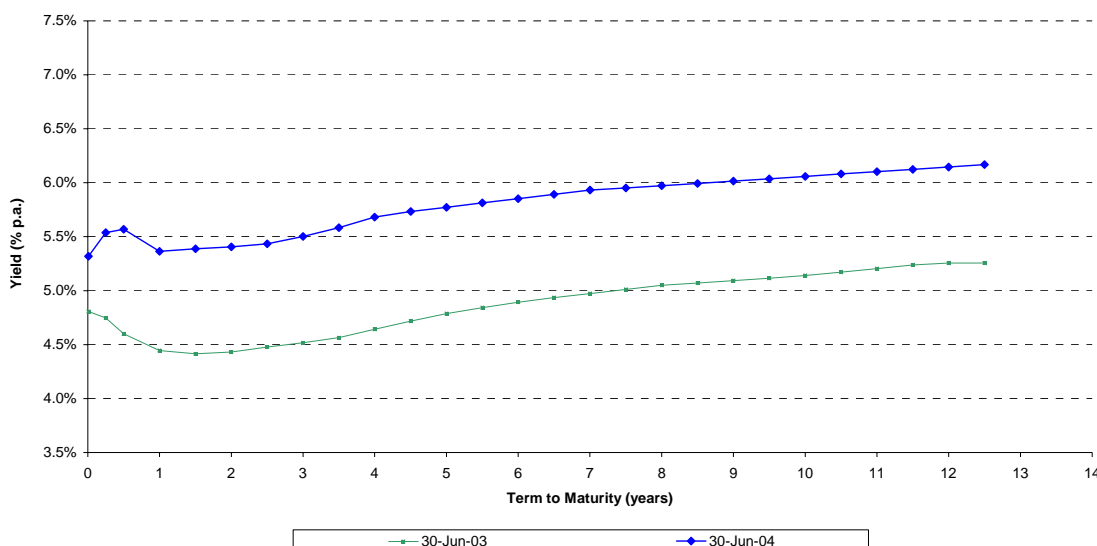
The appropriate rate is a risk free rate corresponding to the duration of the liabilities.

Our selected discount rate is based on an empirical analysis of the yield curve for Government Bonds comparing the yield and the average duration of the underlying liability payments. The duration is a weighted average measure of

the time over which payments are made. (Based on our analysis of the Scheme’s experience, the average duration of the liabilities is about five years.)

Figure 3.1 sets out the of bond yields at June 2003 and June 2004.

Figure 3.1 – Government Bond Yields



The analysis shows that the yield curve at June 2004 has increased substantially from that at June 2003 at all terms to maturity. Based on the anticipated pattern of future payments, we view it appropriate to use a discount rate of 5.75% pa for the valuation of outstanding claims liabilities at 30 June 2004. This rate is 0.75% higher than the rate used in last year’s investigation.

All other assumptions being unchanged, such a reduction will decrease the outstanding claim liabilities. However, as an insurer’s assets are included in its accounts at market value, if the insurer were holding a matched portfolio of government bonds, the value of its assets would also fall and so the net effect on its profitability should be minimal.

For the purposes of comparing premiums and claims costs, we have also adopted a discount rate of 5.75% pa. (This comparison is discussed in Section 6.)

3.2 Wage Inflation

It is usual to relate increases in workers’ compensation claim costs to wage inflation as many of the benefits payable increase with movements in wages. As with the discount rate, we consider it reasonable for valuation purposes to use a single rate for all future years.

The differential between the assumed future inflation and discount rates ('the gap') is more important in determining the value of outstanding claims than is the absolute level of each rate.

Future forecasts for wage inflation over the next few years are generally in the range of 3.5% to 4.5% per annum. At this investigation we have continued to assume a normal inflation rate of 4.0% pa for the future duration of incurred claims. This rate has been used in both the valuation of outstanding claims and the comparison of claims cost to premiums.

3.3 Superimposed Inflation

Superimposed inflation represents the tendency of claims cost to increase at a rate in excess of the rate of wage inflation over time. This is often the result of the combined effect of economic, social and political forces that do not easily lend themselves to forecasting.

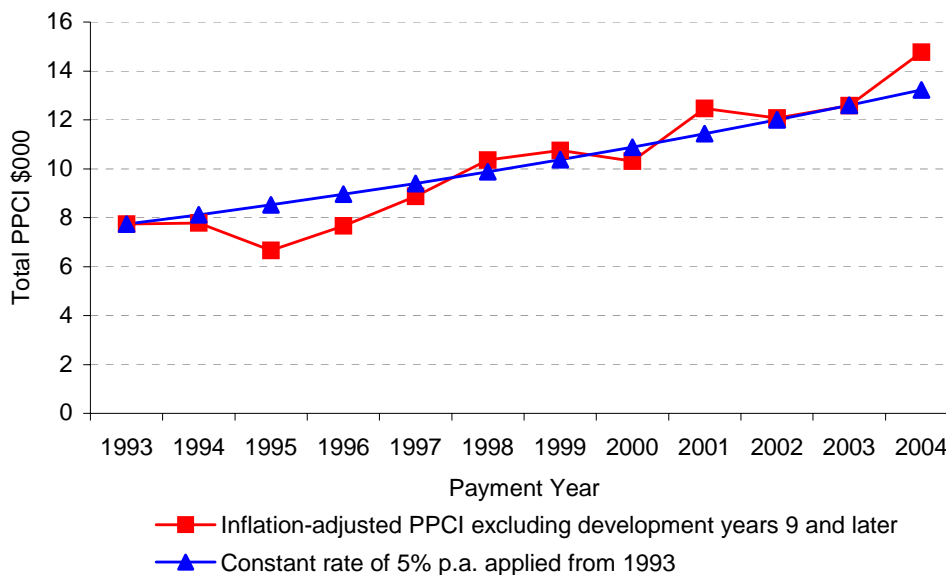
We have expressed this "above wage inflation" growth in claim costs (superimposed inflation) as an average annual rate.

Our analysis of the Scheme's experience continues to reveal evidence of superimposed inflation on claim costs. Determining an appropriate assumption for future superimposed inflation however is very difficult as experience in recent years has exhibited significant volatility, both by accident year and development year. Some of this volatility could be due to other factors such as commutation activity.

Figure 3.2 below shows the historical impact of superimposed inflation over recent years, measured by showing the progression of average payment per claim incurred (PPCI) in the first eight development years of an accident year. (The calculation of the payments per claim incurred is discussed in Section 4.) These are measured on a payment year basis and have been brought to 2004 dollars using movements in actual past average weekly earnings.

For ease of comparison, the impact of a constant 5% per annum rate of superimposed inflation over time is shown, equal to the assumption we have selected for the purpose of our projection of the liabilities of the scheme.

Figure 3.2 – Impact of Superimposed Inflation in Recent Years



As shown in Figure 3.2, the effect of historical superimposed inflation experience is highly variable, with periods of low or negative change and others of very high movement. This necessarily makes the selection of an assumption regarding future levels highly judgemental.

At this investigation we have assumed superimposed inflation of 5% pa for the first 8 years of development and 3% pa beyond 8 years similar to last year's investigation. Claims beyond 8 years are generally in receipt of weekly benefits, with an additional component of medicals, rehabilitation etc and so it is possible that the rate of superimposed inflation in the tail may be somewhat lower than in early years of development. This is discussed further in Section 4.5. (We note also that the 2002 amendments to the legislation may act to reduce the upward cost pressure, although we have not performed any specific costing of these reforms).

3.4 Claims Handling Expenses

In setting the provision for outstanding claims, an appropriate allowance should be made for the future cost of internal claim handling expenses. (External claim handling expenses such as medical and legal fees are already allowed for in expected future claim payments)

Table 3.2 summarises the expense information for the Scheme as a whole from the Form A's supplied by the insurers. Note that this analysis has been

conducted with the HIH Group data removed, as these claims have become the responsibility of the Nominal Insurer and are not included in this valuation.

Table 3.2- Historical Expense Levels

Financial Year	Net Earned Premium	Net Claims		Expenses	Commission	Expenses	Commission
	(1)	Paid	(2)			(3)	as % of (2)
	\$000	\$000	\$000	\$000		%	%
1997/98	22,472	31,860	4,789	842	15.0	3.7	
1998/99	25,825	33,350	5,210	424	15.6	1.6	
1999/00	40,779	36,819	4,947	1,264	13.4	3.1	
2000/01	49,988	42,697	5,039	2,089	11.8	4.2	
2001/02	60,149	38,251	6,301	2,482	16.5	4.1	
2002/03	66,165	40,155	7,436	2,458	18.5	3.7	
2003/04	70,704	46,385	8,584	2,720	18.5	3.8	
Average (last 3 yrs)	65,673	41,597	7,440	2,553	17.9	3.9	

For the outstanding claims valuation, we have maintained our assumption for claims handling expenses of 6% of claims paid, following our review of assumptions generally adopted by insurers in their actuarial reports. This is lower than the average figure shown in Table 3.2 because many of the expenses included in the table are incurred in establishing claims, writing business and administering policies rather than to meet the ongoing costs of administering claims.

In estimating premiums, all expenses and commission costs need to be included. For the expenses, we have increased our assumption from 16% to 18% of net claim payments due to the increasing trend exhibited in column (5) of Table 3.2 for recent years. We have kept the commission assumption unchanged from the previous investigation at 4% of premiums.

3.5 Reinsurance Recoveries

Each insurer has a reinsurance program in place to protect it in years of adverse experience. We have not been provided with details of these programs. Table 3.3 summarises some recent reinsurance experience of the Scheme (taken from individual insurers' Forms A).

Table 3.3 – Reinsurance Recoveries

Financial Year	Gross Written Premium (1)	Reinsurance Premium (2)	Reinsurance as % of (1) (3)	Gross Paid Claims (4)	Reinsurance Recoveries (5)	Recoveries as % of (4) (6)
	\$000	\$000	%	\$000	\$000	%
1997/98	29,036	2,432	8.4	32,980	1,120	3.4
1998/99	40,549	5,120	12.6	35,353	2,003	5.7
1999/00	54,114	5,064	9.4	40,469	3,650	9.0
2000/01	65,467	6,041	9.2	44,638	1,941	4.3
2001/02	66,903	1,535	2.3	38,683	432	1.1
2002/03	70,557	2,221	3.1	40,584	429	1.1
2003/04	72,206	2,514	3.5	47,842	1,457	3.0
Average (last 3 yrs)	69,889	2,090	3.0	42,370	773	1.8

At this investigation we have increased the assumed future reinsurance recoveries from 2% to 3%.

For the purposes of comparing premiums and claims costs, we have also adopted a reinsurance recovery rate of 3.0% of gross claim payments each year. (This comparison is discussed in Section 6).

3.6 Prudential Margin

The estimate of liabilities we have produced in this report can be described as a "central estimate" of the outstanding claim liabilities. The valuation assumptions have been selected to yield estimates with no deliberate bias towards either over-estimation or under-estimation.

Variations between our estimates and the ultimate cost of claims, measured on a consistent basis, arise for a number of reasons:

- models chosen for analysis and projection are unlikely to exactly match the actual claim process
- random fluctuations in the claims experience (or undetected errors in the data) result in uncertainty in assumptions regarding future experience
- future economic and environmental conditions are not known and may be different from those experienced in the past
- future random claim fluctuations will result in uncertainty in the projected payments.

Each of the potential sources of variation introduces uncertainty into the valuation process.

In view of the uncertainties inherent in the valuation process, the view that sound commercial management requires that provisions held in the accounts

should be more than 50% likely to be adequate, and the requirements of APRA regarding the holding of risk margins for solvency calculation purposes, we recommend that prudential margins be added to the central estimates of liabilities in considering the performance of the Scheme.

Reference to Prudential Standards

Effective from 1 July 2002, the minimum capital requirement calculation for general insurers is based on insurance liabilities including risk margins designed to provide a 75% probability of sufficiency.

The reserves recorded in the insurer financial statement may differ from the amounts used for the APRA capital calculation, and we understand that it is not unusual for insurers to hold a higher amount in the balance sheet – an amount designed to provide a higher than 75% probability of sufficiency.

Our Approach

While it is feasible to conduct a risk margin analysis for the Scheme liabilities, it is problematic given that the Scheme comprises a number of insurers of various sizes, with differing reinsurance arrangements and diversification benefits.

From the data provided by insurers, there is a large range in the risk margins held – from around 8% of central estimates to over 30%. Overall, the risk margins disclosed were approximately 18% of central estimates (excluding the one insurer that did not disclose its margin).

We would expect that APRA risk margins would typically be lower than the 15% prudential margin we have assumed, particularly for the larger underwriters where they will generally benefit from the ability to reduce their risk margins to account for the diversification benefit of writing a range of classes of business. However, considering the Scheme in isolation, we believe it is appropriate to include a margin of 15% for the purpose of this investigation (monitoring against insurer reserving and premiums). This position will be reviewed at the June 2005 valuation when we propose gathering additional information from insurers regarding reserving practices and the loadings applied to the central estimate.

④ Valuation Approach, Experience and Assumptions

4.1 Treatment of HIH

For the purposes of projecting the outstanding claims liability, it is appropriate to exclude any liability in respect of claims now being handled by the Nominal Insurer, following the collapse of the HIH Group (including HIH, FAI and WMG).

We have considered the historical experience both with and without HIH as part of this valuation, although the bulk of our analysis is conducted with data excluding HIH. The selected experience development factors and average claim sizes are similar on a “with” and “without” HIH basis.

HIH was a significant underwriter in the NT Scheme. This is illustrated in Figure 4.1 which shows the estimated ultimate number of claims arising in each accident year. The chart shows the estimates from our current valuation, overlaid with our estimates of HIH’s claim number, based on our valuation at 30 June 2001.

Figure 4.1 – Ultimate Claims With & Without HIH

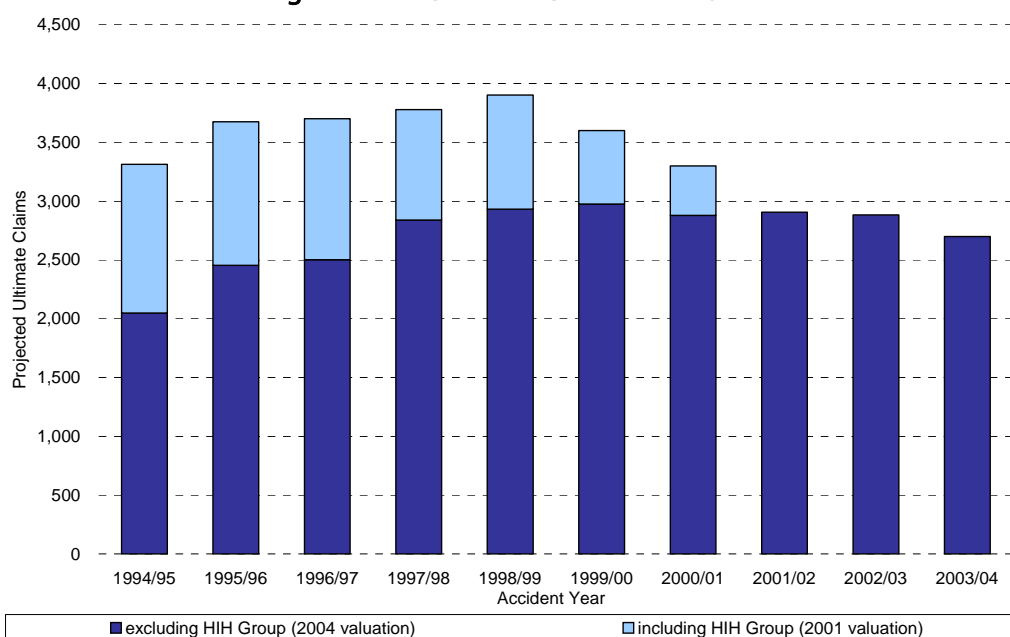


Figure 4.1 shows that HIH typically managed around 30% of claims in the mid 1990's, although the share diminished significantly in the years leading up to the collapse of the Group.

A particular point of interest in this graph is that even after allowing for the 're-introduction' of employers formerly insured with HIH in 2001/02, 2002/03 and 2003/04, the number of claims reported in the latest two years is lower than prior years. Given the size of the NT workforce has continued to increase in recent years, this continues to be an encouraging sign that frequency may be reducing.

Observations on the trend in the number of claims reported are discussed further in Section 4.4.

4.2 Valuation Approach

We have valued the Scheme liabilities using a model and set of assumptions selected taking into account past experience and our own assessment of likely future experience. The analysis is based on data excluding the HIH Group, as the Nominal Insurer has assumed these liabilities.

We have, as in previous years, used the Payment Per Claim Incurred (PPCI) method in deriving our estimate of the outstanding claims liability. The PPCI method requires assumptions regarding:

- the number of claims ultimately arising in each accident year
- the average claim size
- the spread of payments over time (the payment pattern).

Future payments for each accident year are projected by multiplying together:

- the ultimate number of claims incurred
- the assumed payment per claim incurred in each future development period. This is based on the assumed average claim size and the payment pattern – how rapidly we expect claims to be paid
- an inflation index based on the projected rates of claims inflation (both wage and superimposed).

The present value of the liabilities is calculated by discounting the projected future payments to the valuation date at an assumed discount rate.

An important factor in determining the liabilities of the Scheme is the timing and magnitude of payments in the "tail". While for practical purposes we have

adopted the PPCI valuation method for the tail projection, we have constructed a special tail model to generate the PPCI assumptions.

The purpose-built tail model combines explicit assumptions regarding the rate of claim closure and the average payment to open claims in the tail to produce equivalent PPCI assumptions for the tail.

Future payments on tail claims are projected in current values for each accident year by multiplying together:

- the average number of tail claims that were open in the year having regard to the assumed rate of claim closure during the year, and
- the average annual payment made to such claimants.

The current value projected payments are then converted to a PPCI-equivalent by dividing them by the ultimate number of claims incurred in the relevant year. On the basis of the equivalent PPCIs for each year, one or more tail PPCI assumptions are selected. For this valuation, two tail PPCIs have again been selected: one which applies to accident years 1998/99 and prior, and another which applies for years thereafter. This is discussed in Section 4.6.

4.3 Legislative Changes

As noted in Section 2, the governing legislation was amended in 2002/03. Changes included:

- an increase in death benefits
- linking the benefits beyond two years to a claimant's capacity to work
- increasing the focus on rehabilitation and return to work procedures.

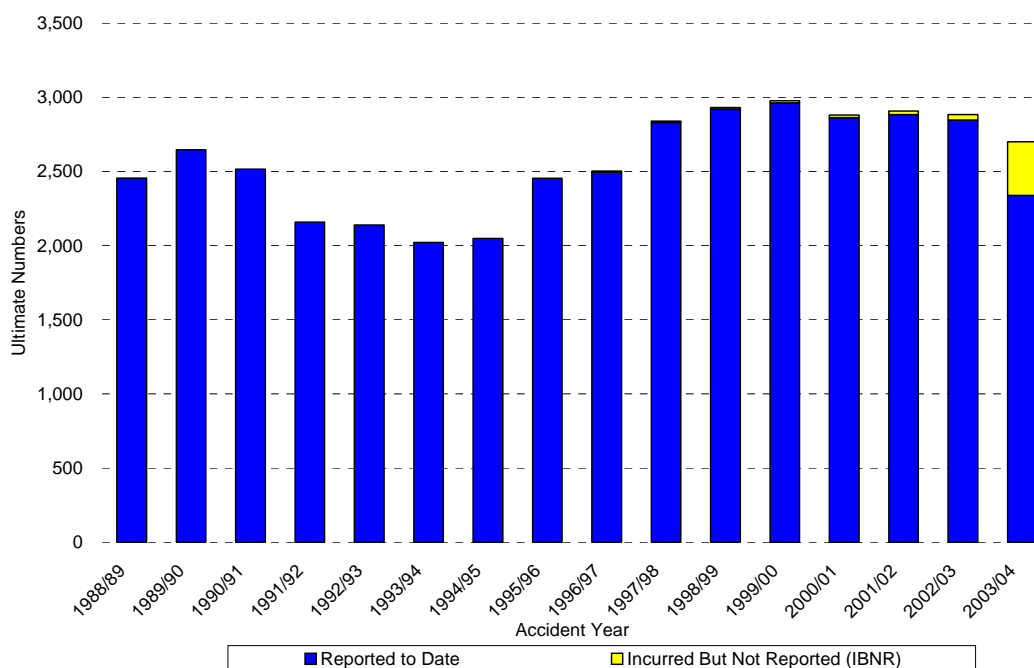
Our analysis of the historical Scheme experience is largely unaffected by these changes. We have considered the nature of the changes, and their likely impact on the liability. On the basis of this assessment we have not explicitly adjusted the valuation assumptions from those that are indicated by the historical experience and our interpretation thereof. Any improvements brought about by the changes will thus be gradually incorporated into our valuation basis as they emerge in the experience of the Scheme.

4.4 Valuation Assumptions: Numbers of Claims Incurred

Figure 4.2 shows our estimates of the ultimate number of claims incurred in each accident year (excluding HIH business). The chart shows both the number

of claims reported to date and the estimate of claims that are Incurred But Not yet Reported (IBNR).

Figure 4.2 – Projected Ultimate Claim Numbers (Excluding HIH)



The apparent trend in Figure 4.2 to a plateau in numbers of claims in the last five years is a little misleading because of the varying market share of HIH in recent years. As shown in Figure 4.1 at the beginning of this Section of the report, the number of total claims in the Scheme (including HIH in past years) has shown a reducing trend in recent years.

We estimate there will be approximately 2,700 claims in respect of the 2003/04 accident year, 8.5% down from 2,950 projected last year. We have made a number of minor changes to the reporting pattern in line with the emerging experience.

We would ideally compare the number of claims with the exposed workforce to establish the claim frequency. Unfortunately the employee number data provided to us from the insurer data collected by WorkSafe is incorrect, and we have therefore not been able to undertake this analysis. These numbers have been incorrect for a number of years. The shortcomings of the employee count are discussed in Appendix A.

While our analysis is necessarily limited by the problems with exposure data referred to above, the claim frequency calculated by reference to net earned premium of insurers appears to have continued to reduce as shown in Table 4.3

below. (While we would ideally have used gross earned premium for this comparison, we imagine that the impact of movements in reinsurance rates for this class of business would not materially alter the conclusion.)

Figure 4.3 – Claim Frequency (excluding HIH)

Financial Year	Net Earned Premium (1) \$000	Ultimate Claims (2) \$000	Claims per \$1M EP (2)/(1)*1000 \$000
2000/01	49,988	2,880	58
2001/02	60,149	2,907	48
2002/03	66,165	2,884	44
2003/04	70,704	2,700	38
Average	61,752	2,842	46

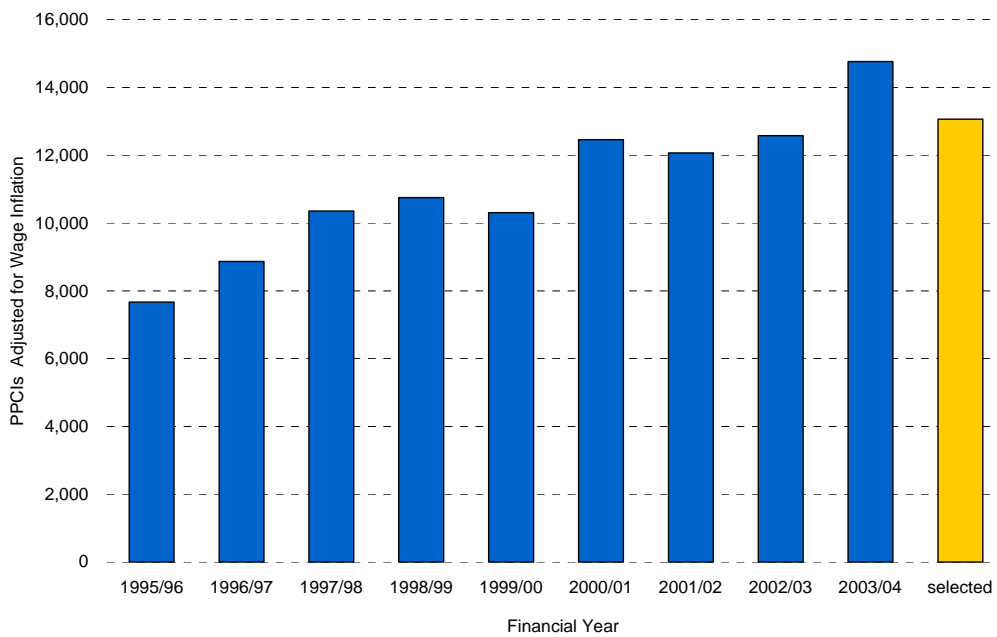
4.5 Valuation Assumptions: Average Claim Size excluding the Tail

Figure 4.4 shows the historical PPCIs calculated on a financial year basis, and adjusted for historical wage inflation. Note that only the first eight development years of experience are included in this part of the analysis as the tail is considered separately.

The chart shows a strong increasing trend in the average claim size in each year, indicating either (a) the presence of a relatively high level of superimposed inflation in the Scheme or (b) that the reduction in claim frequency has been due mainly to the elimination of small claims. The 2003/04 financial year is particularly high due to claim payments on large claims in the 1997/98 and 2003/04 accident years.

The last column on the chart shows our selected PPCI for the first eight development years (the tail PPCI is discussed below).

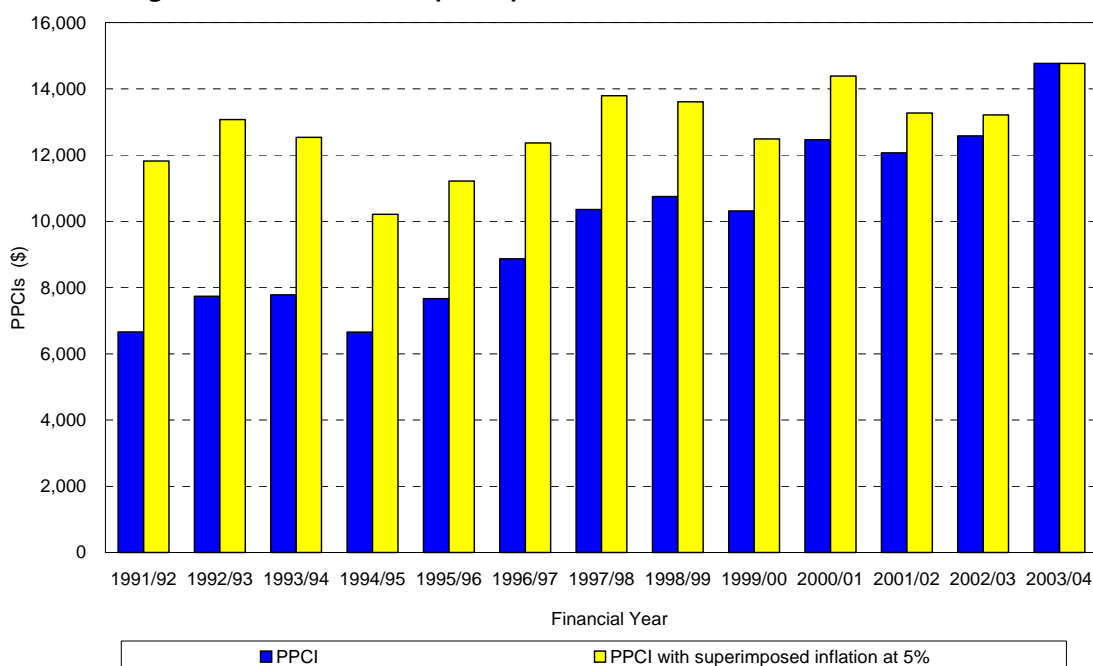
Figure 4.4 – Payments per Claim Incurred excluding “Tail” Payments



We have assumed a current value PPCI for the first eight development years of \$13,065, which compares to \$13,418 that would have been assumed if the basis we used last year were rolled forward with expected claim inflation. This is consistent with the recent experience (except compared to the 2003/04 payment year due to large payments in 1997/98 and 2003/04), after allowing for historical superimposed inflation at our assumed level.

Figure 4.5 below shows the same information as Figure 4.4, but with adjustment for historical superimposed inflation at an assumed rate of 5% per annum.

Figure 4.5 – Effect of Superimposed Inflation on the Historical PPCIs



The assumed PPCI for the first eight development years is slightly below the equivalent value from the previous valuation. The payment patterns are also largely unchanged. In selecting the PPCI and the payment patterns, we have examined the recent experience of the scheme, and adopted patterns that reflect this experience. (The derivation of the PPCI valuation assumptions is set out in Appendix E).

4.6 Valuation Assumptions: The Tail

Selection of valuation assumptions for the tail is made more difficult by the shortage of development history. Prior to 2001/2002, the insurer statutory returns grouped all accident years more than 8 years old. For the last three years, at least 16 individual years are shown, with grouping of all prior years. The short available history of the development of claims beyond year 8 means that it is difficult to properly analyse the continuance experience in the tail. This will become more feasible as the number of years of returns with the 16 year run-off grows.

Commutations

Commutations are a feature of the Scheme which affects the size and pattern of payments over time. The data provided to us for this valuation indicates that there were 124 payments under Section 74 (Commutations) during the year, totalling \$12.8 million. Of this amount, 15.6% is paid in respect of tail claims

(those which are more than eight years old). This is much higher than other types of payment, where only 9% of payments in the 2003/04 year relate to tail claims.

Claim Management Practice

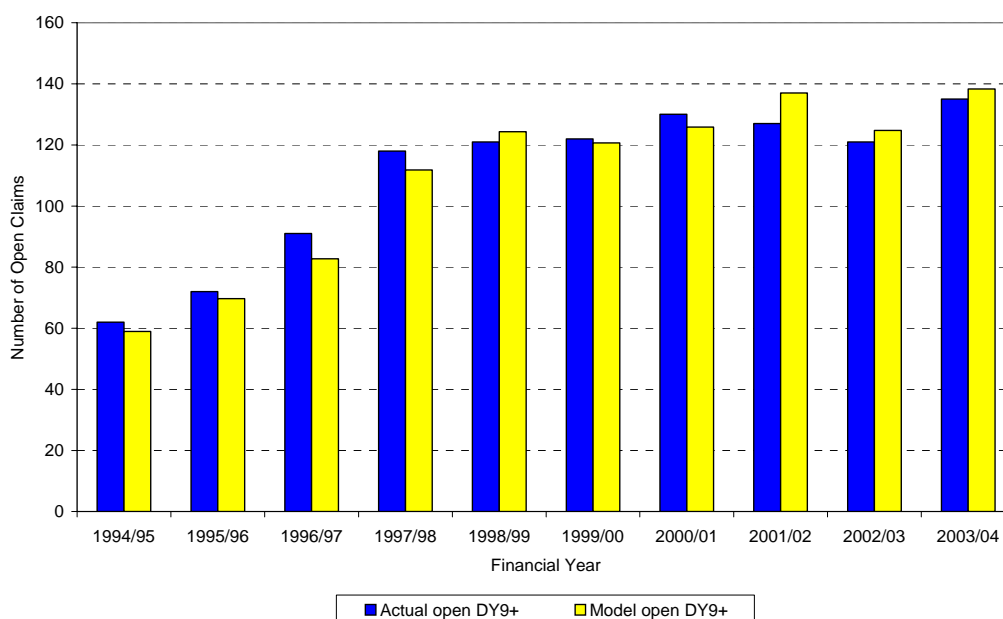
Claim finalisation rates this year have been much lower than expected, which appears to be a direct result of a change in the claims management for one particular insurer. According to the report provided by this insurer, they have been taking a more conservative approach to finalisations to prevent a large number of re-opened claims from emerging in the future and so may not ultimately translate into more claims in the tail. We have taken this into account when modelling the closure rate average size of claims in the tail.

Rate of Claim Closure

As in previous years, we have assumed that the stock of open claims will take around 30 years to fully run off, as many tail claimants are on weekly benefits with the potential to remain on benefit until age 65, and can continue to receive medical benefits for the remainder of their lives.

We have examined the recent experience and modelled open claim numbers to select an appropriate closure rate for the tail valuation. The selections are tested by “projecting” historical numbers of open claims and comparing them with the actual results. Figure 4.6 compares the modelled open claims to actual open claims.

Figure 4.6 – Actual vs. Modelled Open Claims for Development Years 9 & Higher



At this investigation we have assumed a tail claim closure rate of 21% per annum. This represents a 1% increase from last year's valuation and reflects the effect of claim management and commutation activity. At this point in time we have taken a cautious approach to the selection of this assumption; however it is possible that this rate could increase further in the future. The actual closure rate will vary from year to year depending on the number of commutations, changes in claim management activity, etc.

Average Payments to Open Tail Claims

On the basis of the analysis conducted in previous years, and the analysis set out in Appendix E, the average payment on open claims in the tail in recent years is in the range of \$30,000 to \$40,000 each year that they remain open.

At this investigation, we have selected the average payment per open claim to remain at \$38,150 per annum similar to the previous valuation in real terms. Reviewing the more recent evidence suggests that the rate of payment has stabilised despite wage inflation.

We believe that one of the significant drivers of superimposed inflation is longer claim duration – which is modelled explicitly through the closure rate used in valuing the tail claims, but which is not explicitly modelled in the PPCI analysis used for earlier development years. The interaction of the closure rate, average size, and superimposed inflation is complex. Similar to the previous investigation, we have applied a superimposed inflation rate of 3% to the tail projection from that of the earlier development years at this valuation.

We have projected the future tail payments based on an average closure rate of 21% per annum and an average payment per open claim of \$38,150 per annum to arrive at an average PPCI for the 'tail'.

Selected PPCIs

The analysis we have done of payments in the tail suggests that it is appropriate to use separate PPCIs for different accident periods. For these purposes we have separated accident years into two groups:

- up to and including 1998/99
- 1999/00 and later.

This reflects our view that claims in the more recent accident years will experience higher average payments, associated with longer average duration. This pressure on claim duration is a feature of workers' compensation schemes

across Australia, particularly where claimants continue to experience difficulty in finding a job after many years out of the permanent workforce.

The selected tail PPCIs are as follows:

- \$1,830 – accident years up to and including 1998/99 (compared to \$1,836 last year in current year dollars)
- \$2,300 – accident years 1999/00 and later (compared to \$2,106 last year in current year dollars).

These assumptions have increased from our previous valuation, partially due to the greater number of open claims resulting from the change in claims management practices. Some of this increase has been tempered by the higher assumed rate of claim termination.

5 Outstanding Claims Valuation

In this section we outline the results of our valuation of the Scheme's outstanding claims liabilities using the models and assumptions described in Section 3 and 4.

Please note that our estimates do not include liabilities now borne by the Nominal Insurer.

5.1 Insurers' Reserves

Each year the insurers are required to submit their estimates of outstanding claim liabilities to WorkSafe (via Form B). This information is then collated by WorkSafe for the Committee.

At this valuation we asked the insurers to provide separately the central estimates calculated by their actuaries. This information revealed that there is a variety of reporting practices amongst insurers, with not all insurers providing details of their provisions after margins to WorkSafe.

5.2 Summary of Valuation Results

A summary of the net valuation results subdivided by accident year is compared with Insurer Reserves at 30 June 2004, in Table 5.1.

Table 5.1 – Summary of Results at 30 June 2004

Accident Year	Net Central Estimate ¹	Net Outstanding Provision ¹	Insurer Reserves 2004	Difference between Trowbridge and Insurer Estimates	
	\$000	\$000	\$000	\$000	%
<i>95/96 and Prior</i>	15,323	18,678	18,673	5	0%
1996/97	4,919	5,997	4,383	1,614	27%
1997/98	7,359	8,971	5,706	3,265	36%
1998/99	10,243	12,486	5,120	7,366	59%
1999/00	14,970	18,248	10,991	7,257	40%
2000/01	18,452	22,494	15,305	7,189	32%
2001/02	23,306	28,411	22,219	6,192	22%
2002/03	29,614	36,100	33,169	2,931	8%
2003/04	37,736	46,000	44,573	1,427	3%
TOTAL	161,924	197,385	160,139	37,246	19%

¹ Including claims handling expenses of 6% of net claims and prudential margin of 15%

5.3 Comments on Results

Comparison with Insurer Reserves

Our estimated net outstanding claims provision of \$197 million is 4% higher than the \$190 million we estimated last year. It is some \$37 million, or 23%, higher than the combined insurer provisions. However, last year our estimated provision of \$190 million was 33% higher than that of the insurers. The reduction in the difference between our assessment and that of insurers is due to both a strengthening of insurers' provisions over the year and a weakening of our recommended provision in response to emerging experience

5.4 Scheme Profitability

In Figure 5.1 below we show:

9. The combined profit reported by each insurer on a financial year basis. This includes the performance reported by the HIH group up until 2001.
10. The profit for each year, recast to be on the basis of the claims incurred in each year (i.e. accident year basis), consistent with the actuarial valuation. The results shown for years 2000/01 and prior are taken from our previous valuation - and include HIH. Ideally we would have updated the analysis to include the results of the latest actuarial valuation, however this proved problematic because of insufficient HIH-specific premium data prior to the mid 1990's. This means that the impact of the changes to the valuation basis from this valuation have not flowed through into the accident year analysis for 2000/01 and earlier in this chart. However the changes to the basis are relatively small, and we are satisfied that the general impression of the results as shown in the chart are appropriate.
11. The average premium rate charged to employers by insurers. This includes the HIH group up until 2001.

Figure 5.1 – Scheme Profitability (Includes HIH)

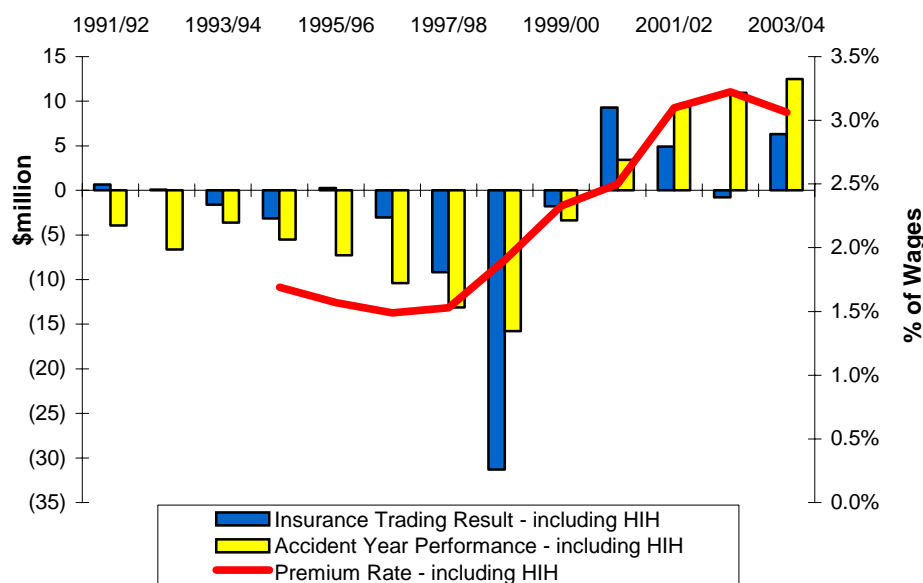


Figure 5.1 shows that on the basis of our assessment, business written from 1991/92 to 1999/00 was at unprofitable premium rates. The insurers typically reported losses during this period, with a very large loss reported in 1998/99 as the insurers strengthened reserves considerably for all prior years.

With substantial increases in premiums in recent years, the insurers are now reporting profits for this business. Insurers will need to be making reasonable levels of profits to establish margins in excess of central estimates and to service their capital if they are to continue to offer this insurance in the Territory.

From the viewpoint of employers and the community, average insurance premiums as a percentage of wages have fallen slightly in 2003/04 as insurers have reacted to improved profitability and potential competition across many classes of business. No doubt the results for individual employers and particular industries will have shown wider variation than this, but with the existing data it is not possible to comment reliably at that level of detail.

5.5 Movement in Trowbridge Estimates

Based on our estimates, the movement in incurred claims cost for the scheme in the last financial year is as follows:

Table 5.2 – Incurred Claims Cost for the 2003/04 Financial Year ¹

	\$000
Net Central Estimate at beginning of year (1)	165,257
Net Claims Payments (2)	46,385
Net Central Estimate at end of year (3)	171,639
Incurred Claims ((3)+(2)-(1))	52,767

¹ Including CHE

The major components of this movement are set out in Table 5.3.

Table 5.3 – Components of Incurred Claims Cost

	\$000
Cost of “run off” claims	
Change in ultimate numbers	(956)
Payments higher than expected	1,661
Interest expense due to 1 year's less inflation & discounting	7,388
Change in average payment per claim (excluding tail)	(754)
Change in average payment per claim in the "tail" and runoff rate	1,904
Change in Discount Rate	(4,371)
Change in Reinsurance Recovery	(1,357)
	<u>3,515</u>
Cost of New Claims	<u>49,254</u>
Total	52,769

After allowing for the cost of new claims, the most significant contributing items are:

- *interest expense*. This is a standard feature of the valuation process. It reflects the fact that the future claim costs have one year's less discounting applied in determining the value of outstanding claims, as they are one year closer to payment
- the increase in the discount rate in line with movements in Australian interest rates over the year
- an increase in the ‘run-off’ rate from 20% to 21% for claims in the tail
- *claim payments* being higher than expected
- an increase in the reinsurance recovery rate (from 2% to 3%).

5.6 Movement in Insurer Net Central Estimates

Table 5.4 below shows the incurred claim cost based on the insurers returns. Note that data from the Nominal Insurer is not included in this calculation.

Table 5.4 - Incurred Claim Cost in 2003/04 (Insurer data)

	\$000
Reserves at beginning of year (1)	142,052
Net Claims Payments (2)	46,385
Reserves at end of year (3)	160,139
Incurred Claims ((3)+(2)-(1))	64,472

A significant source of the increase in incurred claims cost is the addition of a new year's claims. Table 5.5 splits the incurred cost into two parts: the movement due to a new year of claims, and the change in respect of prior years. This includes the unwinding of the discount for prior years' claims.

For comparison, Table 5.5 also shows the movement in the Trowbridge provision estimate, on an equivalent basis.

Table 5.5 - Comparison of Changes in Reserve Basis

	Trowbridge \$000	Insurers \$000
Gross Incurred Cost in 2003/04	53,726	64,472
Cost of New Claims	55,222	53,795
Change in Prior Years	-1,496	10,677

It appears that insurers have again substantially increased their provisions for older years.

6 Premiums

Under Section 145(1) of the Work Health Act, one of the functions of the Committee is to “monitor premium rates offered for workers’ compensation in the Territory”.

In this section we have reviewed the premium rates in the NT, and provided a brief comparison with other Australian jurisdictions. Unless otherwise stated, all analysis of NT performance in this section has been conducted excluding information relating to the HIH Group.

6.1 Comparison to Earned Premiums

Table 6.1 summarises the performance of the Scheme over the last seven accident years, comparing the earned premiums to the expected cost of claims incurred each year.

For the purpose of comparison between premiums and claims costs we have adopted a discount rate of 5.75% pa in determining the cost of claims for each accident year. This is consistent with the discount rate used in the valuation of outstanding claims.

Table 6.1 – Earned Premium vs Accident Year Cost

Accident Year	Earned Premium	Total Net Claims Cost	Loss Ratio 2004	Loss Ratio 2003	Loss Ratio 2002
	\$000	\$000	%	%	%
1997/98	22,472	28,460	127	118	120
1998/99	25,825	32,895	127	119	123
1999/00	40,779	35,604	87	86	88
2000/01	49,988	38,572	77	74	76
2001/02	60,149	41,309	69	70	69
2002/03	66,165	43,779	66	69	
2003/04	70,704	45,641	65		

The loss ratios in Table 6.1 account only for claims cost. They do not include administration expenses or commissions.

Although the most recent two accident years are still in the early stages of development, the increase in premiums during the last four years appears to have generated much more sustainable loss ratios for insurers than earlier years.

6.2 Development of the Break-even Premium

To take the analysis one step further, we have made an allowance for expenses to estimate the “break-even premium” for insurers. This is the amount we estimate insurers need to charge to cover claims costs and expenses. The actual premium charged should be higher than this break-even level, to provide a profit to the insurers on the risk margins and capital that they need to hold in order to meet prudential as well as commercial requirements.

Based on analysis of insurers’ accounts and industry experience, we have built loadings into the break-even premium at the following levels:

- administration expenses - 18% of claim costs
- commission - 4% of net premiums.

Table 6.2 shows the results of the break-even premium calculation, including a forecast of the cost for 2004/05. The results in the table highlight the difference between the cost of the Scheme and the premium rates that have been charged by insurers over time.

Table 6.2- Comparison of Premiums Charged and Expected “Break-even Premiums”

Accident Year	Wages ¹ \$m	Gross Incurred Costs ² \$m	Expenses, Commission \$m	"Break-even Premium Rate"	Average Premium Rate Charged by Insurers
				%	%
1997/98	1,437	29.3	6.5	2.5	1.6
1998/99	1,586	33.9	7.5	2.6	1.9
1999/00	1,859	36.7	8.2	2.4	2.4
2000/01	1,924	39.8	8.8	2.5	2.9
2001/02	2,130	42.6	9.5	2.4	3.1
2002/03	2,170	45.1	10.0	2.5	3.2
2003/04	2,201	47.1	10.5	2.6	3.1
2004/05 ³ (forecast)	2,289	50.4	11.2	2.7	

1 Source: ANZSIC Data - excluding HIH/FAI/WMG

2 Including 4% inflation, 5% superimposed; discounted to middle of accident year at 5.75% pa.

3 Assumes 4% waggeroll growth, 0% claim number growth, 5.75% pa discount, 4% pa inflation, 5% pa superimposed

The assumptions used for the forecast for the 2004/05 year (based on recent experience) include:

- increase in total wage roll of 4% for 2003/04 (i.e. no assumed growth in the number of employees covered)
- no increase in claim numbers over 2003/04 levels

- an increase in the average claim size to allow for one year's wage and superimposed inflation at the rates assumed in the valuation.

We have the following comments on the break-even premium analysis:

- If an insurer were to hold free capital in respect of its Northern Territory business equal to one year's premium as well as a 15% risk margin in its insurance liabilities, it would need to charge rates of the order of 25% more than our "breakeven premium" in order to return 12% per annum after tax to its shareholders. While different insurers will have different capital and return targets, such parameters seem a reasonable benchmark to us in a commercial insurance environment. Allowing for expenses and the cost of capital would suggest that business written since the 2000/01 financial year should be returning an adequate (but not excessive) profit for insurers (taken as a whole)
- The break-even premium is estimated to be quite stable in recent years, despite the existence of superimposed inflation in the Scheme. Whilst we have not had the data available to investigate this in detail, one possible explanation is the steady reduction in the number of claims being reported. Quite apart from any improvements in occupational health and safety, in an environment of increasing premiums it may be that employers are opting to pay smaller claims directly, rather than passing them through the insurer (fearing the consequence on premium calculations in future years)
- We have projected a slight increase in the break-even premium for 2004/05 compared with earlier years. This reflects the impact of superimposed inflation over the long term, which has the claims costs growing faster than the wage roll.

6.3 Comparison with other Australian jurisdictions

Meaningful comparisons with other Australian jurisdictions are difficult because:

- benefits are not the same throughout Australia
- some jurisdictions have premiums established centrally, others are privately underwritten.

The Committee has compared average premiums with those charged in other jurisdictions in the past and we have updated the information on average premium rates where available.

For the Committee's information, we have again provided the table of comparison of average premium rates for previous years.

Table 6.3- Comparison of Average Premiums Rates Across Jurisdictions

Year	NT ¹	Comm	SA	Vic	NSW	WA	Qld	Tas	ACT
	%	%	%	%	%	%	%	%	%
1994/95	1.7	1.6	2.9	2.3	1.8	2.7	1.7	2.9	2.3
1995/96	1.6	5.2	2.9	2.0	2.5	2.6	1.9	3.0	2.4
1996/97	1.5	5.0	2.9	1.8	2.8	2.7	2.0	3.2	2.5
1997/98	1.5	3.0	2.9	1.8	2.8	2.4	2.1	3.1	2.1
1998/99	1.9	2.6	2.9	1.9	2.8	2.7	2.1	2.7	2.1
1999/00	2.3	2.8	2.9	1.9	2.8	3.1	1.9	2.9	2.6
2000/01	2.9	3.1	2.9	2.2	2.8	3.0	1.8	3.1	2.5
2001/02	3.1	3.4	2.5	2.2	2.8	2.6	1.6	3.1	3.0
2002/03	3.2	3.1	2.5	2.2	2.8	2.5	1.6	2.9	n/a
2003/04	3.1	3.1	3.0	2.2	2.6	2.3	1.6	n/a	n/a

¹ The NT rate has not been adjusted to remove the HIH Group

Note: The figures shown for the Commonwealth after 1995 are for the ACT Government service only.

Source: Workers' Compensation Arrangements in Australia and New Zealand, Heads of Workplace Safety and Compensation Authorities, October 2003

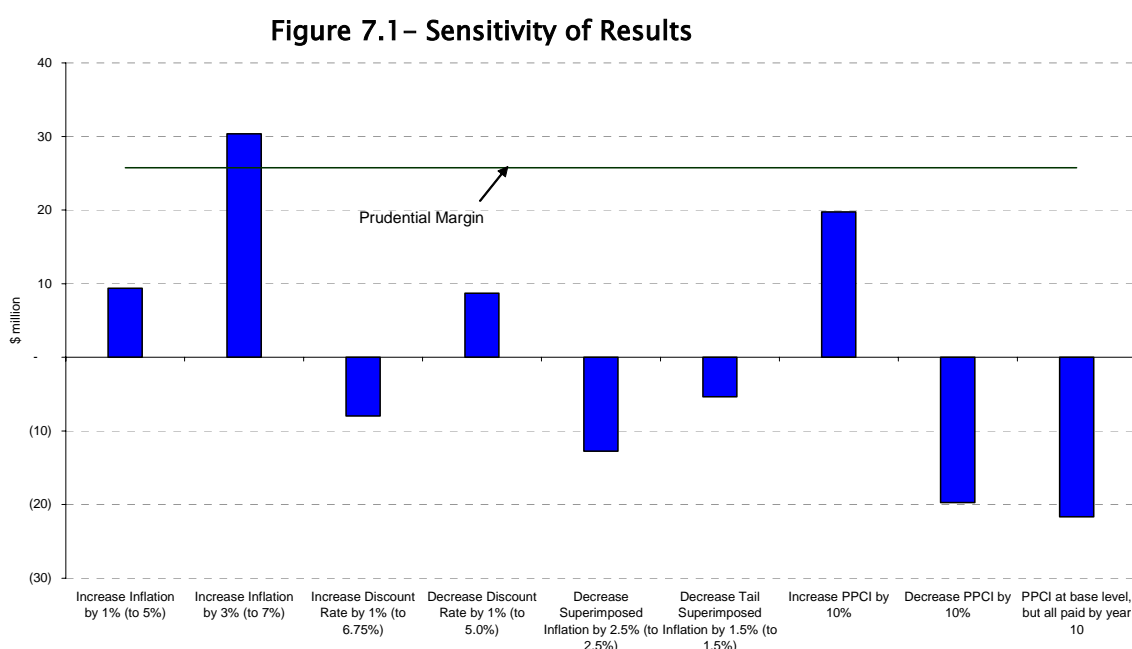
In terms of the rates shown above, please note the following:

- These premium rates have not been standardised to a common industry mix, and so reflect the different workforce compositions as well as the different benefit structures in each jurisdiction
- Comcare, South Australia and the Northern Territory are the only jurisdictions without common law. Victoria re-introduced common law rights (backdated) for accidents occurring after 12 November 1997 following the election of the Labor Government in 1999
- The ACT, Tasmania, Western Australia and the Northern Territory are privately underwritten; the other Schemes are monopoly schemes
- The rates quoted are the averages rates charged; they do not necessarily reflect the rates required to cover expected claims costs (ie. they will have varying levels of profitability).

7 Sensitivity of Results

The valuation results are sensitive to the assumptions used, and as previously noted, the selection of appropriate assumptions is subject to uncertainty.

The effect on the total outstanding claims liability (industry expenses and prudential margin) of changing some of the valuation assumptions is shown in Figure 7.1 below. The “buffer” provided by the 15% prudential margin is also shown.



We have the following comments on the analysis shown in Figure 7.1:

- A change of 1% in either the inflation or discount rate produces a movement in the valuation of around \$9 million. Note that if both assumptions were to increase or decrease by the same amount then the impact on the valuation is negligible. As noted previously it is the gap between the two rates that drives the change in net assets remaining after accounting for liabilities. A movement of 1% in these rates is substantial in terms of market conditions. We have also shown the impact of a 3% increase in inflation rates for illustrative purposes, but do not consider it a likely outcome in isolation (a movement of this magnitude would be expected to be largely offset by an increase in the discount rate)
- The sensitivity of the valuation result to our selected PPCI assumptions is

also shown. A 10% change, in absolute terms, will result in a movement in our valuation result of close to \$20 million

- The effect of a change to the assumed level of superimposed inflation has also been tested. Halving the rate of superimposed inflation firstly overall, and then only in the tail, can produce material movements in the valuation result.

8 Reliances and Limitations

We have relied on data provided by WorkSafe which included copies of the insurers' Forms A and B. Appendix A outlines the data we received and notes the considerable level of unreliability around various aspects of it.

While we have conducted reasonableness checks regarding the accuracy of the information we have not independently verified it. If for any reason, there is any material error or omission in the information provided, then this may materially impact our estimates.

The nature of workers' compensation liabilities means that there is inherent uncertainty in any estimates of outstanding claim liabilities. Deviations from our estimates are normal and are to be expected.

The purpose of the report is outlined in Section 1 above. It is not intended for any other purpose. In particular, sections of the report that analyse premium adequacy, are intended as a monitoring tool only. Use of this information for any other purpose (eg. premium pricing) is not appropriate.

The report should be considered as a whole. Consultants from Trowbridge Deloitte are available to answer any queries, and the reader should seek such advice before drawing conclusions on any issue in doubt.

This report is intended for the use of the Scheme Monitoring Committee. While it may be included on the NT Government website as an aid to understanding the development of the Scheme, Trowbridge Deloitte accepts no responsibility for any action by third parties which may be taken based on any aspect of this report.

Part III Appendices

(A) Information Provided

A.1 Sources of Claims and Other Data

At this investigation, we were supplied with the following information:

- Forms A and B for each insurer and for combined industry for financial year 2003/2004. (This included profit and loss statements and claims information). Prior year's information was provided at the previous investigations.
- ANZSIC Data from individual insurers and combined for 2003/2004 financial year, showing
 - policies written
 - employee numbers covered
 - wages paid
 - premiums receivedby major ANZSIC code (prior years information was provided at previous investigations).
- Payment information from the Office of Work Health and Electrical Safety system by accident year for the financial year 2003/2004 (we have previously been supplied with this information for prior financial years)
- For all claims that have been on benefit for longer than seven years post accident, individual claim data which included dates of accident, report and finalisation (if applicable) and total benefits paid.

A.2 Data Reconciliation and Adequacy

We reviewed the data provided for general reasonableness and attempted to reconcile the insurers' data (from forms A and B) with that provided directly from the system.

The data from these two sources reconciled satisfactorily this year at a group level (the discrepancy within 1%) but that the results by individual accident years continues to show considerable variation. These differences add uncertainty to the valuation results. Table A.1 below summarises the differences in relation to the 2003/04 financial year.

Table A.1 – Form B and Heads of Damage payment comparison

Accident Year	Paid in 2003/04 Financial Year		% Difference
	From Form B	From NT Worksafe	
	\$000	\$000	
1995/96 and prior	6,061	5,114	16%
1996/97	1,902	1,872	2%
1997/98	4,098	1,560	62%
1998/99	3,141	5,509	-75%
1999/00	3,153	3,482	-10%
2000/01	4,635	5,015	-8%
2001/02	5,716	5,760	-1%
2002/03	9,916	9,925	0%
2003/04	9,222	9,307	-1%
TOTAL	47,844	47,543	1%

The ANZSIC data provided as at 30 June 2004 was complete, although the employee details for all insurers again appeared to be incorrect. It is our understanding that a number of employers do not keep accurate records of employee numbers for ANZSIC purposes – some might return the number of employees used during the year, or not take into account part-time work. This ultimately overstates the employee numbers, limiting the use of this data. The other information – wages, policies written and premiums is believed to be correct and was useful for the purposes of our analysis.

Table A.2 summarises the differences between 2003 and 2004.

Table A.2 – Comparison 2003 and 2004 ANZSIC Employee Numbers

	2003	2004	% change
A. Agriculture, Forestry & Fishing	5,004	5,251	5%
B. Mining	9,736	7,198	-26%
C. Manufacturing	3,773	4,904	30%
D. Electricity, Gas & Water Supply	787	1,445	84%
E. Construction	12,689	16,235	28%
F. Wholesale Trade	3,282	3,014	-8%
G. Retail Trade	12,002	12,513	4%
H. Accommodation, Cafes & Restaurants	15,972	15,027	-6%
I. Transport & Storage	6,703	5,900	-12%
J. Communication Services	710	422	-41%
K. Finance & Insurance	1,208	1,125	-7%
L. Property & Business Services	9,605	10,660	11%
M. Government Administration & Defence	13,559	16,129	19%
N. Education	5,735	9,782	71%
O. Health & Community Services	5,575	5,740	3%
P. Cultural & Recreational Services	5,258	4,437	-16%
Q. Personal & Other Services	6,623	2,881	-57%
Total	118,221	122,663	4%

The data limitations described above introduce further uncertainty in the results of our analysis of the Scheme liabilities.

B Claim Numbers

The chain ladder method estimates the ultimate number of reported claims in each accident year by analysing past claim reporting patterns and estimating a pattern for the future.

The steps are as follows:

1. Produce a triangle of cumulative claim reports, subdivided by accident year and development year.
2. Calculate development ratios (or chain ladder factors) by dividing the cumulative reports to the end of development year x by the cumulative reports to the end of development year $x-1$.
3. Select a development ratio for each development year, based on a combination of the historical experience, application of judgement, and expectations for the future.
4. Apply these ratios to cumulative reports to date to project the ultimate number of claims in each underwriting year.

B.1 Chain Ladder (Excluding HIH Group)

This table shows the chain ladder analysis for the number of claims reported.

Appendix B.1 - Chain Ladder (Excluding HIH Group)

Cumulative Number of Claims

Accident Year	1	2	3	4	5	6	7	8	9+
1988/89	2,208	2,425	2,447	2,449	2,451	2,451	2,453	2,454	2,455
1989/90	2,265	2,616	2,628	2,632	2,633	2,635	2,635	2,635	2,646
1990/91	2,242	2,483	2,497	2,499	2,502	2,504	2,506	2,506	2,516
1991/92	1,890	2,136	2,146	2,148	2,148	2,149	2,149	2,149	2,158
1992/93	1,923	2,114	2,120	2,123	2,128	2,131	2,131	2,133	2,138
1993/94	1,853	1,997	2,004	2,012	2,015	2,016	2,017	2,018	2,021
1994/95	1,792	2,027	2,035	2,038	2,040	2,043	2,045	2,045	2,048
1995/96	2,150	2,434	2,442	2,446	2,446	2,447	2,449	2,451	2,454
1996/97	2,190	2,475	2,486	2,488	2,490	2,490	2,494	2,495	
1997/98	2,406	2,799	2,819	2,827	2,827	2,829	2,830		
1998/99	2,527	2,897	2,910	2,916	2,920	2,920			
1999/00	2,655	2,943	2,960	2,961	2,962				
2000/01	2,566	2,847	2,859	2,863					
2001/02	2,581	2,879	2,884						
2002/03	2,599	2,847							
2003/04	2,338								

Chain Ladder Factors

Accident Year	1:2	2:3	3:4	4:5	5:6	6:7	7:8	8:9
1988/89	1.0983	1.0091	1.0008	1.0008	1.0000	1.0008	1.0004	1.0004
1989/90	1.1550	1.0046	1.0015	1.0004	1.0008	1.0000	1.0000	1.0042
1990/91	1.1075	1.0056	1.0008	1.0012	1.0008	1.0008	1.0000	1.0040
1991/92	1.1302	1.0047	1.0009	1.0000	1.0005	1.0000	1.0000	1.0042
1992/93	1.0993	1.0028	1.0014	1.0024	1.0014	1.0000	1.0009	1.0023
1993/94	1.0777	1.0035	1.0040	1.0015	1.0005	1.0005	1.0005	1.0015
1994/95	1.1311	1.0039	1.0015	1.0010	1.0015	1.0010	1.0000	1.0015
1995/96	1.1321	1.0033	1.0016	1.0000	1.0004	1.0008	1.0008	1.0012
1996/97	1.1301	1.0044	1.0008	1.0008	1.0000	1.0016	1.0004	
1997/98	1.1633	1.0071	1.0028	1.0000	1.0007	1.0004		
1998/99	1.1464	1.0045	1.0021	1.0014	1.0000			
1999/00	1.1085	1.0058	1.0003	1.0003				
2000/01	1.1095	1.0042	1.0014					
2001/02	1.1155	1.0017						
2002/03	1.0954							

Summary statistics

	1:2	2:3	3:4	4:5	5:6	6:7	7:8	tail
Maximum	1.1633	1.0091	1.0040	1.0024	1.0015	1.0016	1.0009	1.0042
Minimum	1.0777	1.0017	1.0003	1.0000	1.0000	1.0000	1.0000	1.0004
Simple average	1.1200	1.0047	1.0015	1.0008	1.0006	1.0006	1.0003	1.0024
Column sum average	1.1203	1.0047	1.0015	1.0008	1.0006	1.0006	1.0003	1.0024
Standard deviation	0.0239	0.0018	0.0010	0.0007	0.0005	0.0005	0.0004	0.0015

Selected development factors

	1:2	2:3	3:4	4:5	5:6	6:7	7:8	tail
Selected ratios	1.1400	1.0050	1.0020	1.0010	1.0008	1.0006	1.0004	1.0030
<i>Selected for 6/03 valn</i>	1.1200	1.0050	1.0025	1.0010	1.0008	1.0006	1.0004	1.0035
<i>Selected for 6/02 valn</i>	1.1250	1.0055	1.0025	1.0010	1.0008	1.0005	1.0004	1.0035
Cumulative development factor	1.1547	1.0129	1.0078	1.0058	1.0048	1.0040	1.0034	1.0030
Percentage developed	0.8661	0.9873	0.9922	0.9942	0.9952	0.9960	0.9966	0.9970
Future % development factors	0.1339	0.0127	0.0078	0.0058	0.0048	0.0040	0.0034	0.0030

Projected Number of Claims - Incremental

Accident Year	1	2	3	4	5	6	7	8	9+	Ultimate
1988/89	2,208	217	22	2	2	0	2	1	1	2,455
1989/90	2,265	351	12	4	1	2	0	0	11	2,646
1990/91	2,242	241	14	2	3	2	2	0	10	2,516
1991/92	1,890	246	10	2	0	1	0	0	9	2,158
1992/93	1,923	191	6	3	5	3	0	2	5	2,138
1993/94	1,853	144	7	8	3	1	1	1	3	2,021
1994/95	1,792	235	8	3	2	3	2	0	3	2,048
1995/96	2,150	284	8	4	0	1	2	2	3	2,454
1996/97	2,190	285	11	2	2	0	4	1	7	2,502
1997/98	2,406	393	20	8	0	2	1	1	8	2,840
1998/99	2,527	370	13	6	4	0	2	1	9	2,932
1999/00	2,655	288	17	1	1	2	2	1	9	2,976
2000/01	2,566	281	12	4	3	2	2	1	9	2,880
2001/02	2,581	298	5	6	3	2	2	1	9	2,907
2002/03	2,599	248	14	6	3	2	2	1	9	2,884
2003/04	2,338	327	13	5	3	2	2	1	8	2,700

Ⓒ Claim Payments

C.1 Payment Information (Excluding HIH Group)

Report to Scheme Monitoring Committee

Appendix C.1 Payment Information (Excluding HIH Group)

Incremental claims payments (\$000)

Accident Year	1	2	3	4	5	6	7	8	9+	AccYr Total	Pt Yr Total
1980/81									384	384	
1981/82								102	641	742	
1982/83							481	78	1,061	1,620	
1983/84						1,111	681	631	1,060	3,483	
1984/85					905	379	871	507	1,135	3,797	
1985/86				899	779	790	901	251	874	4,493	
1986/87			984	891	1,098	903	719	1,240	1,364	7,199	
1987/88		2,387	1,143	1,064	973	947	940	480	916	8,849	
1988/89	2,770	2,543	1,196	1,085	1,286	814	584	865	1,241	12,384	10,024
1989/90	3,609	3,631	2,058	2,285	1,789	1,350	1,165	1,281	3,402	20,570	10,742
1990/91	3,288	2,935	1,510	1,280	883	935	709	1,365	4,441	17,345	13,630
1991/92	3,034	3,044	1,198	694	791	719	1,001	783	5,566	16,831	13,455
1992/93	3,836	3,592	1,540	1,185	1,562	1,566	1,271	530	4,704	19,786	15,012
1993/94	2,957	2,621	1,599	1,628	1,414	1,100	1,386	961	6,932	20,597	14,684
1994/95	3,304	3,439	1,890	2,391	1,775	1,220	2,021	1,056	4,123	21,219	12,820
1995/96	3,807	4,402	3,414	2,159	2,171	1,583	1,598	1,268	6,061	26,463	14,701
1996/97	4,781	5,690	3,358	3,343	3,605	2,128	1,213	1,902		26,020	18,213
1997/98	4,955	6,388	3,430	3,562	2,692	2,523	4,098			27,648	25,198
1998/99	6,103	7,228	4,951	3,406	4,412	3,141				29,241	27,378
1999/00	6,419	8,208	5,164	4,003	3,153					26,947	31,293
2000/01	7,299	8,212	5,747	4,635						25,893	36,894
2001/02	7,493	9,612	5,716							22,821	38,681
2002/03	7,682	9,916								17,598	40,583
2003/04	9,222									9,222	47,844

Inflation-adjusted claim payments (\$000)

Accident Year	1	2	3	4	5	6	7	8	9+	AccYr Total	Pt Yr Total
1980/81									571	571	
1981/82								151	889	1,040	
1982/83							715	108	1,416	2,239	
1983/84						1,651	945	842	1,383	4,821	
1984/85					1,345	526	1,163	661	1,473	5,168	
1985/86				1,336	1,081	1,054	1,175	325	1,117	6,088	
1986/87			1,461	1,236	1,466	1,179	933	1,585	1,732	9,591	
1987/88		3,547	1,585	1,420	1,269	1,229	1,202	609	1,150	12,011	
1988/89	4,116	3,529	1,596	1,416	1,669	1,040	742	1,086	1,515	16,708	14,892
1989/90	5,008	4,846	2,685	2,966	2,287	1,713	1,463	1,564	3,907	26,439	14,906
1990/91	4,388	3,830	1,960	1,636	1,120	1,174	866	1,568	5,351	21,893	18,191
1991/92	3,960	3,951	1,532	881	993	878	1,150	944	5,989	20,277	17,559
1992/93	4,979	4,592	1,954	1,488	1,907	1,798	1,532	570	4,974	23,795	19,485
1993/94	3,780	3,327	2,007	1,987	1,624	1,326	1,491	1,016	7,409	23,967	18,771
1994/95	4,193	4,318	2,308	2,746	2,139	1,313	2,137	1,129	4,082	24,364	16,272
1995/96	4,781	5,374	3,921	2,602	2,336	1,674	1,708	1,255	6,061	29,711	18,460
1996/97	5,837	6,535	4,047	3,597	3,812	2,274	1,201	1,902		29,205	22,236
1997/98	5,690	7,698	3,691	3,767	2,877	2,498	4,098			30,319	28,938
1998/99	7,355	7,777	5,235	3,640	4,368	3,141				31,516	32,993
1999/00	6,907	8,680	5,519	3,963	3,153					28,221	33,671
2000/01	7,718	8,777	5,689	4,635						26,819	39,013
2001/02	8,008	9,515	5,716							23,240	41,341
2002/03	7,605	9,916								17,521	40,175
2003/04	9,222									9,222	47,844

D **PPCI Development Years 1–8**

The PPCI method models the claims process by assuming that the payments arising from a cohort of claims develop in a predictable pattern over a period of years. The PPCI method requires assumptions about:

- Claim numbers by accident year
- Average claim size
- Payment patterns (i.e. the proportion of the overall claim payment made in each development period).

Future payments for each accident year are projected by multiplying together:

- The number of claims incurred
- The assumed payments per claim incurred in each future development period
- An inflation index based on the projected rates of claims inflation.

The present value of liabilities is calculated by discounting the projected payments to the valuation date at the assumed discount rate.

D.1 Payments Per Claim Incurred (Excluding HIH Group)

This table shows the PPCI analysis for the first 8 development years.

Appendix D.1 Payments Per Claim Incurred (Excluding HIH Group)

Inflation-adjusted payments per claim incurred (\$)

Accident Year	1	2	3	4	5	6	7	8	9+	Pt Yr Total
1984/85					538	210	465	264	589	
1985/86				534	432	422	470	130	447	
1986/87			584	494	586	472	373	634	693	
1987/88		1,419	634	568	508	492	481	244	460	
1988/89	1,676	1,438	650	577	680	424	302	442	617	4,752
1989/90	1,893	1,832	1,015	1,121	864	647	553	591	1,477	5,101
1990/91	1,744	1,522	779	650	445	467	344	623	2,127	6,267
1991/92	1,835	1,831	710	408	460	407	533	437	2,775	6,663
1992/93	2,329	2,148	914	696	892	841	716	267	2,327	8,323
1993/94	1,870	1,646	993	983	804	656	738	503	3,666	8,228
1994/95	2,048	2,108	1,127	1,341	1,044	641	1,044	551	1,993	7,347
1995/96	1,948	2,190	1,598	1,060	952	682	696	512	2,470	8,128
1996/97	2,333	2,611	1,617	1,437	1,523	909	480	760		9,484
1997/98	2,004	2,711	1,300	1,326	1,013	880	1,443			11,831
1998/99	2,509	2,653	1,786	1,242	1,490	1,071				12,878
1999/00	2,321	2,916	1,854	1,331	1,059					13,083
2000/01	2,680	3,048	1,976	1,610						14,787
2001/02	2,755	3,274	1,967							15,734
2002/03	2,637	3,439								14,572
2003/04	3,416									17,235

Summary statistics

	1	2	3	4	5	6	7	8	9
Maximum	3,416	3,439	1,976	1,610	1,523	1,071	1,443	760	3,666
Minimum	1,676	1,419	584	408	432	210	302	130	447
Simple average	2,250	2,299	1,219	961	831	615	617	458	1,637
Column sum average	2,279	2,355	1,258	981	843	666	667	495	1,724
Standard deviation	466	665	509	396	345	233	307	185	1,079

Selected payments per claim incurred

Selected PPCI	1	2	3	4	5	6	7	8	Tail	Total
- DY: 9+ tail for acc yrs pre 30/6/1999									1,830	
- DY: 1-8; 9+ tail for acc yrs post 30/6/1999	3,000	3,300	1,950	1,375	1,190	900	800	550	2,300	15,365
Selected 6/03 valn rolled fwd @ 9%	2,998	3,488	2,071	1,417	1,188	894	818	545	1,819	15,237
Selected 6/03 valn	2,750	3,200	1,900	1,300	1,090	820	750	500	1,700	14,010

E **PPCI For the Tail**

E.1 Finalisation Rates for Development Years 1–8 (Excluding HIH Group)

Finalisation rates are calculated by comparing the cumulative number of claims finalised in successive development years, and using the selected finalisation rates to project for future development periods

E.2 Claim Numbers Open at Year End (Excluding HIH Group)

The number of open claims at the end of each year is equal to the number open at the start of the year less the number closed during the year. This data is extracted from the insurer returns.

E.3 Claim Numbers Open at Year End Modelled (Excluding HIH Group)

The modelling of open claims starts with the analysis of open claims at year end, and models the number of open claims in the tail development years. The modelling of the number of claims finalised in each year is based on the number open at the start multiplied by the assumed closure rate.

E.4 Average Payment per Open Claim (Excluding HIH Group)

The average payment per open claim is selected based on the history of average payments in the tail (development years 9 and later). Explicit adjustment has been made for the impact of commutations. Analysis both with and without HIH has been used (as we were unable to examine commutation history excluding HIH in the past).

E.5 Claim Payments for Modelled Open Claims – Current Value

The claim payments for modelled open claims is equal to the modelled open claims for each year multiplied by our selected assumption of \$33,280 per open claim.

The implied tail PPCI is calculated based on the projected payments divided by the ultimate number of claims reported for that accident year.

Appendix E.1 - Finalisation Rates for Development Years 1-8 (Excluding H I H Group)

Cumulative Number of Claims Finalised

Accident Year	1	2	3	4	5	6	7	8
1988/89	1,448	2,285	2,359	2,381	2,405	2,405	2,416	2,424
1989/90	1,546	2,428	2,516	2,546	2,559	2,572	2,584	2,583
1990/91	1,460	2,331	2,416	2,436	2,452	2,460	2,464	2,468
1991/92	1,190	2,017	2,056	2,093	2,107	2,117	2,124	2,128
1992/93	1,253	1,917	2,044	2,056	2,071	2,086	2,094	2,102
1993/94	1,167	1,856	1,917	1,954	1,968	1,971	1,981	1,993
1994/95	1,109	1,822	1,937	1,967	1,981	1,997	2,014	2,023
1995/96	1,331	2,233	2,336	2,378	2,399	2,412	2,423	2,429
1996/97	1,432	2,308	2,368	2,411	2,441	2,458	2,463	2,472
1997/98	1,580	2,589	2,704	2,748	2,783	2,794	2,797	
1998/99	1,782	2,679	2,807	2,848	2,865	2,877		
1999/00	1,563	2,721	2,831	2,881	2,888			
2000/01	1,770	2,618	2,740	2,759				
2001/02	1,638	2,614	2,720					
2002/03	1,668	2,539						
2003/04	1,320							

Summary statistics

	1	2	3	4	5	6	7	8
Maximum	61.47%	93.47%	96.09%	97.15%	98.01%	98.39%	98.74%	98.98%
Minimum	48.90%	88.05%	93.58%	95.81%	96.71%	97.20%	97.66%	97.62%
Simple average	56.63%	91.17%	95.15%	96.59%	97.40%	97.88%	98.24%	98.50%
Column sum average	56.65%	91.14%	95.15%	96.60%	97.42%	97.90%	98.24%	98.49%
Standard deviation	3.16%	1.50%	0.64%	0.42%	0.46%	0.39%	0.33%	0.43%

Selected Finalisation Rates

	1	2	3	4	5	6	7	8
Selection	56.75%	91.00%	95.00%	96.75%	97.75%	98.00%	98.25%	98.50%
Selected 6/03 valn	57.00%	91.00%	95.00%	96.75%	97.75%	98.00%	98.25%	98.50%
Revised Selection	56.75%	91.00%	95.00%	96.75%	97.75%	98.00%	98.25%	98.50%
Incremental Selection	34.25%	4.00%	1.75%	1.00%	0.25%	0.25%	0.25%	0.31%

Incremental Number of Finalised Claims

Accident Year	1	2	3	4	5	6	7	8
1988/89	1,448	837	74	22	24	0	11	8
1989/90	1,546	882	88	30	13	13	12	-1
1990/91	1,460	871	85	20	16	8	4	4
1991/92	1,190	827	39	37	14	10	7	4
1992/93	1,253	664	127	12	15	15	8	8
1993/94	1,167	689	61	37	14	3	10	12
1994/95	1,109	713	115	30	14	16	17	9
1995/96	1,331	902	103	42	21	13	11	6
1996/97	1,432	876	60	43	30	17	5	9
1997/98	1,580	1,009	115	44	35	11	3	6
1998/99	1,782	897	128	41	17	12	7	7
1999/00	1,563	1,158	110	50	7	10	10	9
2000/01	1,770	848	122	19	39	10	9	8
2001/02	1,638	976	106	69	38	9	9	8
2002/03	1,668	871	161	68	38	9	9	8
2003/04	1,320	1,147	108	46	25	6	6	6

Appendix E.2 - Claim Numbers Open at Year End (Excluding HIH Group)

Accident Year	1	2	3	4	5	6	7	8	9+	Totals new in 9+	closure rate
1980/81									31		2
1981/82								11	42		4
1982/83							17	7	39		8
1983/84						35	24	19	48		3
1984/85					44	34	25	18	60		7
1985/86				59	40	27	23	17	48		2
1986/87			97	69	52	40	34	26	62		3
1987/88		144	80	59	49	43	38	25	72		3
1988/89	760	140	88	68	46	46	37	30	91		1
1989/90	719	188	112	86	74	63	51	52	118	1,155	11
1990/91	782	152	81	63	50	44	42	38	121	1,279	10
1991/92	700	119	90	55	41	32	25	21	122	1,210	9
1992/93	670	197	76	67	57	45	37	31	130	1,156	5
1993/94	686	141	87	58	47	45	36	25	127	1,268	3
1994/95	683	205	98	71	59	46	31	22	121	1,192	3
1995/96	819	201	106	68	47	35	26	22	135	1,416	3
1996/97	758	167	118	77	49	32	31	23		1,389	
1997/98	826	210	115	79	44	35	33			1,443	
1998/99	745	218	103	68	55	43				1,424	
1999/00	1,092	222	129	80	74					1,784	
2000/01	796	229	119	104						1,470	
2001/02	943	265	164							1,620	
2002/03	931	308								1,659	
2003/04	1,018									1,902	

Appendix E.3 - Claim Numbers Open at Year End Modelled (Excluding HIH Group)

Assumed 17% reduction rate for all past DYs; and 21% for future DYs

Accident Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1980/81																		
1981/82								11	9	8	6	5	4	4	3	2	2	2
1982/83							17	7	6	5	4	3	3	2	2	2	1	1
1983/84						35	24	19	16	13	11	9	7	6	5	4	4	3
1984/85					44	34	25	18	15	12	10	9	7	6	5	4	3	3
1985/86				59	40	27	23	17	14	12	10	8	7	6	5	4	3	3
1986/87			97	69	52	40	34	26	22	18	15	12	10	9	7	6	5	4
1987/88		144	80	59	49	43	38	25	21	17	14	12	10	8	9	7	6	5
1988/89	760	140	88	68	46	46	37	30	25	21	17	14	12	13	11	9	7	6
1989/90	719	188	112	86	74	63	51	52	43	36	30	25	23	19	16	13	10	8
1990/91	782	152	81	63	50	44	42	38	32	26	22	29	16	18	14	11	9	7
1991/92	700	119	90	55	41	32	25	21	17	14	8	7	8	6	5	4	3	2
1992/93	670	197	76	67	57	45	37	31	26	19	17	18	14	11	9	7	6	4
1993/94	686	141	87	58	47	45	36	25	20	15	15	12	9	7	6	5	4	3
1994/95	683	205	98	71	59	46	31	22	19	14	11	9	7	5	4	3	3	2
1995/96	819	201	106	68	47	35	26	22	23	18	14	11	9	7	6	4	3	3
1996/97	758	167	118	77	49	32	31	23	18	14	11	9	7	6	4	3	3	2
1997/98	826	210	115	79	44	35	33	28	22	18	14	11	9	7	5	4	3	3
1998/99	745	218	103	68	55	43	38	32	25	20	16	13	10	8	6	5	4	3
1999/00	1,092	222	129	80	74	66	58	50	39	31	24	19	15	12	10	8	6	5
2000/01	796	229	119	104	68	61	53	46	36	28	22	18	14	11	9	7	5	4
2001/02	943	265	164	101	66	59	51	44	35	28	22	17	14	11	9	7	5	4
2002/03	931	308	161	100	65	58	51	44	34	27	21	17	13	11	8	7	5	4
2003/04	1,018	198	103	63	40	36	32	27	21	17	13	11	8	7	5	4	3	3

Appendix E.4 - Claim payments for modelled open claims - Current Value

Assumed	38,150 per claim per year																		
Accident Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1980/81										0	0	0	0	0	0	0	0	0	0
1981/82									384	319	265	220	182	151	126	104	86	72	60
1982/83								78	244	203	168	140	116	96	80	66	55	46	38
1983/84	actuals in left hand						681	631	663	550	457	379	315	261	217	180	149	124	103
1984/85	box are inflated					379	871	507	628	522	433	359	298	248	205	171	142	117	97
1985/86	with AWE, no s/i				779	790	901	251	593	493	409	339	282	234	194	161	134	111	92
1986/87		891	1,098	903	719	1,240	908	753	625	519	431	358	297	246	204	170	138		
1987/88		1,064	973	947	940	480	873	724	601	499	414	344	328	314	261	212	167		
1988/89		1,085	1,286	814	584	865	1,047	869	721	599	497	473	458	384	312	246	195		
1989/90		2,285	1,789	1,350	1,165	1,281	1,815	1,507	1,250	1,038	909	801	668	546	432	341	269		
1990/91		1,280	883	935	709	1,365	1,326	1,101	914	968	858	649	615	486	384	303	239		
1991/92		694	791	719	1,001	783	733	608	429	286	286	273	216	170	135	106	84		
1992/93		1,185	1,562	1,566	1,271	530	1,082	853	687	668	615	486	384	303	239	189	149		
1993/94	proj'n doesn't	1,628	1,414	1,100	1,386	961	858	668	572	512	405	320	253	199	158	125	98		
1994/95	work back here	2,391	1,775	1,220	2,021	1,056	782	629	478	378	298	236	186	147	116	92	73		
1995/96		2,159	2,171	1,583	1,598	1,268	858	785	620	490	387	306	242	191	151	119	94		
1996/97		3,343	3,605	2,128	1,213	1,902	785	620	490	387	306	242	191	151	119	94	74		
1997/98		3,562	2,692	2,523	4,098	1,164	957	756	598	472	373	295	233	184	145	115	91		
1998/99		3,406	4,412	3,141	1,543	1,338	1,101	870	687	543	429	339	268	211	167	132	104		
1999/00		4,003	3,153	2,672	2,360	2,046	1,695	1,339	1,058	836	660	522	412	326	257	203	161		
2000/01		4,635	3,279	2,452	2,166	1,879	1,556	1,229	971	767	606	479	378	299	236	187	147		
2001/02		4,200	3,189	2,383	2,106	1,827	1,513	1,195	944	746	589	466	368	291	230	181	143		
2002/03		4,979	3,138	2,345	2,072	1,797	1,488	1,176	929	734	580	458	362	286	226	178	141		
2003/04		3,163	1,964	1,455	1,292	1,120	927	732	579	457	361	285	225	178	141	111	88		
Adopted Pattern - accident years pre 30/6/1999									386	305	241	191	151	119	94	74	59	46	37
Adopted Pattern - accident years post 30/6/1999									486	384	303	239	189	149	118	93	74	58	46

F Valuation Results, including Scheme Cost

F.1 Valuation Results by Accident Year

F.2 Projected Cashflows

F.3 Estimated Annual Scheme Cost

Appendix F.1 - Valuation Results by Accident Year

Accident Year	Gross Central Estimate ¹	Reinsurance Recoveries ²	Net Central Estimate	Margins and Expenses ³	Net Outstanding Provision	Insurer Reserves 2004
	\$000	\$000	\$000	\$000	\$000	\$000
<i>95/96 and Prior</i>	15,796	474	15,323	3,356	18,678	18,673
1996/97	5,072	152	4,919	1,077	5,997	4,383
1997/98	7,587	228	7,359	1,612	8,971	5,706
1998/99	10,560	317	10,243	2,243	12,486	5,120
1999/00	15,433	463	14,970	3,278	18,248	10,991
2000/01	19,023	571	18,452	4,041	22,494	15,305
2001/02	24,027	721	23,306	5,104	28,411	22,219
2002/03	30,530	916	29,614	6,486	36,100	33,169
2003/04	38,903	1,167	37,736	8,264	46,000	44,573
TOTAL	166,932	5,008	161,924	35,461	197,385	160,139

¹ Assumed Future Wage Inflation at 4%pa, Superimposed inflation at 5%pa, Discounted at 5.75%pa

² Reinsurance Recoveries assumed to be 3% of Gross Claim Payments

³ Claims Handling Expenses 6% of Net Central Estimate, Prudential Margin 15% of Net Central Estimate plus Claims Handling Expenses

Appendix F.2 - Projected cashflows (Undiscounted & Inflated) (\$000)

Accident Year	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	thereafter	Total
1984/85	61	52	44	37	31	26	22	19	16	13	0	0	0	0	321
1985/86	77	65	55	47	39	33	28	24	20	17	14	0	0	0	421
1986/87	98	83	70	59	50	42	36	30	26	22	18	15	0	0	549
1987/88	124	105	89	75	63	53	45	38	32	27	23	20	16	0	711
1988/89	154	130	110	93	79	66	56	47	40	34	29	24	20	17	901
1989/90	210	178	150	127	107	91	77	65	55	46	39	33	28	44	1,249
1990/91	253	214	181	153	129	109	92	78	66	56	47	40	34	73	1,524
1991/92	275	232	196	166	140	119	100	85	72	61	51	43	37	98	1,673
1992/93	344	291	246	208	176	149	126	106	90	76	64	54	46	142	2,118
1993/94	412	348	294	249	210	178	150	127	107	91	77	65	55	190	2,554
1994/95	529	447	378	319	270	228	193	163	138	116	98	83	70	266	3,298
1995/96	802	678	573	484	409	346	292	247	209	177	149	126	107	431	5,030
1996/97	1,054	891	753	637	538	455	385	325	275	232	196	166	140	598	6,645
1997/98	1,702	1,304	1,102	932	788	666	563	476	402	340	287	243	205	913	9,922
1998/99	2,556	1,916	1,467	1,240	1,048	886	749	633	535	452	382	323	273	1,258	13,722
1999/00	2,920	2,829	2,120	2,003	1,693	1,431	1,210	1,023	865	731	618	522	441	2,091	20,496
2000/01	3,735	3,079	2,983	2,236	2,113	1,786	1,510	1,276	1,079	912	771	651	551	2,670	25,351
2001/02	4,356	4,109	3,388	3,282	2,460	2,324	1,965	1,661	1,404	1,187	1,003	848	717	3,544	32,247
2002/03	6,129	4,711	4,444	3,663	3,549	2,660	2,513	2,125	1,796	1,518	1,283	1,085	917	4,607	41,001
2003/04	9,710	6,254	4,807	4,535	3,738	3,622	2,714	2,565	2,168	1,833	1,549	1,309	1,107	5,637	51,549

Note:

- Payments are gross of reinsurance recoveries
- Payments do not include allowance for claim handling expenses

Appendix F.3 - Estimated Annual Scheme Cost

Accident Year	Earned Premium \$000	Net Paid to Date		Net Outstanding		Total Net Claims Cost \$000	Assumed Expenses ² \$000	Total Cost \$000	Loss Ratio %
		Undisc \$000	Disc ¹ \$000	at 6/03 \$000	Disc ¹ \$000				
1997/98	22,472	26,819	23,343	7,359	5,117	28,460	6,522	34,983	156
1998/99	25,825	28,364	25,364	10,243	7,532	32,895	7,538	40,434	157
1999/00	40,779	26,139	23,963	14,970	11,640	35,604	8,159	43,763	107
2000/01	49,988	25,116	23,399	18,452	15,173	38,572	8,839	47,412	95
2001/02	60,149	22,136	21,043	23,306	20,266	41,309	9,467	50,776	84
2002/03	66,165	17,070	16,547	29,614	27,232	43,779	10,033	53,812	81
2003/04	70,704	8,945	8,945	37,736	36,696	45,641	10,459	56,101	79

¹ Discounted to the middle of injury period at 5.75% pa - inflation of 4% pa and superimposed inflation of 5% pa used in calculations

² Claims Handling Expenses 15% of Net Claims Cost, Commission 4% of premiums

³ Reinsurance Recoveries assumed to be 3% of gross central estimate

G Glossary of Terms

The table below provides a summary of a number of terms used throughout the report. The terms described below may have different meanings ascribed to them in some other actuarial reports.

Term	Definition
Accident Year	The year (defined in years ending 30 June) in which an accident occurred: eg. a claim occurring on 30 November 2003 is said to belong to the 2003/04 accident year
Break-even Premium	Expected discounted costs of claims for an accident year plus the expected cost of expenses for that year
Central Estimate	An estimate of the liability which is intended to contain no deliberate bias to either over or underestimate
Claims Cost	Expected net (ie. after allowing for reinsurance) cost of claims for an accident year. This is equal to the net payments to date plus the discounted net central estimate for outstanding claims
Claims Handling Expenses	The expected expenses of administering the claims that have been valued from the valuation date until they are all settled
Development Year	The number of years after an accident year (counting the accident year as year 1) in which an event occurs. For example a claim which occurs on 30 November 2000 but is not reported until 15 October 2002 is said to be reported in Development Year 3
Gap	Difference between discount rate and wage inflation rate
GST	Goods and Services Tax
IBNR	Incurred but Not Reported Claims – ie. claims that have occurred at the investigation date but have not yet been reported to the insurer
Incurred Claims Cost	Net Central Estimate at end of the period + Payments made in the period - Net Central Estimate at beginning of the period
Inflated/Discounted Provisions	The central estimate after allowing for future inflation and discounting, together with an allowance for claims handling expenses and a prudential margin

Loss Ratio	Expected Claims Cost as a percentage of Net Earned Premium
Net Earned Premium	The premium (net of reinsurance) in respect of insurance cover that was provided to policyholders during the accounting period, regardless of when the policy was issued.
Run-off Claims	Claims occurring prior to the most recent accident year, ie. claims occurring prior to 1 July 2003
PPCI	Payment per Claim Incurred (see Section 3)
Prudential Margin	An additional amount, held above the central estimates to increase the probability of the overall provision being sufficient
Superimposed Inflation	The tendency for claims costs to increase faster than movements in general inflation
Tail	Claims belonging to accident years more than 8 years old at the date of investigation
Total Provision	Net Central Estimate + Claims Handling Expenses + Prudential Margin
Ultimate Claims Incurred	The total expected claims for an accident year. This will include all claims reported to the investigation date together with any IBNR claims for the accident year
