



Institute of Actuaries of Australia

NSW Coal Mining Industry A Case Study

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ABSTRACT

Introduction

This paper presents a case study of workers compensation within a single industry: the NSW coal industry. There are aspects of an industry specialist scheme that are relevant for broader workers compensation schemes. The issue central to the theme of this paper is claim frequency, which we focus on as the key driver of scheme costs.

Industry dynamics impact on claim frequency

We present a brief history of the claim frequency experience of the CMI scheme, and the dynamics that have led to significant change in this claim frequency over time.

These dynamics include the aging of the workforce, industry structural shift from underground to open cut processes, consolidation of smaller employers and growth of larger employers, shift in employment arrangements from employed to contracted workforce, and finally, employer restructuring and the impact of the number and average cost of claims related to retrenchments.

Claim frequency impact on scheme cost comparisons

We consider the financial impact of claim frequency on cross-scheme cost comparisons. We show the main driver of higher industry premium rates for coal mining relate to its higher claim frequency, and less directly to its differences in scheme benefits.

Accident prevention impact on claim frequency

We present a survey on accident prevention practices in coal mining, and how these practices relate to observed differences in claim frequency between mines. We show the survey questions that most explained the variation in claim frequency between mines. The key practices include having adequate resources to implement safety systems, linking employment decisions to safety management, and using open cut processes.

Conclusion

This seminar paper concludes by drawing some implications for broader workers compensation schemes in respect to the impact of claim frequency on scheme costs, scheme funding issues for retrenchments arising from industry restructuring and business failure, implications for premium systems, and financial incentives for improving claim frequency in schemes.

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1. INTRODUCTION AND BACKGROUND

1.1 History

The Commonwealth and NSW Governments established the Joint Coal Board in 1946 through the joint State and Commonwealth *Coal Industry Act 1946*. The legislation gave the Joint Coal Board broad powers to regulate the NSW coal mining industry, and to ensure maintenance of coal supplies. The Joint Coal Board was established following a period of significant industrial relations unrest.

The Joint Coal Board commenced the specialist provision of workers compensation insurance to the coal industry in 1948, when it acquired Mine Owner's Insurance, which later became Coal Mines Insurance.

The Commonwealth withdrew from the Joint Coal Board in June 2000. As a consequence, the NSW Government established new arrangements under the *Coal Industry Act 2001*, which included the creation of Coal Services Pty Ltd (CSPL), and its subsidiary Coal Mines Insurance (CMI), to administer the workers compensation scheme for the NSW coal industry (the "CMI scheme"). The arrangements allow CMI to operate as a monopoly specialist provider of workers compensation.

The NSW Minerals Council (NSWMC) and the Construction, Forestry, Mining and Energy Union (CFMEU) now own CSPL jointly. The assets, rights and liabilities of the former Joint Coal Board and Mines Rescue Board were transferred to the new group of companies.

The CMI scheme is unique in Australia as it is an industry specialist scheme, owned and operated by the industry. It is compulsory for all NSW coal industry employers to insure for workers compensation within the CMI scheme.

Today there continues to be a strong and well-organised unionised workforce. The relationship between employers and employees is heavily influenced by statewide union representation.

1.2 Importance of the coal industry to NSW

The coal industry is strategically important to the NSW economy. In 2002-03 it produced 142 million tonnes of raw coal, with revenue of about \$6.8 billion, and employed 10,165 coal miners. Exports represented about 54% of this production, with a value of \$4.0 billion.

A unique characteristic of NSW coalmines, compared to Queensland coalmines, is that the NSW mines are located close to large regional communities. The regional impact creates employment for many more people. Coal mining is strategically important to the economies of NSW regional communities including the Hunter Valley, the Illawara, Lithgow, and Gunnedah areas.

In addition to the coal industry being a significant contributor to NSW regional communities and economies, and to NSW Government through royalties, it is also the

major source of power generation for the State. The majority of NSW's electricity generation needs are met through coal power electricity generation.

Interruption in supply to NSW coal power plants would lead to power outages that would directly impact economic production of all other industries, as well as there being an impact on households. The issue of stability within the coal industry, and continuing supply, is a strategically important issue to NSW.

1.3 Differences between the CMI scheme and NSW WorkCover scheme benefits

Until 1987 the CMI scheme operated under the same legislation and benefits of the broader NSW workers compensation scheme of the time. However, the CMI scheme has been left out of WorkCover reforms over recent years, and over time the CMI scheme has diverged from the WorkCover scheme. As a consequence, the CMI scheme now has more generous benefits than the WorkCover scheme.

Some of the differences in benefits between the CMI scheme and NSW WorkCover scheme include:

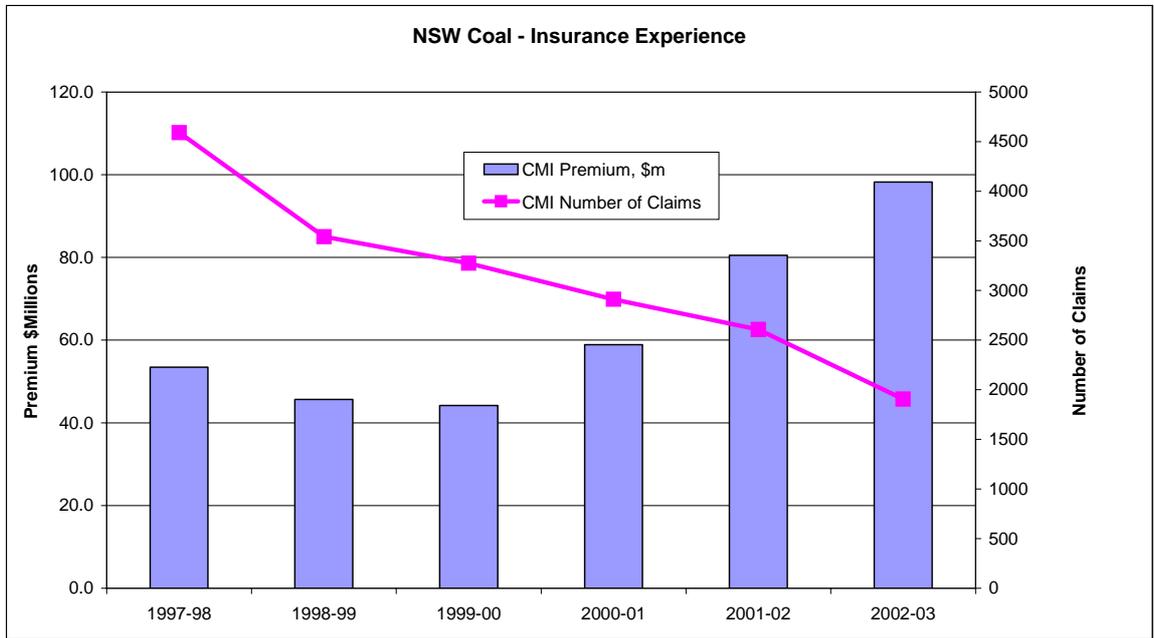
- Weekly benefits for CMI, unlike WorkCover, provide full award rates of pay plus allowances for loadings and bonuses, with no maximum weekly amount up to 78 weeks (note that loadings and bonuses are not provided after 38 weeks). The WorkCover scheme provides 26 weeks at award rate of pay, does not include loadings and bonuses, and limits the maximum weekly benefit to \$1,300, after 26 weeks the weekly benefits revert to the statutory rate.
- For CMI after 78 weeks (26 weeks for WorkCover) weekly benefits revert to the statutory rates.
- However, many coal workers are entitled to additional Accident Pay under Industrial Agreements, which provides continuation of award rates of pay in some cases up to 104 weeks. These benefits are insured and paid by CMI.
- Benefit reforms in 2001 to the WorkCover scheme were not adopted within the CMI scheme. In particular, common law and redemptions continue as major features of the CMI scheme.

1.4 Premium and claims history of the CMI scheme

The premium cost of workers compensation in the NSW coal industry has been increasing for employers. This has been against a background of reducing numbers of claims.

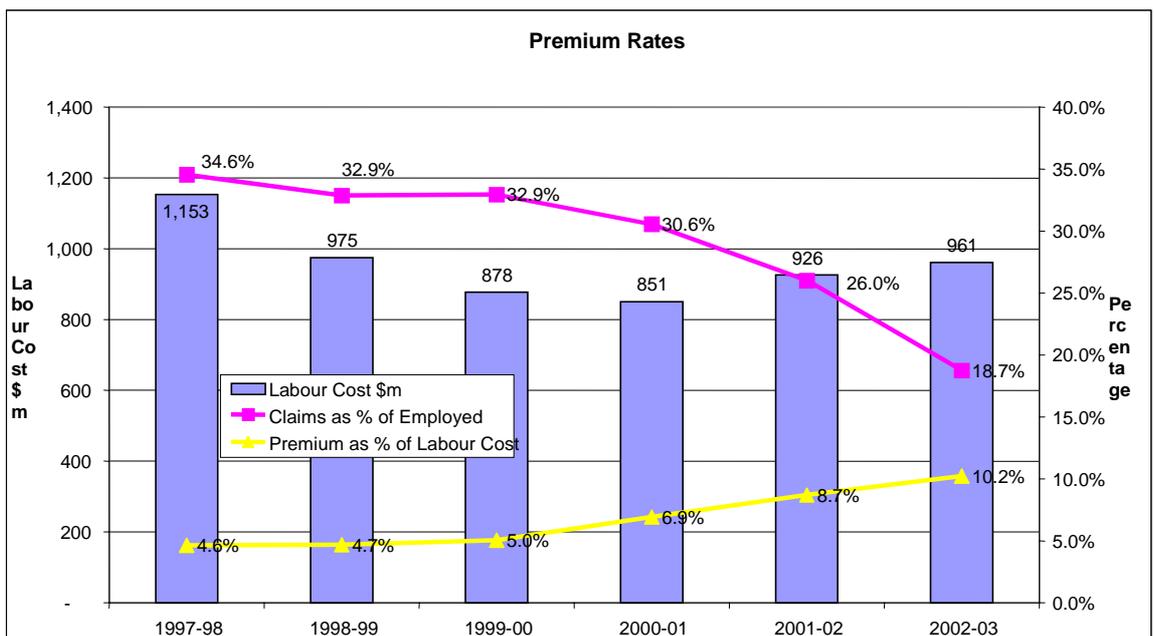
Graph 1 below shows since 1997-98, the numbers of claims have reduced by 59%, whilst premiums have increased by 91%.

Graph 1



Premiums have also increased as a percentage of labour cost. Graph 2 below shows labour costs (\$millions), which include gross wages and salaries paid before taxation and other deductions. Earnings also include bonuses and leave entitlements for all coal mine employees (including administration staff) whether employed directly or by contractors. Since 1997-98 the average premium rate shown as “Premium as % of Labour Cost” has increased from 4.6% to 10.2%, an increase of 122% over six years.

Graph 2



The latest target premium pool set by CMI for 2003/04 has reduced to \$90 million (not shown on graph); the estimated average premium rate for 2003-04 is approximately 9.8% of labour cost.

The frequency of claims has reduced. From 1997-98 to 2002-03, the claim frequency shown as “Claims as % of Employed” has reduced from 34.6% to 18.7%. In section 2 we show this reduction in claim frequency has continued on from a long-term trend of reducing frequency over the past 23 years.

Like workers in all other industries, workers compensation is very important to workers in the coal industry. The number of claims per year is still very high; about one in five workers will have a compensation injury each year.

1.5 Other features of the CMI scheme

Some of the other characteristics of the scheme include:

- Recent premium rates have been set at a higher level than the fully funded premium rate in order to improve the financial position of the scheme. Our estimated fully funded premium rate has reduced over the past four years from a high of 9.7% for 2000/01 to 6.1% in 2003/04.
- Relative to the other costs of the coal industry CMI premiums are small. The fully funded cost represents about 1% to 1.5% of industry revenue over the past five years. This represents about \$0.48 to \$0.75 per tonne of saleable coal.
- Excluding the impact of retrenchments, the average claims size experience of the CMI scheme has been relatively stable over the last two decades with little superimposed inflation. This contrasts with most other schemes in Australia over the last 20 years that have had poor claims experience and high rates of superimposed inflation with benefit design similar to that of the CMI scheme.
- The level of retrenchments is strongly linked to the economic environment, the prospects of the coal industry and the extent of changes in coal production.

1.6 Economic outlook for the NSW coal industry

The Australian Bureau of Agricultural and Resource Economics (ABARE) shows the demand for coal is projected to grow steadily out to 2009, in line with strong growth in industrial production and planned additions to coal fired electricity generation capacity in Asia.¹

The demand outlook for the Australian coal industry is positive. Current worldwide demand for coking coal is greater than the available worldwide supply. Australia is likely to be the main beneficiary of increased global demand. As a consequence, ABARE expects Australian coal exports to increase by 20% over the period to 2009.

¹ “Australian Commodities Outlook”, Produced by ABARE, 2004, p. 108.

The “2003 Coal Industry Profile”² (pages 3 and 4) notes that productivity in the NSW coal industry has increased, there are new mines and mine expansions, there is also increased shipping capacity at port facilities, these indicate that NSW is well placed to supply an increased share of the planned export growth.

We expect the positive economic conditions will assist further improvements in the cost of the CMI scheme.

1.7 Prior scheme reviews and context for this paper

Since 2000, there have been three major independent reviews of the CMI scheme.

In 2000, KPMG undertook a major review of the workers compensation scheme following the announcement of the Commonwealth’s intention to withdraw from the Joint Coal Board. KPMG subsequently recommended the significant restructuring of the Joint Coal Board and the establishment of CSPL and CMI. The 2000 review recommended that CMI remain separate to WorkCover and for CMI to continue as a specialist monopoly provider provided shortcomings, identified at the time, were rectified.

Ernst & Young have also undertaken subsequent independent reviews. The first review by Ernst & Young was conducted in 2003, to evaluate the progress of CSPL and CMI restructuring efforts to realise the benefits of industry specialisation. The second review by Ernst & Young was in 2004, which was to evaluate the monopoly arrangements for the CMI scheme.

This paper is drawn from parts of our second review of the CMI scheme. The Government has not made our 2004 report available at the time of writing this paper. We have shown factual findings from the 2004 review mainly in relation to the scheme’s experience and an accident prevention survey, to this paper’s theme on claim frequency, and we have made some observations that are applicable to broader workers compensation schemes.

² “2003 NSW Coal Industry Profile”, produced by the NSW Department of Mineral Resources, 2004.

2. INDUSTRY DYNAMICS

2.1 Background

The industry has, over the last 22 years, undergone significant changes. Since 30 June 1982 when the industry employed 20,705 employees, the number of employees has approximately halved to 10,165.

At the same time the number of hours worked per annum has reduced by about one third from 29,458,800 hours (1,547.0 per employee) to 19,220,400 hours (1,966.9 per employee) and the amount of coal produced per annum has increased from 59,818,000 tonnes of raw coal (or 51,701,000 tonnes of saleable coal) to 143,006,000 tonnes of raw coal (or 111,533,000 tonnes of saleable coal).

This period has witnessed significant restructuring in the industry as well as significant retrenchments.

2.2 Exposure and Premium Income

We have examined the historical changes of exposure in the industry via the average number of employees and gross written premium income for the years ending June 1994 to June 2004.

Over this time, a number of important trends have been observed, including:

- A significant reduction of the workforce. The average number of employees at 30 June 1994 is approximately 13,920 as compared to 10,021 at 30 June 2004.
- A significant aging of the workforce. Over the six years to December 2002 the average age of NSW coal miners increased from 41.7 to 43.5 years of age.
- A significant shift of employment and production of coal from underground mines (18,299 employees at 30 June 1982 to 5,416 employees at 30 June 2003) to open cut mines (2,612 employees at 30 June 1982 to 4,749 employees at 30 June 2003). Industry forecasts suggest this trend will continue with expected closure of some underground mines and opening of new open-cut mines.
- The age distribution at December 2001 of underground mines has a heavier weighting of employees over 45 years (53%) than open cut mines (44%).
- A significant increase in the number of contract employees in the industry. The proportion of employees has increased from approximately 4% at 30 June 1994 to 26% at 30 June 2003.

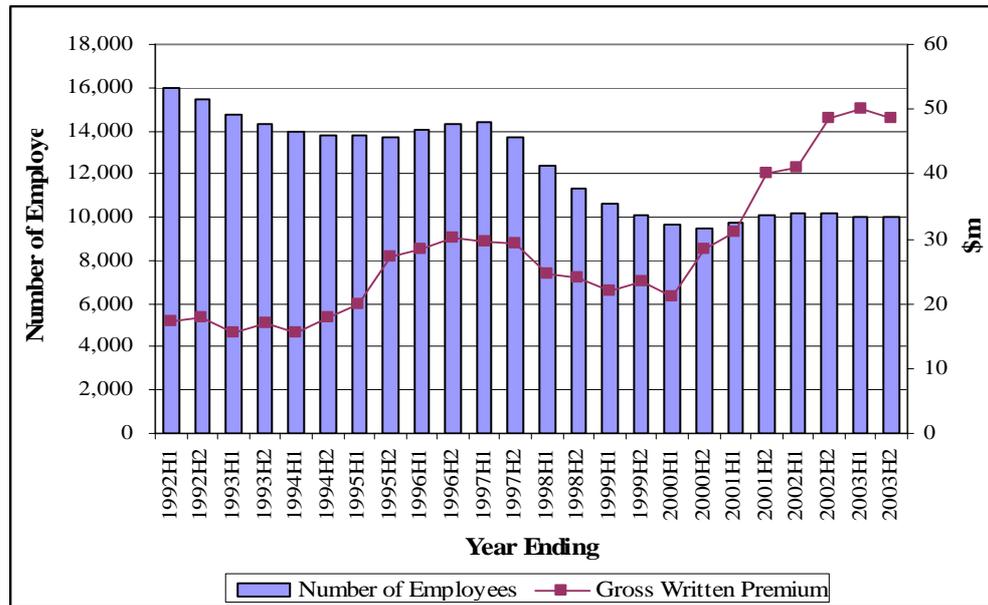
These trends have a significant impact on the claim frequency and average claim size, and subsequently premium rating.

The remaining part of this section sets out our detailed analysis of the exposure changes in the NSW coal industry.

Overall

Graph 3 shows the historical exposure changes of the CMI scheme and the gross written premium income.

Graph 3
Overall Scheme Historical Exposure Experience



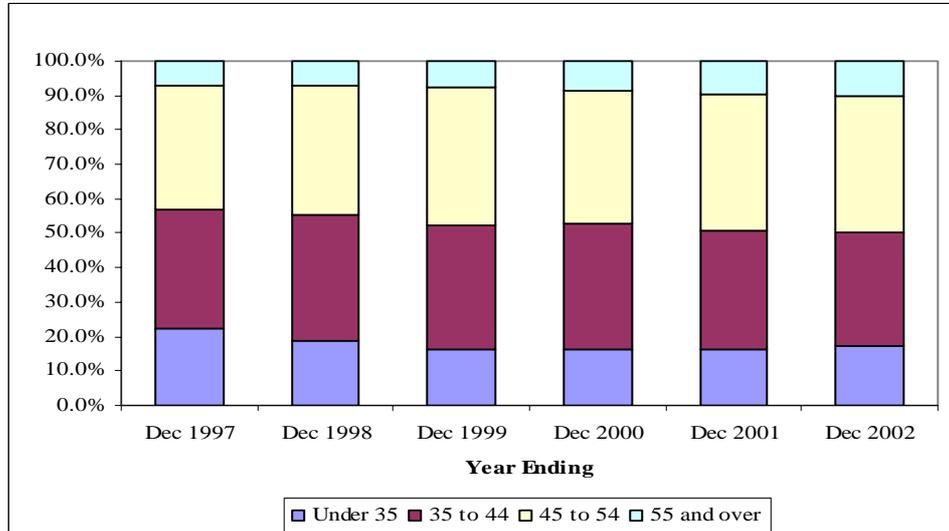
It can be observed the scheme underwent significant exposure reduction in the years ending June 1998 to 2000 with a slight recovery in the most recent two years. The reduction reflects the retrenchments of the workforce associated with the restructuring in the industry. However, in the recent two years, there are signs of the coal industry entering into a favourable economic period with higher coal demand and hence the slight increase in the number of employees.

Relative to the number of employees, the gross written premium income has been growing rapidly since June 2000. The average premium rate per employee is currently at a record high. The increase in the premium rate has been against a backdrop of reducing number of claims (as observed in the later sections).

Age profile

Graph 4 shows the age distribution of employees for the years ending December 1997 to 2002.

Graph 4
Age Distribution of Coal Miners

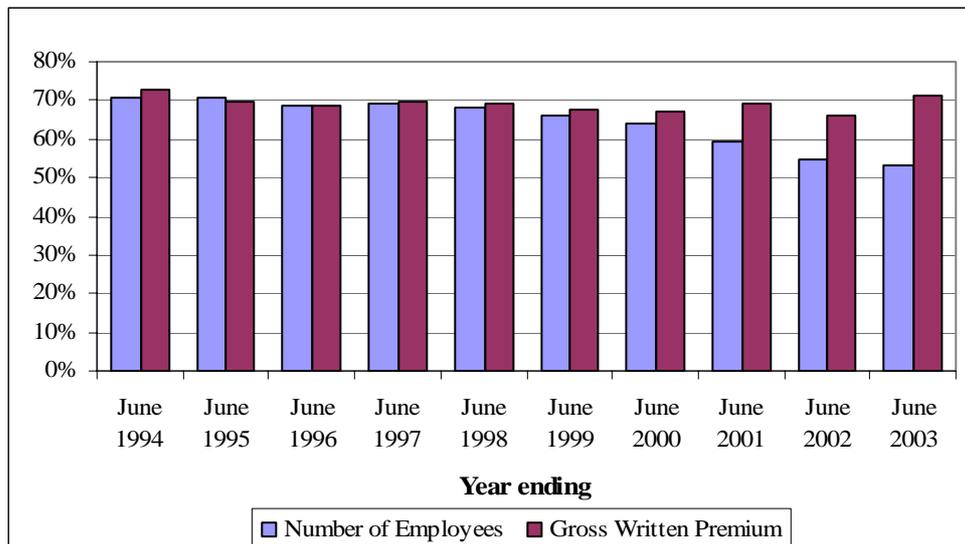


There is a clear trend of a decreasing proportion of miners from the 44 and under age group. This demonstrates the impact of the decreasing number of young miners entering the industry, causing a significant increase in the age profile in the industry. This aging profile is more marked for underground mines than for open cut mines. Based on the NSW Coal Statistics 2001-2002, the average age of miners in underground mines is 44.1, as compared to 42.8 in open cut mines as at 31 December 2002.

Large Employers

Graph 5 shows the proportion of the scheme that is represented by large employers by number of employees and gross written premium for years ending 30 June 1994 to 2003.

Graph 5
Proportion of Scheme Represented by Large Employers



We have defined large employers as employers with 500 or more employees (WorkCover’s self insurance threshold). These companies are the “Big 4” - BHP, Rio Tinto, Centennial and Xstrata.

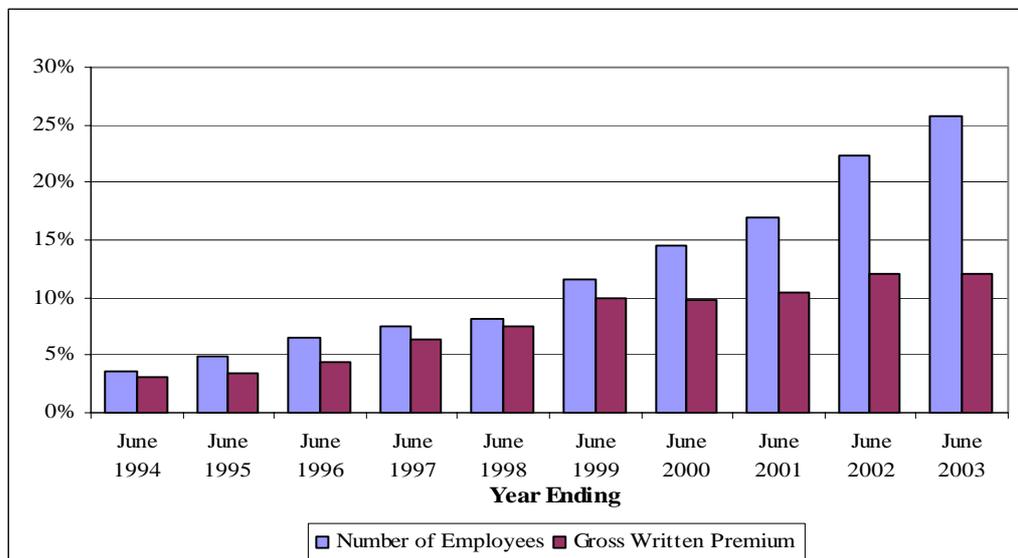
It can be observed the proportion of total employees covered represented by large employers has reduced from 71% at 30 June 1994 to 53% at 30 June 2003. This decrease may be due to retrenchments during periods of industry re-structuring and growth in labour hire and contractors who are all non-large employers.

For years 1994 to 2000, the contribution of gross written premium from large employers are in line with the proportion of employees. However, from 2001, the contribution of premium income from large employers appears to be much higher than the proportion of employees. This is due to the average premium rates for large employers increasing at a rapid rate since 2001. We investigated the increase in average premium rate for large employers and the analysis is set out later in this section.

Contractors and Labour Hire

Graph 6 shows the proportion of labour hire and contractors by number and gross written premium for years ending 30 June 1994 to 2003.

Graph 6
Proportion of Labour Hire and Contractors (by number of employees)



It can be observed the number of labour hire employees has been growing rapidly over the last 10 years with an average rate of increase of approximately 21% pa.

The increase in “labour hire” employees may be partly explained by the number of workers retrenched during the period of industry restructuring returning to employment as contractors. With the economic forecast of a boom in coal exports over the next five years, it is unclear if the proportion of “labour hire” employees will continue to increase in the future years.

With the increase in exposure, the contribution of premium income from labour hire employees has also increased over the years. As at 30 June 2003, labour hire employees contributes 26% and 12% of the exposure and premium respectively, as compared to 4% and 3% of the exposure and premium at 30 June 1994.

2.3 Claim Experiences

As noted in Graph 3, the historical gross written premium income has been increasing significantly over the last three years. The initial cost driver is the occurrence of the injury. In this part of the section, we examined trends in claim frequency and average claims size, with focus on the trends and experience of retrenchments. We have also examined these cost drivers in more detail, with focus on the following characteristics of the coal industry for:

- Aging workforce
- Large and other employers
- Labour hire and contractors

2.3.1 Claim Frequency

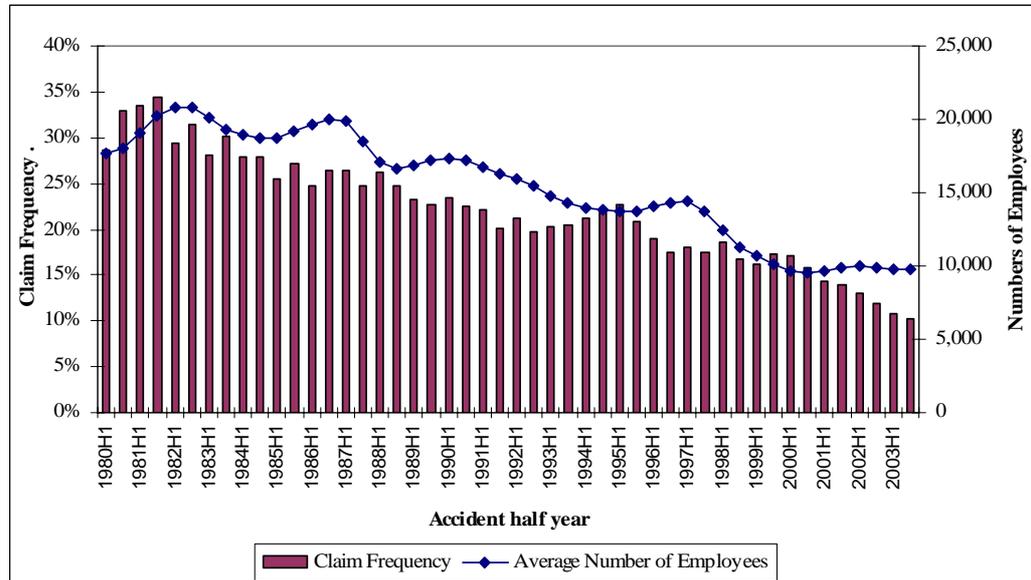
Claim frequency has been measured as the estimated number of claims incurred in the period divided by the average number of employees over the period, except as noted in the following paragraph.

However in the analysis of claim frequency for “labour hire” (including contractors) and employers, this exposure may cause “double counting” in the exposure. This is because a contractor or labour hire can be employed in several contracting firms. A more appropriate measure would be adopting number of hours worked as the exposure in determining the claim frequency. However, this information was not available. Hence, we have adopted per \$10,000 gross wages as a proxy, which we do not believe would caused materially different results had the number of hours worked were used.

Overall

Claims frequency has been measured from the 6 months period ending 31 December 1980 to the 6 months period ending 30 June 2003 as shown in Graph 7. Over this period claim frequency per half year has reduced significantly from 32.8% to 10.6% (that is, a 66% reduction or 4.9% pa over 22.5 years or about 2.5% per half year).

Graph 7
Claim Frequency per Half Year



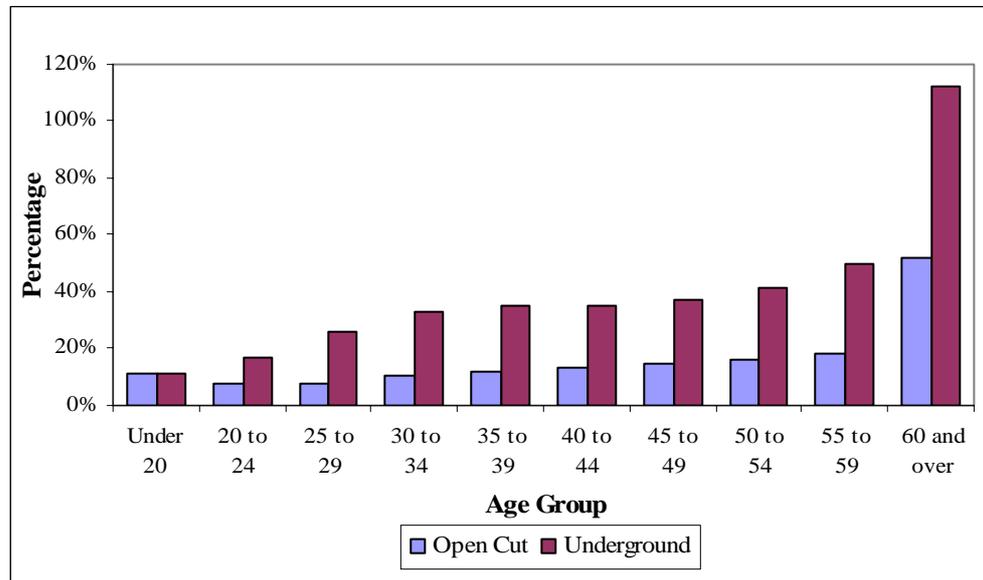
In 2003, the claim frequency continued to decline, whilst the number of employees remained stable. Our analysis shows that the annual decline in claim frequency over the last four years has been about 12%pa. Part of this continual improvement is due to a switch from underground mines to open-cut mines, partially offset by the aging of the workforce (see details later in this section).

The major source of this improvement appears to be explained by improvement in mine safety and to a lesser extent an increasing proportion of labour hire and contractors who have a significantly lower claim frequency (see details later in this section).

Aging Workforce

Graph 8 shows the overall claim frequency for years ending 30 June 1998 to 2003, by type of mine and age of miner.

Graph 8
Claim Frequency by Age Group



A number of key observations can be made from the above two graphs. They are as follows:

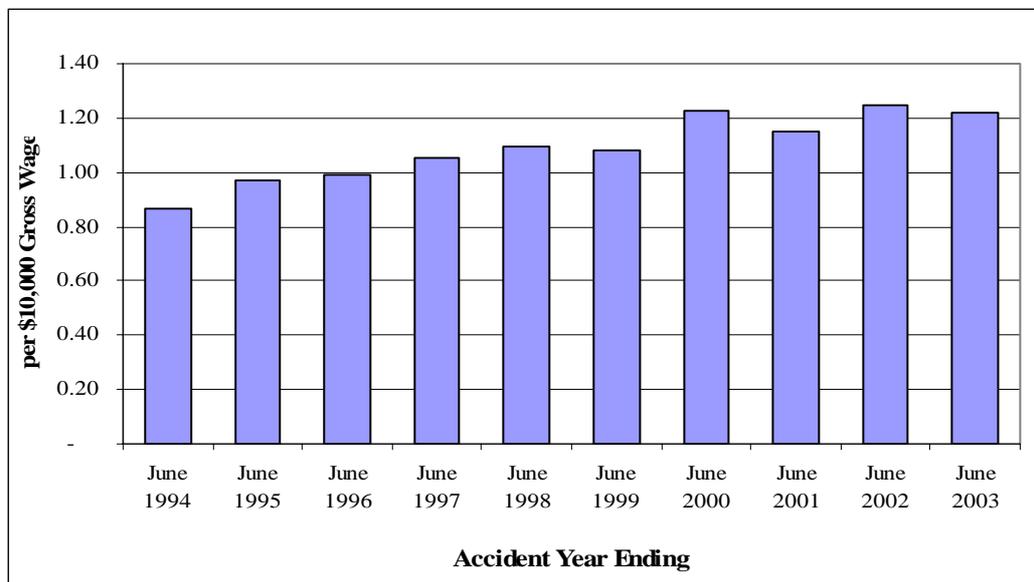
- Based on the average age distribution of employees over this period, the claim frequency has reduced significantly for both underground (43.6% for year ending 30 June 1998 to 27.5% for year ending 30 June 2003) and open-cut mines (17.9% for year ending 30 June 1998 to 7.7% for year ending 30 June 2003). The decrease is more marked for open-cut mines.
- The overall average claim frequency for open cut mines between 1998 and 2003 (13.8%) is approximately 38% of the overall claim frequency for underground mines (36.5%). Adjusting for the slightly different age distribution of employees does not change these relativities significantly.
- The claim frequency by age group for underground mines increase with age from 11.3% for the under 20 age group to 112.0% for the 60 and over age group.
- The claim frequency by age group for open cut mines follow a similar pattern, however, the lowest claim frequency is age group 20 to 24 with a frequency of 7.5% (the under 20 age group has a claim frequency of 11.5%). Claim frequency then increases with age to 52.1% for the 60 and over age group.

- The decline in overall claim frequency as observed in Graph 7 can be partially explained by, a shift in employment from underground mines to open cut mines. Historically, open cut mines have experienced a significantly lower claim frequency. This is partially aided by a slightly younger workforce. We estimated the switch from underground to open cut mines has contributed to approximately 1.2% pa to the decrease in claim frequency. The remainder of the claim frequency reduction appears to be due to improvement in mine safety or other factors.
- The decline in claims frequency is partially offset by the aging workforce in both underground and open cut mines. Based on claims experience for the 5 years to 30 June 2003, the aging workforce acted to increase claim frequency by approximately 0.8% pa. We do not know whether this rate of increase is indicative of the longer term experience of the scheme.

Large and Other Employers

Graph 9 shows the claim frequency of large employers relative to other employers for years ending 30 June 1994 to 2003. We have calculated claims frequency as a proportion of \$10,000 gross wages. “Other” employers refer to non large employers.

Graph 9
Claim Frequency – Large Employers Relative to Other Employers



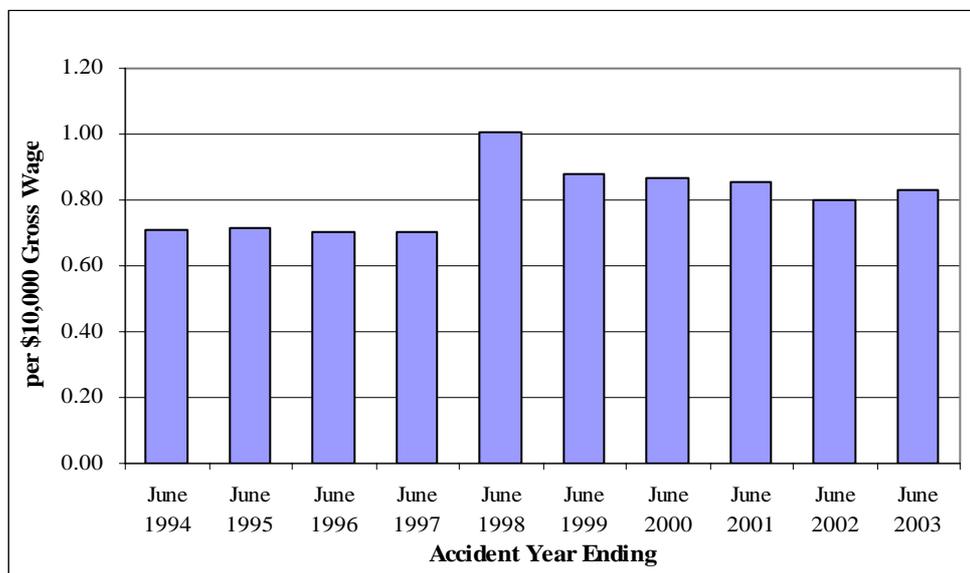
For years 1994 to 1999, there were no significant differences in the claim frequency between large employers and other employers, although an upward trend is observed.

The claim frequency for large employers' started to increase from year 2000 onwards. For the past 3 years, the claim frequency for large employers is approximately 20% higher than other employers. As shown in later sections, the growth in labour hire employees may explain some of the increase in the relative claims frequency for large employers due to the lower claims frequency of labour hire employees.

Labour Hire/Contractors and Permanent Employees

Graph 10 shows the claims frequency of labour hire employees relative to permanent employers for years ending 30 June 1994 to 2003.

Graph 10
Claim Frequency - Relativity of Labour Hire Employees to Permanent Employees

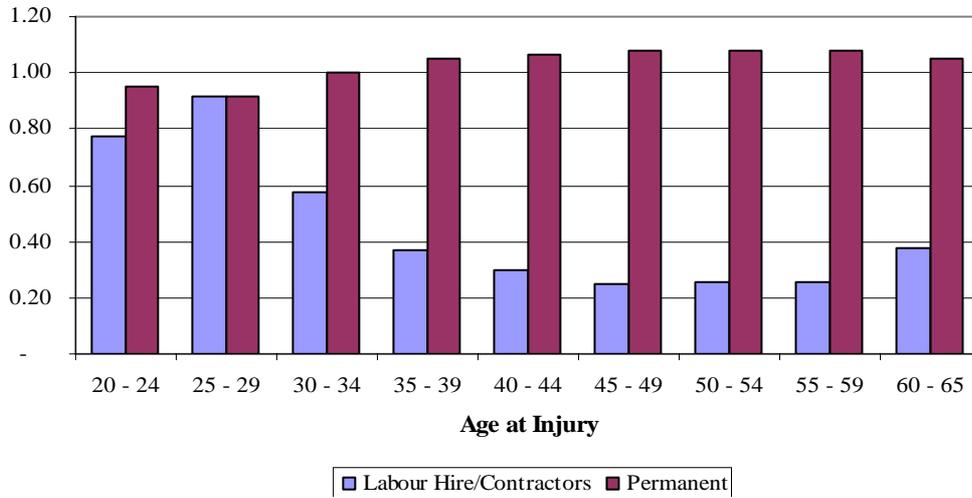


For years prior to 1999, the proportion of labour hire employees is too small to draw any credible trends in claim frequency. For years 1999 and beyond, it can be observed the claim frequency of labour hire employees is approximately 15% lower than that of the permanent employees. In our discussions with stakeholders, suggestions were made that may explain the lower claim frequency. These explanations included:

- Reluctance of labour hire employees to report claims, as this may affect their opportunities for future employment; and
- The job nature of “labour hire” employees may be less dangerous as compared to permanent employees.

Another possible explanation of the lower claim frequency for labour hire and contractors is the lower proportion of claims from older age groups (age nearest birthday at time of injury) for labour hire and contractors. Graph 11 shows the proportion of claims by age group, using the permanent employees with age group 30-34 at time of injury as a base.

Graph 11
Proportion of Claims Relative to Permanent Employees 30 – 34 Age Group



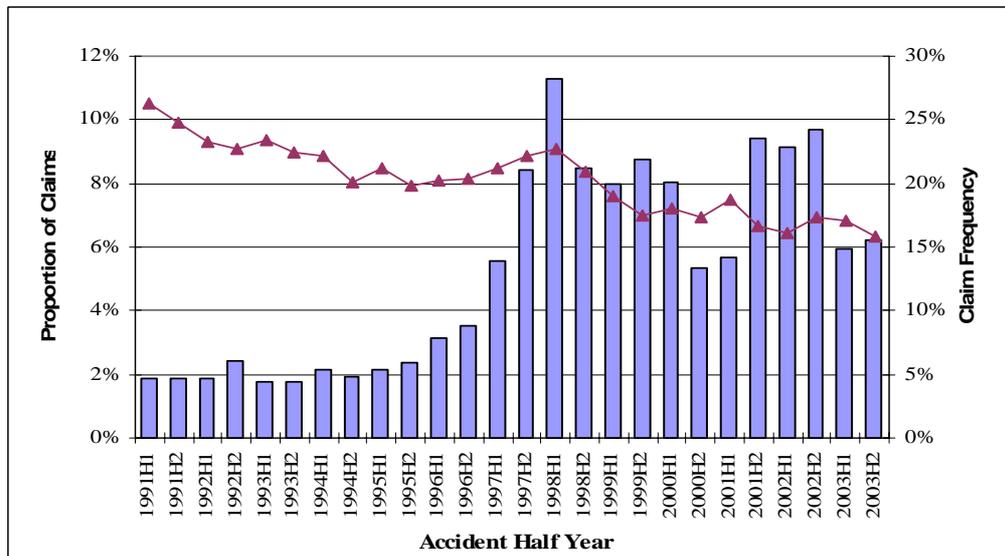
Labour hire and contractors have a significantly lower proportion of older age group claimants. This may possibly reflect the younger workforce of labour hire and contractors. We do not have information on the age distribution of the labour hire workforce.

2.3.2 Proportion of Ultimate Number of Retrenched Claims

The retrenchment experience of the coal industry is a key driver of the cost of the CMI scheme. In the following paragraphs we set out analyses of the claims experience for retrenched and non-retrenched claims.

Graph 12 compares the proportion of the ultimate number of retrenched claims incurred as forecast at 31 December 2003 and the overall claim frequency.

Graph 12
Proportion of Ultimate Retrenched Claims



It can be observed the proportion of retrenched claims increases in the periods 1997 to 2000 and 2002. This is associated with the industry restructuring where there was significant reduction of workforce. However, the proportion of retrenched claims reported in accident year 2003 is the lowest since accident year 1996. This favourable claims experience in accident year 2003 is mainly due to the coal industry entering a favourable economic period where production is expected to grow and less restructuring is expected to take place. This means that fewer retrenchments are expected. Hence, the number of future yet to be reported retrenched claims is expected to be lower than in the recent past.

It can also be observed that there is no significant direct relationship between the overall claim frequency and the proportion of retrenched claims. This implies the continual improvement in claim frequency is most likely due to improvement of mine safety.

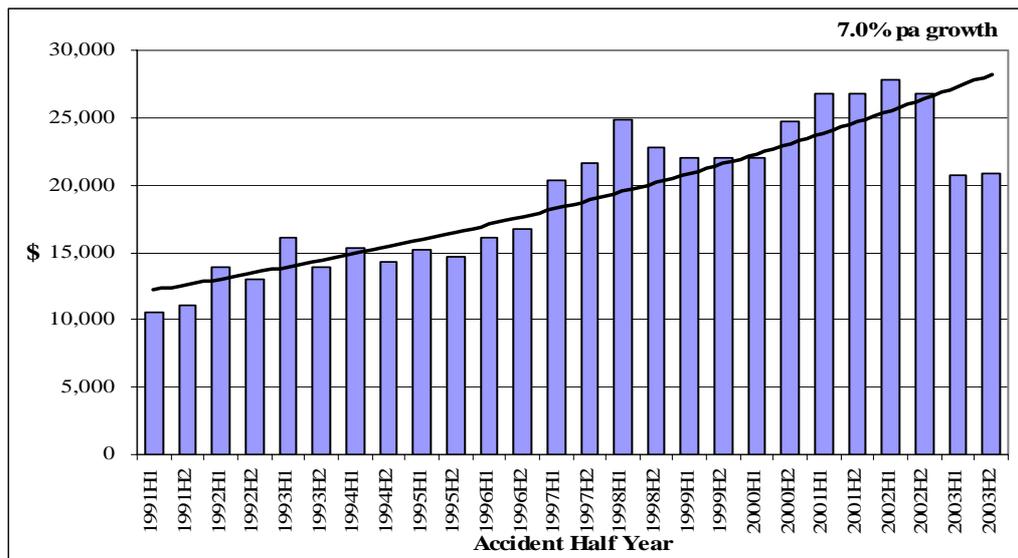
2.3.3 Average Claim Size

The average claim size is defined as the ultimate incurred costs (that is, incurred costs to date plus an IBNR allowance) divided by the ultimate number of claims reported.

Overall

Graph 13 shows the ultimate average claim size for accident half years ending June 1991 to December 2003.

Graph 13
Ultimate Average Claim Size (at December 2003 values)

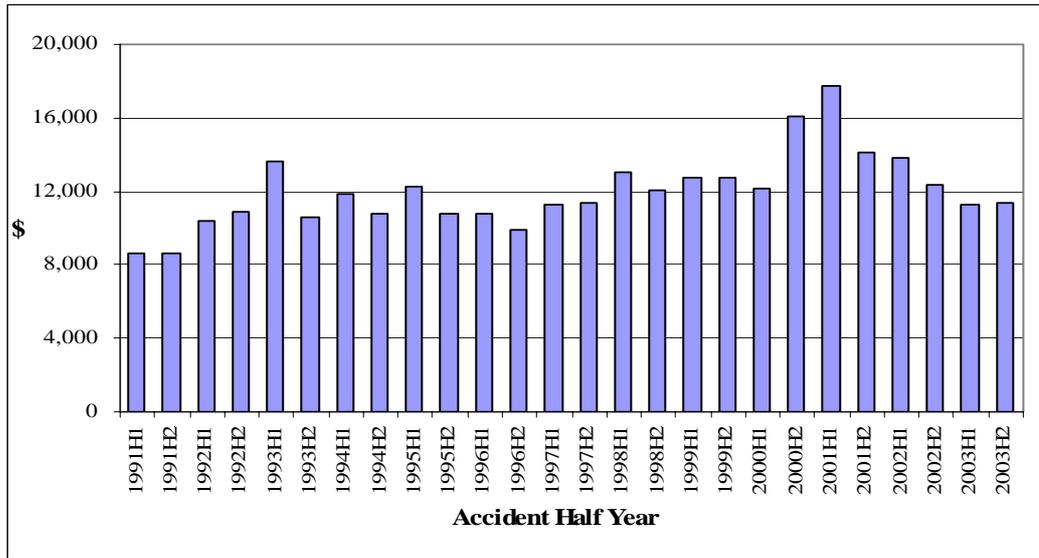


It can be observed the average claim size has increased significantly over time. The rate of increase has been approximately 7.0% pa (above AWE inflation) since June 1991.

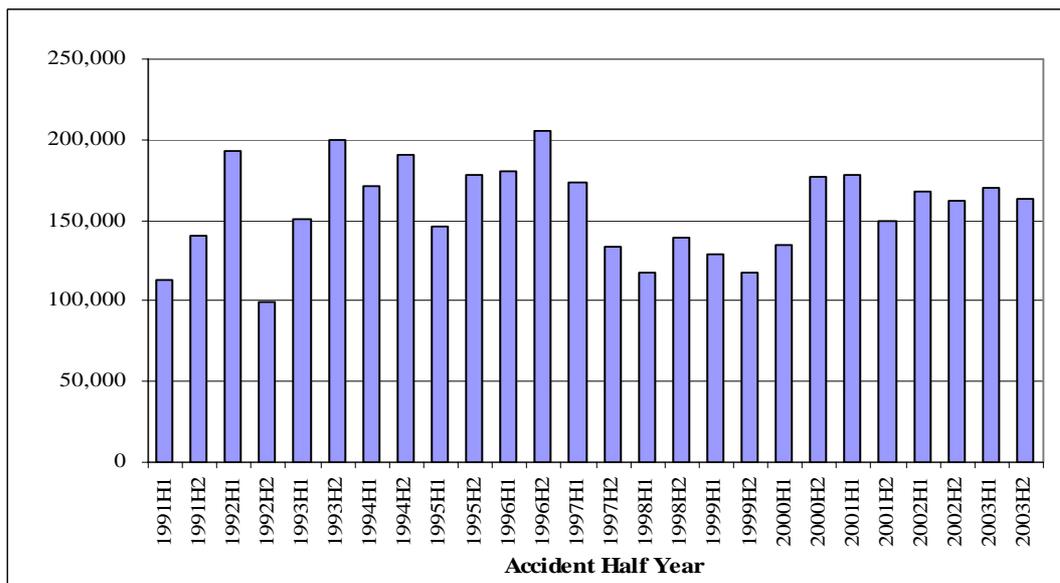
Retrenched and Non Retrenched Claims

We have investigated the source the superimposed inflation as noted in Graph 13. Graphs 14 and 15 show our ultimate average claim size separately for retrenched and non-retrenched claims in December 2003 values.

Graph 14
Ultimate Average Claim Size (\$) – Non Retrenched Claims
December 2003 Values



Graph 15
Ultimate Average Claim Size (\$) – Retrenched Claims
December 2003 Values



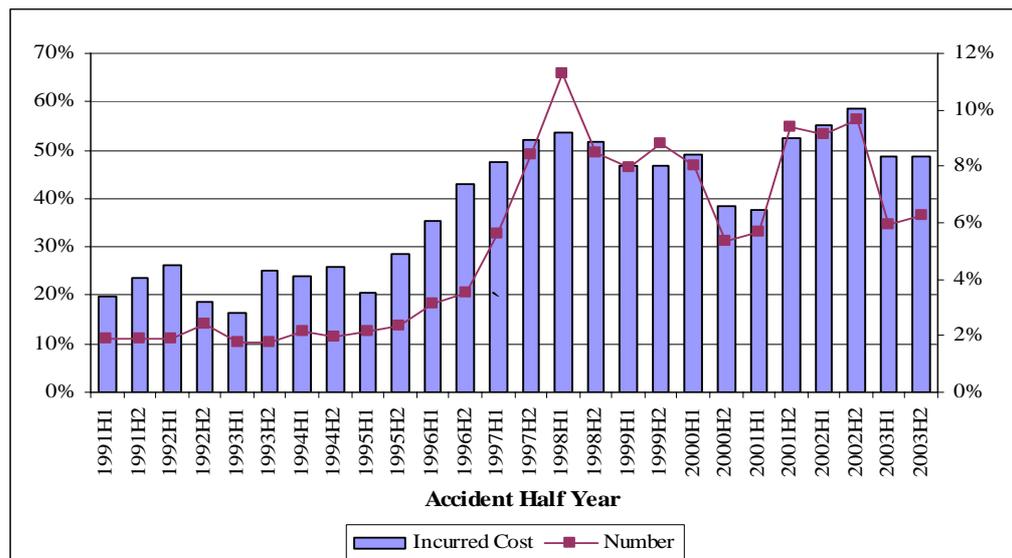
It can be observed the overall ultimate average claim cost for non-retrenched claims has remained relatively unchanged. There is no clear evidence of historical superimposed inflation, as observed in the aggregate ultimate average claim size, but it has some fluctuations over time. This lack of superimposed inflation is quite unique, as compared to other accident compensation schemes in Australia.

However, the average claim size for retrenched claims appears to go through periods of increases (“superimposed inflation”) with peaks in 1994, 1996 and 2000. In addition, the average claim costs for retrenched workers are approximately 13 times the size of non-retrenched claims. This is mainly due to a number of factors such as:

- Higher claim continuance rates for periodic type of benefits, as retrenched workers are generally of a older age group.
- Higher level of compensation benefits paid on lump type of payment such as redemption, common law and section 66/67. On average, redemption and common law payments for retrenched workers are 15% and 7% higher than non-retrenched workers.

It can be observed from Graph 16 below, the proportion of ultimate incurred costs of retrenched claims increases with the proportion of retrenched claims. Hence, the number of retrenched claims is the major driver of superimposed inflation in the scheme.

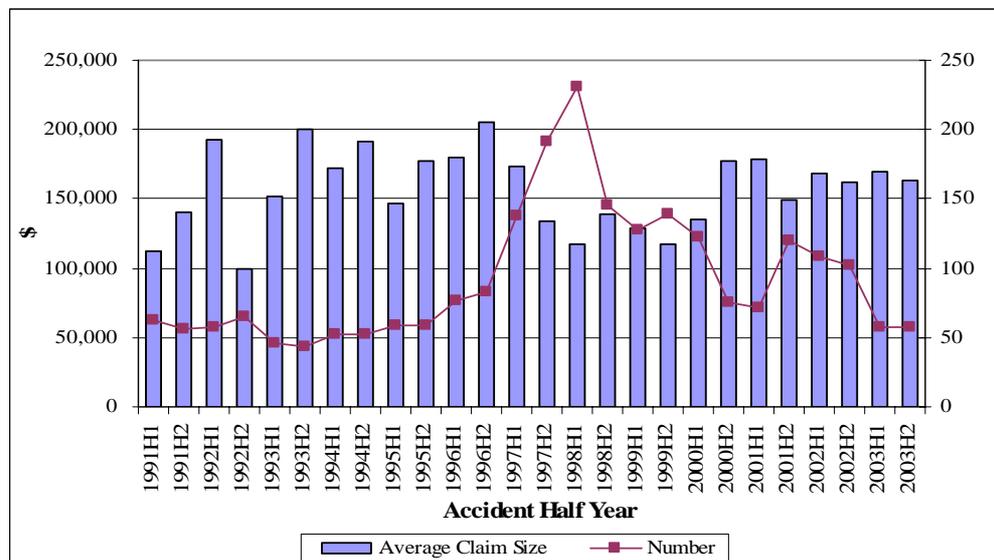
Graph 16
Proportion of Ultimate Incurred Costs for Retrenched Claims
Values at 31 December 2003



Based on the above analysis, it can be concluded that the superimposed inflation and substantially higher average claims size of retrenched claims illustrates that a change in the proportion of retrenched claims can have a significant impact on the average claim size and incurred costs for the scheme.

Graph 17 shows the ultimate average claim size and the number of claims reported for retrenched claims.

Graph 17
Ultimate Average Claim Size (\$) and Number Reported Retrenched Claims



It is also interesting to note from the graph above the periods of superimposed inflation actually precede the increase in the number of retrenched claims. This implies the change in economic condition has an inflationary impact on claims reported prior to the industry restructuring. This is because it would be more difficult for retrenched workers already on claim to return to work with the worsening of the economic condition.

2.4 Equity of premium rate between large and other employers

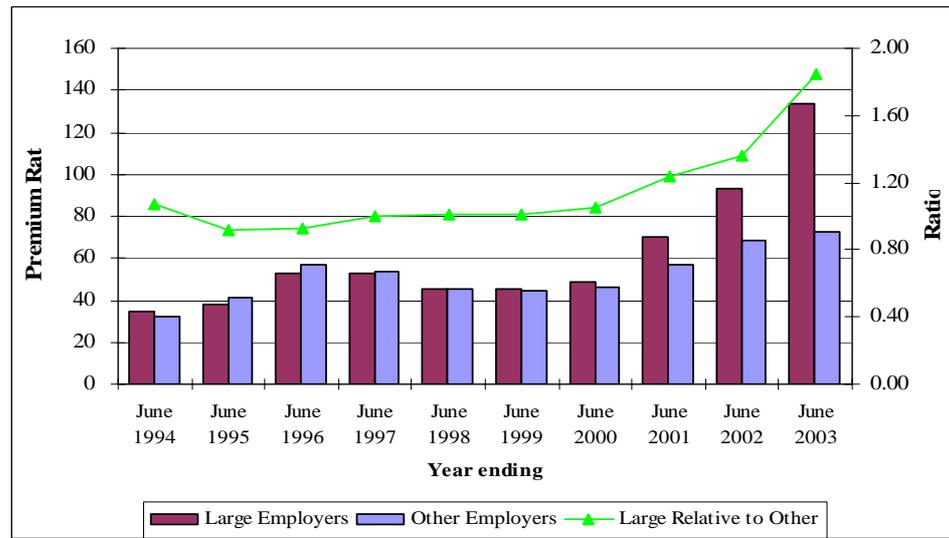
It is noted in Graph 3 that the gross written premium income has grown rapidly since June 2000. In addition, it is also observed that the contribution to the pool between large and other employers has changed (as detailed in later sections). Hence, the contribution to the funding of these unexpected claims costs, and the equity of the premium rating system is an important and yet sensitive issue.

The following sections detailed our investigation into the equity of the current premium rating system and contribution to the premium pool between large and other employers.

2.4.1 Large and Other Employers

Graph 18 compares the average premium rate payable by large and other employers for the years ending June 1994 to June 2003.

Graph 18
Average Premium Rate (per \$1000 Gross/Assessable Wage)



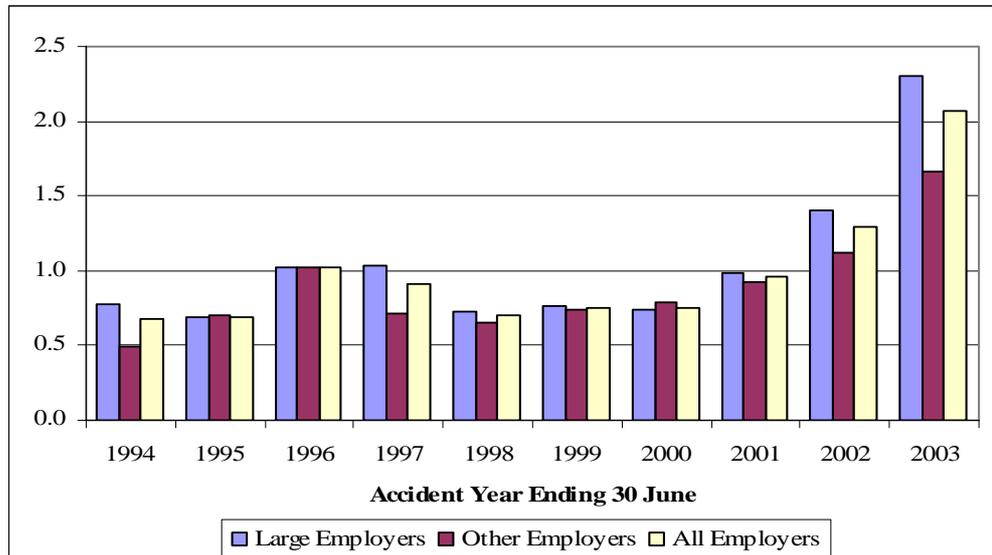
It can be observed from the graph above:

- For years ending 30 June 1994 to 2000, the overall average premium rate of large and other employers is similar from year to year. There are no significant differences between large and other employers, as reflected by the ratio of average premium rate of large and other employers being close to 1.
- For years 2001 and beyond, the overall average premium rate for all employers increased yearly. However, the rate of increase of the average premium rate is greatest for large employers. The ratio of the average premium rate for large employers to other employers increased from 1.24 at 30 June 2001 to 1.85 at 30 June 2003.

This differential in premium rates is justified if the large employers displayed worse claim experience than other employers over this period. If the differentials in claims experience do not correspond to relativities in the average premium rate, then there may be cross subsidies in premium rates between large and other employers.

We have defined “premium coverage ratio” as the ratio of gross written premium to the ultimate claims incurred costs. If the premium rate is fully funded and adequate, then the gross written premium received should exceed incurred claims costs to cover expenses and profit margin. Hence, the premium coverage ratio should exceed one. Graph 19 compares the premium coverage ratio between large employers and other employers, for accident years ending 30 June 1994 to 30 June 2003.

Graph 19
Premium Coverage Ratio



A number key points can be observed from the graph above:

- For accident years prior to 2002 except for 1996, the aggregate premium coverage ratio is less than 1. That is, the gross written premium received for the year is not adequate to cover the ultimate incurred claims costs incurred in the same year.
- The premium coverage ratio started to increase from 2001 to 2003 at a rapid rate, with more than 1 observed in years 2002 and 2003. This is due to CMI's decision to set premium rates in 2002 and 2003 to improve its solvency position.

For years prior to 2002, with the exception of 1994 and 1997, the large employers' premium coverage ratio is similar to those of other employers. However for the most recent 2 years, the employers' premium coverage ratio is on average 32% higher than those of other employers. The premium coverage relativity for large employers suggests possible cross-subsidies between the large and other employers in the premium rating structure. However, this is a "hindsight" view. That is subsequent changes in claims experience can result in the appearance of cross-subsidy in early years even though decisions on premium rates for these years did not intentionally plan cross subsidies.

We have investigated CMI premium rating structure to explain the possible cross-subsidies between large employers and other employers. We note that the data used to determine the premium rates excludes some policies that are not active as at 30 June 2003 ("inactive policies") and their associated claims. These inactive policies are due to closing of mines, replacement of old policies or merger/acquisition of mining companies. Hence, the claims arising from these inactive policies are generally retrenched claims where the full impact the claims costs would only emerge years after the employer ceases to trade.

It would appear the implicit philosophy of the current CMI premium rating system is to fund the unexpected development on claims arising from inactive policies is that the cost is spread in proportion to the incurred costs of the active policies, regardless of whether the owners of the inactive policies are still current in CMI's scheme. The large employers' incurred costs is approximately twice of that from other employers. Hence, under this approach, large employers would bear a significant contribution to the funding of these incurred claims costs from inactive policies.

The majority of these "inactive policies" are from non large employers as they have a greater propensity to fail. However, some of these "inactive policies" are owned by employers who are still active in the CMI scheme (pseudo "inactive" policies) who are mostly large mining companies. This then raises the question whether the claims costs arising from:

- pseudo "inactive" policies be funded by the owners who are still current in the scheme; and
- real "inactive" policies be funded by the pool of other employers.

Under this approach, the contribution of other employers to the incurred claim costs from inactive policies would be larger. However, there are significant counter arguments to this approach ranging from ability to pay to complexity in administration.

The above analysis highlights the potential impact of significant restructuring on the claims experiences and the subsequent financing of the claims costs. There are other issues to consider in designing a premium rating system. Cross-subsidies within sectors of an industry may exist, however these should be a conscious decision and fully aware of the potential impact of such cross subsidies.

2.5 Summary Findings

The claim frequency in the CMI scheme is significantly higher than other workers' compensation scheme. This is mainly due to the work nature of the coal mining industry, and to a lesser extent, the generous benefit structure of the CMI scheme. However, there has been a continual decline in claims frequency, reducing from 32.8% in 1980 to 10.6% in 2003 or 4.9% pa over 22.5 years. During the last four years the reduction in claims frequency accelerated to an average of about 12% pa. The decrease in claims frequency has been mainly driven by improved mine safety and to a lesser extent the increase proportion of labour hires/contractors in the workforce. However, offsetting some of these improvement is the adverse impact on claims arising from the ageing workforce and the move from underground to open-cut mines.

The industry has undergone a significant restructuring over the periods 1998 to 2000 and 2002. This has resulted in significant retrenchments. It has been shown the scheme's superimposed inflation arises solely from retrenched claims. These periods of superimposed inflation were associated with high number of retrenched claims reported. Hence, the number of retrenched claims is the major driver of the superimposed inflation in the scheme.

There is no clear evidence of superimposed inflation on non-retrenched claim. This lack of superimposed inflation on average claim size is unique as compared to other accident compensation schemes in Australia.

It is also noted that the average claim size of retrenched claims is approximately 13 times the size of non-retrenched claims. Therefore, it can be concluded that the superimposed inflation and substantially higher average claims size of retrenched claims illustrates that a change in the proportion of retrenched claims can have a significant impact on the average claim size and incurred costs for the scheme.

The relatively more expensive retrenched claims also have an impact on the design of the premium rating system. As the owners of some these retrenched claims are no longer in the scheme or had ceased trading, there are different approaches on how these claims costs should be funded and shared out within the industry scheme. Cross subsidies may exist in the adopted premium rating system, however this should be a result of conscious decision and fully aware of the potential impact of such cross subsidies.

Other notable features of CMI's claims experience over the last 10 to 15 years include:

- Labour hire/Contractors represent 26% of workers in 2003 up from about 12% in 1999. Labour hire/contractors claims frequency is approximately 15% below the level of permanent workers. Their average claim size has varied between 10% to 50% below that of permanent workers. It is unclear whether the premium rate for labour hire/contractors has in recent years been subsidising premiums for permanent workers.
- Claims frequency for the four largest employer groups in the last four years is about 20% above all other employers while their average claims size is a little lower than the scheme average. The difference in claim frequency appears to be largely driven by the increase in the Labour hire/Contractors workforce which is included in the all other employers group.

3. SCHEME COST COMPARISONS

3.1 Background

We consider first the theoretical additional cost of the CMI scheme over the NSW WorkCover scheme as a result of its more generous benefit structure. Our estimate is that for claims costs only (the cost of the benefits structure), the CMI scheme is between 30% and 45% more expensive than WorkCover excluding the impact of accident pay. We estimate this is increased by a further 10% for the higher cost for CMI over WorkCover in respect to its funding of risk margins and capital, and higher expenses.

To evaluate the extent to which the theoretical additional cost does exist, we compared costs and outcomes between the CMI and Queensland schemes for the coal industry, and also between the CMI and NSW WorkCover scheme.

Costs of schemes reflect their benefit design, benefit levels, socio-economic and cultural environment and management. Two general approaches can be adopted to compare the cost of schemes being a) claims cost plus expenses and profit margin; or b) premium levels.

It is difficult to obtain the necessary data to properly complete the assessment for the first approach. In addition this approach involves considerably more detailed work than the second approach. There are however, difficulties with the premium approach. We have endeavoured to overcome the difficulties of the premium approach by accessing relevant information and making adjustments to ensure a valid comparison.

There are always limitations in comparisons of the type we are undertaking and some of these are explained below in this section. Consequently, the results of our comparison are necessarily approximate but we do not believe they materially impact our findings and conclusions.

We have undertaken the following comparisons:

- Scheme costs and premium rates after adjustments for differences between the schemes.
- Coal and non-coal industry workers compensation costs and premium rates in NSW.
- Coal industry workers compensation costs and premiums in NSW and Queensland.
- Claims frequency in the NSW and Queensland coal industry. We were unable to directly compare the average claims size between the two states due to insufficient available information.

3.2 Differences between Schemes

There are two differences between the CMI and Queensland schemes that need to be adjusted before comparing premiums and costs of the schemes. The differences are:

- The CMI scheme includes and the Queensland scheme excludes, accident pay. Our analysis indicates that accident pay in the CMI scheme represents about 7% of total claim payments for an accident year.
- The Queensland scheme has a five day excess in respect of weekly payments. Our analysis indicates that the five day excess in the CMI scheme represents about 1% of total claim payments for an accident year.

Consequently the cost of the CMI scheme and premiums need to be reduced by about 8% to undertake a valid comparison with Queensland.

Premium rates in each state are set on bases that reflect the funding objectives of each scheme. Differences arise from allowances in respect of profit loadings, reinsurance, expenses and the extent to which they reflect the current accident year claims cost.

We have excluded profit loadings and reinsurance costs to undertake a valid comparison. Where appropriate we have adjusted premium rates to ensure they reflect current accident year claims cost. The matters we considered were:

- The definition of wages. We have assumed that the definition of wages is the same for each state and for CMI. This seems reasonable based on the fourth and fifth reports of the Workplace Relations Ministers Council titled “Comparative Performance Reporting” of August 2002 and November 2003.
- A valid comparison between states requires that premium rates not be cross-subsidised between industries. From a review of the actuarial premium rating reports we are able to establish that there are no deliberate cross-subsidies in the CMI scheme and the broader NSW scheme. For the Queensland scheme we have not been able to establish if there are any deliberate cross-subsidies between industries. For the purpose of our review we have assumed there are no deliberate cross subsidies of premium rates between industries in any scheme, including Queensland.
- A valid comparison between premium rates of schemes requires that premium rates reflect the cost of claims plus expenses of the scheme. That is, the premium rates are fully funded. We have been able to establish that the premium rates in NSW are fully funded. The premium rate in Queensland appears to be a reasonable indicator of a fully funded premium rate based on our analysis of past WorkCover (Queensland) annual reports.
- We have reduced scheme premium rates to exclude profit loadings that are included in premium rates in Queensland. In Queensland, WorkCover is required to fund risk margins of 15% and capital of 20% of outstanding claims provisions and we have assumed this equates to 8% of premiums.

- With the exception of CMI expenses, we have not made any adjustment for different expense allowances in premium rates. We have assumed that any differences are small (e.g. a few percent of incurred claims) and in the context of our comparison they are not likely to be material.
- There may well be differences between schemes in the way they classify employers by industry classification. Most, if not all, schemes use a similar classification system usually related to the ANZSIC classification system. Even so employers may be classified into different industries. We have assumed consistency of allocation of employees to industry classification between schemes.
- The levels of self-insurance vary by state and between classifications. We have not sought to obtain claims experience for self-insurers for NSW.

The assumptions above create some uncertainty in our comparison, however, any comparison of this nature is by nature an approximation and in the context of the results we do not believe the approximations we have made have a material impact on the results or conclusions.

Other schemes do not undertake some of the functions that CSPL does (primarily Health related functions) and essentially only fund the equivalent of CMI's expenses through premium rates. Consequently for the comparison of CMI's premium rates against other schemes we have taken CMI's expenses and reduced CMI's actual premium rates for the difference between CSPL and CMI expenses.

3.3 Comparison of Scheme Premium Rates

The following table sets out 2003-04 scheme premium rates.

Table 1		
Scheme premium Rates for 2003-04		
State	Premium Rate (% of Wages)	Adjusted Premium Rate (% of Wages)¹
NSW	2.80	2.80
Queensland	1.55	1.43

1 Excludes profit margins and loadings to finance scheme deficiencies

Our comments on the premium rates in the above table are:

- From analysis of PwC's latest actuarial advice the premium rate for NSW of 2.8% is close to a fully funded rate.
- The Queensland premium rate has been at 1.55% for a few years. We have assumed that the premium rate is representative of the underlying cost of claims since the scheme is in a sound financial position. We have deducted 0.12% to reflect a profit loading to fund risk margins and capital.

We have accepted that the differences between adjusted premium rates for each state in the above table reflect differences in the cost of each scheme. The reasons for the differences reflect generosity of benefits, cultural and socio-economic and possible demographic characteristics of each state.

3.4 Comparison of Coal and Non-Coal Mining Premium Rates in NSW

In Australia only NSW and Queensland have separate rates for underground and open-cut mining. The following table sets out a summary of premium rates for the coal and non-coal mining industries in NSW.

Table 2			
NSW 2003-04 Average Premium Rates – Mining Industries			
Type of Mining	Non-Coal¹	Coal (CMI Rates)²	Ratio of Coal to Non-Coal Premium Rate
Underground	10.2%	14.5% (16.4%)	1.42
Open-cut	5.5%	9.0% (10.6%)	1.64

1 Includes 3% loading for the \$500 excess

2 The figures of 16.4% and 10.6% are CMI's actual premium rates while the 14.5% and 9.0% exclude 7% for accident pay and reflect the expenses of CMI and not CSPL. CMI's new wage definition has been adopted.

The above table indicates CMI premium rates in NSW are about 40% to 65% higher than the respective non-coal premium rates.

On the surface it appears the premiums of the CMI scheme are higher than our theoretical estimate of the cost differences between the two schemes. However, the CMI premium rates have been set at a higher level than the true cost of the scheme to improve the solvency position of the scheme. The table below sets out the premium rates for CMI based on our estimate of the fully funded cost of claims for 2003-04 plus CMI expenses (excluding additional expenses of CSPL) excluding any amounts to improve the capital position of CMI.

Table 3			
CMI 2003-04 Revised Coal Mining Premium Rates Compared to 2003-04 Non-Coal Mining Premium Rates			
Type of Mining	Non-Coal	Coal-Adjusted CMI Rates	Ratio of Coal to Non-Coal
Underground	10.2%	8.2%	0.80
Open cut	5.5%	5.2%	0.94
Weighted Average¹	9.0%	7.5%²	0.84

¹ 75% underground and 25% open cut.

² Excludes other CMI classifications such as labour hire, contractors, etc.

The above table suggests that the fully funded premium rate for CMI in 2003-04, excluding a loading for funding risk margins and capital, is about 15% below the premium rate for non-coal mining industries in NSW.

From our review of PwC's 2003-04 premium rating report to WorkCover, the claims experience from 1998 to 2002 of the non-coal mining industry supports WorkCover's non-coal premium rates in the above table. It is difficult to compare prior year WorkCover premium rates for non-coal as there were significant cross-subsidies in WorkCover premium rates. WorkCover's 2003-04 non-coal mining premium rates above, are compared to our estimated fully funded premium rates for the CMI scheme over the past five years below. Note that unlike table 1 above this table includes all classifications in the CMI scheme including administration, coal preparation, labour hire and contractors.

Table 4	
Estimated Fully Funded Premium Rates for CMI	
Year	Premium Rate
1999-00	7.6%
2000-01	8.0%
2001-02	7.2%
2002-03	5.8%
2003-04	4.8%
Average 1999-00 to 2003-04	6.7%

The above CMI Fully funded premium rates include contractors, labour hire and other classifications, which we understand, are partly included in the mining classifications in the WorkCover scheme. Consequently CMI's average fully funded premium rates in the above table are not fully comparable to WorkCover's non-coal premium rates.

Taking a weighted average of the WorkCover underground and surface non-coal mining rates based on the proportion of underground and surface coal mines in NSW (which is approximately 75% and 25%) gives an average premium rate of 9.0%. The rate of 9.0% is higher than all rates in the above table.

Similar conclusions may be reached if allowance is made for a significant proportion of contractors, labour hire and other classifications not being in the non-coal classification. That is the fully funded CMI rates compare favourably with WorkCover non-coal rates.

Given the uncertainties in the above comparison our conclusion is that there does not appear to be any significant difference between the NSW coal and non-coal mining industry workers compensation costs and premium rates despite the theoretical additional cost of the CMI scheme benefits.

3.5 Coal Industry Premium Rates in NSW and Queensland

The raw premium rate comparison for 2003-04 between CMI premium rates and the rates for the Queensland coal industry is detailed in the following table.

Mine Type	NSW	Queensland	Ratio NSW to Queensland
Underground	16.4%	4.8%	3.4
Open-Cut	10.6%	1.5%	7.1
Contractors, Labour Hire, Coal Preparation	6.5%-8.0%		
Other	1.1% - 1.3%		

The comparison in the above table suggests that the cost of the CMI scheme is three to seven times that of Queensland or a weighted average of about 4.3 based on the NSW distribution between underground and open cut mines.

It is possible some of the labour hire, coal preparation and other CMI classifications would be included in the underground and open-cut mines in Queensland. Consequently the average of 4.3 may be overstated, however, it is unlikely to be significantly less than 4.0.

The figures in the above table require adjustment for a number of factors to be a valid comparison. These factors are:

- The inclusion of accident pay in the CMI scheme but not Queensland.
- The first five day excess in Queensland but not the CMI scheme.
- CMI's expenses rather than CSPL's expenses
- The CMI premium rates need to be adjusted to reflect the fully funded cost of the CMI scheme and not current premium rates, which are designed to improve the capital position of CMI.

As noted earlier in this section CMI premium rates need to be reduced by 8% to provide a valid comparison with Queensland in respect of accident pay and 5 day excess.

We have adopted our estimate of CMI's fully funded premium rates set out in tables 3 and 4 above for the comparison.

The 2003-04 average NSW WorkCover premium rate is 2.8% (excluding GST). The 2003-04 average Queensland premium rate is 1.55% (excluding GST). This reduces to 1.43% when adjustment is made to exclude a loading to fund risk margins and capital. An adjustment should be made to these figures to reflect the different mix of industries in each state and inclusion of self-insurers.

Table 4 of the November 2003 Comparative Performance Monitoring Report suggests that an additional increase of about 14% is required to the NSW average of 2.8% to reflect Queensland's industry mix. This increases NSW's premium rate to 3.20%.

A summary of the above adjustments is set out in the following table.

Table 6		
Adjusted NSW Coal Industry Premium Rates 2003-04		
	Mine Type	
	Underground	Open-Cut
1. Raw CMI Premium rate	16.4%	10.6%
2. Exclusion of accident pay and excesses ¹	14.5%	9.0%
3. Estimated Fully funded premium rate ²	7.5%	4.6%
4. Adjust for lower scheme costs in Queensland ³	3.3%	2.1%

1. 8% adjustment
2. Cost of claims plus expenses less 8% adjustment for accident pay and excess and the expenses of CMI not CSPL.
3. Row 3 times 1.43/3.20

The following two tables compared Queensland's coal industry premium rates in 2003-04 to our estimate of CMI's fully funded premium rates in the above table.

Table 7			
Ratio of Adjusted CMI to Queensland Coal Industry Premium Rates¹			
Year	Mine Type		
	Underground	Open-Cut	Weighted Average²
2000-01	2.5	4.9	3.1
2001-02	2.3	4.5	2.8
2002-03	1.9	3.7	2.3
2003-04	1.6	3.1	1.9

1. NSW rates from row 3 of table 6.
2. 75% underground, 25% open-cut.

Table 8			
Ratio of Adjusted NSW to Queensland Coal Industry Premium Rates Including Overall Differences in Broader Scheme Premium Rates¹			
Year	Mine Type		
	Underground	Open-Cut	Weighted Average²
2000-01	1.1	2.2	1.4
2001-02	1.0	2.0	1.3
2002-03	0.8	1.6	1.0
2003-04	0.7	1.4	0.9

1. NSW rates from row 4 of Table 6.
2. 75% underground, 25% open-cut

Our observations on the above results are:

- The cost of the NSW CMI Workers Compensation Scheme without adjustment for the overall difference in WorkCover NSW and Queensland scheme costs, has been about 2 to 3 times the cost of the Queensland scheme for coal mines for the last four years or an average of about 2.5.
- The cost of the broader NSW WorkCover scheme is about twice the cost of the Queensland scheme. This reflects a number of factors including culture, socio-economic and more generous benefits of the NSW scheme.
- After adjusting for the higher cost of the broader NSW WorkCover scheme it appears the cost of the CMI scheme is about 1.1 times the cost of the Queensland scheme for coal mines over the last four years. In the last three years the cost is broadly comparable.
- We would have expected a higher cost of the CMI scheme relative to Queensland in table 6 given the higher theoretical cost of the CMI scheme and the extent to which retrenchments increased the cost of the scheme in the CMI scheme.

3.6 Claims Frequency – Comparison of NSW and Queensland.

Information from WorkCover Queensland enabled us to undertake a comparison of claims frequency for the coal industry between NSW and Queensland. There is some uncertainty associated with the comparison, since the categorisation of employers into coal industry classifications in Queensland may be different to NSW. We are not aware of the extent of any differences, however, we doubt it would have any material impact on the results of the comparison.

We were supplied with Queensland data, which included wages and claims data by accident year from 1997-98 to 2002-03 by industry classification, which we allocated into underground coal mining and open cut coal mining.

We understand the Queensland data provided to us included claims with less than five days on compensation. Consequently Queensland data should be on a comparable basis to CMI's data.

Details of the comparison we undertook are:

- Since employee numbers were not available for Queensland, we calculated claims frequency as:

$$\frac{\text{Number of claims reported}}{\$100,000 \text{ of wages}}$$

- Differences in wage levels and definition of wages in each state will result in different claims frequency levels. However, we do not expect this to have a material impact on results of the comparison.

- Wages were not inflated to current values. This will not impact relative performance between the two states.
- No allowance was made for IBNR claims. This should have little relative impact on the comparison.

CMI data used for the comparison was as at 31 December 2003 compared to February 2004 for Queensland. The different dates will result in the claims frequency for NSW in 2002-2003 being somewhat understated, relative to Queensland and to a lesser extent for earlier accident years.

The following table sets out the ratio of NSW claims frequency to that of Queensland.

Table 9						
Ratio of NSW to Queensland Coal Industry Claims Frequency						
	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03
Underground	2.10	1.96	2.45	1.92	1.71	1.59
Open Cut	2.65	2.10	2.42	2.78	2.71	1.84
All Coal Mining¹	2.24	1.99	2.45	2.14	1.96	1.65

1. 75% underground 25% open cut.

The results in the above table suggest coal industry claims frequency in NSW is about twice that of Queensland, except for 2002-03, which is about 65% higher. The lower ratio in 2002-03 is a result of an increased in frequency in Queensland and a decrease in NSW.

Our comments on the results are:

- We are surprised at the difference in claims frequency between the two states. It is possible it does not reflect the true difference in claims frequency between the two states.
- One explanation of the lower frequency in Queensland is that there is under reporting of claims in Queensland (for claims less than five days on compensation) but the possible extent of under reporting is unclear.
- Differences in characteristics of the industry in each state may explain part of the difference. For example the NSW industry has an average employee age of nearly 45 and it is possible Queensland may have a younger age force. NSW has older mines than Queensland, and from our discussions with stakeholders, older mines tend to have higher claims frequency.
- More generous benefits in NSW may give greater incentives to make a claim than in Queensland.

- Cultural differences between the two states may result in a greater propensity to claim in NSW reflecting more of a “compensation culture” in that state.
- Differences in the management of the workers compensation and OHS systems. For example Queensland may be more pro-active at risk prevention and may have a premium system that provides greater incentives to employers to prevent accidents.

We have not sought to verify these possible explanations. Despite the above comments the results suggest NSW “may” have significantly higher claims frequency than Queensland coalmines. Information from the Comparative Performance Monitoring report notes that for mining, coal and non-coal, in NSW and Queensland:

- In NSW the claims incidence of compensated injuries and diseases from 1997-98 to 2001-02 for all mining resulting in more than one week off work was between two and two and a half times higher than Queensland.
- In NSW the claim incidence of compensated injuries and diseases from 1997-98 to 2000-01 for all mining resulting in more than 12 weeks off work in NSW varied between two and three times higher than Queensland but only 50% higher in 2001-02.

The results set out in the Comparative Performance Monitoring report were adjusted for the mix of each industry (eg underground versus open-cut, coal, gold, copper, etc).

The results set out in from the Comparative Performance Monitoring report appear to generally support our claims frequency comparison in table 9 and also suggests there may not be significant under reporting of claims in Queensland. We also note from this report that other industries in Queensland generally have lower claims frequency (over one week incidence) than in NSW but not to the same extent as for mining.

3.7 Findings and Conclusions

Our main findings from our investigations presented in this section are:

- From 1997-98 to 2002-03 the NSW coal industry appears to have had about double the claims frequency of the Queensland coal industry adjusted for the different mix of underground and open cut mines. However, it appears the difference reduced significantly in 2002-03 but it is unclear if the reduction is just a fluctuation since the differences do fluctuate significantly from year to year. The different characteristics of the industry, generosity of NSW benefits and cultural differences may partly explain differences in claims frequency. However, even making allowances for these differences it is our view that NSW probably has a significantly higher claims frequency than Queensland possibly due to safer mines.
- The cost of the broader NSW WorkCover Scheme is close to double that for Queensland. This reflects more generous benefits, culture, socio-economic, labour, accident frequency and possible demographic characteristics between the

states. That is, in theory even if the CMI scheme replicated the NSW WorkCover scheme, it would be reasonable to assume NSW coal industry employers would still pay double the Queensland coal mines premium rates assuming all other matters remained unchanged.

- The fully funded average premium rates (i.e. excluding a profit loading) for CMI from 1999-00 to 2003-04 are about the same level as non-mining industries in NSW despite the CMI scheme having more generous benefits.
- The cost of the CMI scheme without adjustment for the overall difference in WorkCover NSW and Queensland scheme costs, has been on average about 2.5 times the cost of the Queensland scheme for coal mines over the last four years. This comparison adjusts for the different mix of underground and open-cut mines.
- After adjusting for the higher cost of the broader NSW scheme it appears the cost of the CMI scheme is broadly consistent with the Queensland scheme for coalmines. This comparison adjusts for the different mix of underground and open-cut mines.

Our conclusions from our investigation are:

- The significantly higher claims frequency in NSW coalmines probable explains a considerable amount of the higher premium rates in the NSW coal industry compared to Queensland. However we note claims frequency for the CMI scheme during the last 4 years has fallen considerably by about 55% or 12% pa which is a significant achievement.
- It is unclear what additional costs are added to the CMI scheme from the more generous benefits since the premiums and cost of the non-coal mining industry in NSW is consistent with the fully funded premiums and cost of the CMI scheme despite CMI's more generous benefits. There are possible explanations that cause the CMI scheme costs to be lower than expected. These include cultural, geographical, socio-economic and may include the monopoly situation of the scheme and the industrial relations environment.
- After allowing for the additional claims frequency in NSW the cost of the CMI scheme is probably broadly consistent with the Queensland scheme for coalmines. It is possible the CMI premiums are lower than would be expected relative to Queensland given the more generous benefits of the CMI scheme.
- The coal industry in NSW has had to in recent years pay additional premiums above the real cost of the CMI scheme. This in our view is a consequence of the financial management of the CMI scheme and not the difference in the cost of the CMI and Queensland schemes. It also probably reflects costs of retrenchments in the 1990's and the fact that premium rates in earlier years were too low.

4. ACCIDENT PREVENTION

4.1 Background and Data

We evaluated differences in accident prevention practices between mine sites, and to determine if these differences were related to differences in the frequency of claims (the number of claims per worker per annum).

A survey form “Survey of Mine Site Accident Prevention Practices” (“The Survey”), was developed with input from the NSWMC, CFMEU and employers. In particular, we were grateful for input to the survey design from members of the Safety Committee of the NSWMC. A copy of the survey form is included in Appendix A.

The history of claim incidents was matched to survey responses using our analysis of claim data provided to us by CSPL.

All survey responses have been treated in confidence. We have not presented our findings in a way that would disclose individual participants. Completion of the survey was voluntary by mine sites.

The survey form asked 61 questions about mine site accident prevention practices. The survey included questions seeking data and general comments. Sections of the survey included:

- Section 1 – Mine site details.
- Section 2 - Safety measurement and management system.
- Section 3 – Other details of the safety program, and rating the success of the program.
- Section 4 – Future plans.

The survey form was mailed to a list of 58 mine sites. We received 21 responses in total (36% of the original mailing list). Some of the responses included aggregate responses for a company for a number of their mine sites.

The survey respondents covered 4,367 employees, which represented:

- 43% of employees within the coal mining industry.
- 57% of these employees were from open cut mines.

Total coal production for respondents was 79.5 million tonnes (MT) per annum production, which represented 72% of production for NSW.

In our experience the response rate of 36% for a voluntary survey is a reasonably typical response level. Additionally, coverage of 43% of employees, and 72% of production, is an above average response.

4.2 General comments by survey respondents

Respondents provided written comments to questions Q46, Q55, Q60 and Q61 of the Survey. These questions were:

- Q46 – “For the mine site, what has changed in the last five years? When was the change made?”
- Q55 – “What has made the biggest impact on safety over the past five years?”
- Q60 – “What other changes do you anticipate in your operations, due to use of the safety measurement and management framework and process?”
- Q61 – “What enhancements do you anticipate making to your safety measurement and management framework?”

The following were the main themes in the responses to the above four questions:

- For many companies there has been a recent change in management, ownership and restructuring which has increased the management focus on safety.
- The restructuring of the industry has also lead to improved physical upgrading of mine infrastructure which has reduced injuries.
- There is currently a focus on the introduction of “behavioural” safety and peer based safety management processes for workers.
- Many companies are implementing common safety management systems across multiple mine sites.
- Companies are developing performance indicators to track performance against measurable targets.
- Safety is increasingly seen as “attitude” or culture, and improved workforce culture is seen as a key issue for improving safety.
- Training programmes are becoming more formalised.
- Legislation changes and fear of prosecution has necessitated development of mine safety management plans.

4.3 Aggregate survey response

We highlight below some of the key findings from the aggregate responses.

In respect to mining type, 57% of respondents operated open cut mines, and 43% underground.

In respect to safety roles 95% of respondents have a mine safety manager, and 81% have a mine safety committee. 80% of respondents said the mine safety committee had implemented operational changes. 76% of respondents said there was an expense budget allocated to safety.

There were lower responses for other roles involved in safety at the mine. 86% cited involvement from the parent company, 71% from the CEO, and 62% from other mines.

Most respondents (95% or more) cited that they had safety measurement and safety management systems in place.

There were lower responses for how safety systems impacted the mines operational processes. 81% said safety systems had lead to operational changes, and 70% said safety sign-off was part of purchasing processes.

There were lower response rates related to the safety system impact on rosters and shift structures. 70% said rosters and shift structures were designed for safety goals, and 67% said there was active management of aging and fatigue. One third of respondents did not see aging and fatigue being actively managed.

Most respondents (95% or more) had documented processes for claims, rehabilitation and return to work plans, and provided employee assistance programs.

The Survey themes presented earlier in this section showed the importance of behavioural safety, and buy-in and culture to enhancing safety. All respondents (100%) said safety was promoted at the mine, and there was commitment to safety from management and from workers. All respondents said there was on-site safety training for workers.

Fewer respondents had linked safety to recognition processes. 81% of respondents said people were recognised for safety, and 76% said they had cultural change projects. However, only 65% of respondents said the mine had participated in a safety award program.

Fewer again respondents had linked safety to reward processes. 62% of respondents said safety is included in performance agreements of workers, and 52% of respondents said they had linked pay and remuneration to safety.

Most respondents have had safety measurement and management systems in place for some time, with 86% for more than 3 years, and 14% more than 1 year but less than 3 years.

The primary focus of safety measurement systems were mostly said to be time lost, injuries reported, and hazards identified.

In respect to the success of programs, 76% of respondents said their safety program was moderately successful, and 24% said it was highly successful.

About half the respondents said the safety program had provided new information and insight, and about half also said this had lead to some action.

The safety program is not integrated into coal pricing, with only 15% of respondents saying safety was integrated into coal pricing decisions.

However, most respondents indicated that the safety program was integrated into other decision-making processes. Respondents said safety was integrated with decisions; 95% for general decision making; 91% for production processes; and 81% for equipment purchasing decisions.

In respect to employment and remuneration, 86% of respondents said safety was integrated with employment decisions, but only 48% said it was integrated with incentive compensation.

Only 45% of respondents said they were close to their vision of an ideal safety system. 55% said they were less than three quarters towards their vision.

The major challenges or impediments to implementing safety systems were mostly said to be maintaining the momentum throughout the process, having insufficient resources and inadequate internal support.

The main challenge remaining for 62% of respondents was cultural acceptance and buy-in.

Implementation of programs is still in progress with 52% of respondents saying they still needed to complete the implementation of safety systems.

There was support for the benefits of safety, with 76% of respondents saying that the benefits of safety systems outweighed the costs, with 14% undecided.

4.4 **Effectiveness of Mine Site Accident Prevention Practices**

In order to ascertain the effectiveness of safety practices, the survey responses were compared to the claims experience for the particular mines, over the past year, and the past five years.

Limitations

In interpreting the results of the comparison it is important to recognise there are a number of limitations of our analysis. These limitations of the study that make analysis and interpretation difficult include:

- The sample size of 21 respondents was relatively small, although it covered a significant percentage of coal production and employees.
- There is scope for subjectivity in responses to a number of the survey questions. That is, different mines with the same practices may have responded differently to the same survey questions or interpreted the questions differently to other mines.
- For many of the variables, responses were the same for most mines. This limited the possible differentiation between the mines, on the basis of the survey.
- We had to estimate changes in employment over the five-year period. The number of employees (annual average) for the past year was provided on the survey responses, however the number of employees over the past five years had to be estimated. In a number of cases, significant changes in employee numbers were signalled on the survey response. Where this was the case, this was built into the estimation, but where this was not the case, it was assumed that for the past five years, the employee numbers have remained the same for each of the mines.

Approach

The variable we used for claims experience is claims frequency, which is the number of claims divided by the number of employees.

We present our results in three ways:

- We present a simple comparison of differences in claim frequency for groups within the sample.
- We determine whether these observed differences in claim frequency for the groups are statistically valid using small sample statistics.
- We use small sample statistics to test which survey questions have the greatest relative impact on claim frequency.

For brevity we have not included the technical calculations of the statistical testing. However, we identify which tests have been applied so that a technical reader could refer to these methods.

Mine Safety Index

A mine safety index was developed to sort mines into groups based on their overall safety practices, and to compare these groups to their claims frequency.

Mines were grouped in two major categories, based on a mine safety index from the survey responses.

The mine safety index was constructed in the following manner:

- A number of the questions in the survey provided data on safety that was to some extent quantifiable. Each of these questions was allocated one point. For ‘Yes/No’ style questions, one point was allocated to ‘Yes’ (or to the response expected to be positively aligned with safety), and zero was allocated to ‘No’.
- Where survey questions had more than two possible responses, one point was allocated to the response expected to be most positively aligned with safety, and lesser points were allocated to other responses.
- For example, the following are the responses for question Q56 of the survey. “How far along are you towards your organisation’s vision of an ideal safety measurement and management system?”

0%	We’re there
45%	Less than 90%
40%	Less than 75%
15%	Less than halfway
0%	Less than 25%
- The response expected to be most positively aligned with safety in the above example is ‘Less than 90%’. This response is allocated 1 point. ‘Less than 75%’ and ‘Less than halfway’ were assigned 0.5 point and zero respectively (as there were no less than 25% responses).
- For the purposes of constructing the mine safety index, the questions that did not provide quantifiable responses were excluded, as were questions for which all responses were identical.
- The mine safety index is therefore the sum of the points allocated to each response in the Survey.
- The range of results for the mine safety index for all Survey responses was a range of 26.5 to 48.6, indicating the variation in Survey responses. The median value was 40.8 (the median is the value for which 50% of responses are higher or lower than).

The mines with a safety index less than or equal to the median value (defined above) were grouped as ‘Safety Index Low’. The mines with a safety index higher than the median value were grouped as ‘Safety Index High’. 11 mines were in the low group, and 10 mines were in the high group.

Sample groupings

The groupings used to compare differences in claim frequency were:

- Survey respondents versus non-survey respondents.
- Open cut versus underground mines.

- ‘Safety Index High’ versus ‘Safety Index Low’ groups.
- ‘Safety Index High’ versus ‘Safety Index Low’ groups, allowing for the mining method of underground or open cut.
- Small mines versus large mines (on the basis of employee numbers, where small is equal to or less than 200 employees).
- The length of time that the accident management framework has been in place.
- Whether the respondent considered the safety program to be highly successful or not.

4.5 Findings for Sample Groups

Table 10 below shows the results for comparisons of claim frequency between the sample groups. The sample groups are as defined above. It should be noted that differences in the claim frequency for groups might not reflect statistically significant differences.

The five-year claim frequency is total claim incidents for the five accident years 1 July 1998 to 30 June 2003 (from CSPL data), divided by our estimate of average employment over the five-year period.

The one-year claim frequency is claim incidents for the last full accident year 1 July 2002 to 30 June 2003 (from CSPL data), divided by average employment declared in survey responses.

Table 10
Results of Claim Frequency Comparisons

Claim Frequency Comparisons	FiveYear	OneYear
	Claim Frequency	Claim Frequency
Respondents (Sample)	22.9%	16.6%
Other	30.4%	20.1%
Sample Open Cut	14.1%	8.7%
Sample Underground	31.1%	23.9%
Safety Index High	18.9%	11.8%
Safety Index Low	26.4%	20.4%
Open Cut - Safety Index High	13.8%	8.3%
Open Cut - Safety Index Low	15.2%	10.2%
Underground - Safety Index High	43.4%	32.6%
Underground - Safety Index Low	28.9%	22.7%
Small Company(<=200 employees)	23.5%	18.1%
Large Company	22.6%	15.9%
How successful do you rate your safety program?		
Highly successful	20.0%	13.8%
Moderately successful	23.5%	17.2%
Length of time framework has been in place:		
>3yrs	22.5%	16.2%
1-3yrs	25.9%	20.3%

We note the overall results are generally consistent with our analysis of scheme data. Our comments below refer in the main to the five-year claim frequency (although we note there are further improvements in frequency for the one-year result).

The claim frequency for respondents was compared to non-respondents. ‘Respondents’ with a claim frequency of 23% were the aggregate result for Survey responses, while ‘Other’ with a claim frequency of 30% represents the balance of the CMI scheme (non-respondents). The ‘Respondents’ claim frequency was found to be lower in both periods, and improved from 23% to 17%. One reason for this is the greater proportion of open cut mines in respondents than non-respondents. It is also possible the respondent mines might have better claims experience than non-respondents.

The differences in claim frequency for mining method of open cut versus underground are well established and understood. These frequencies were calculated mainly as a check that the sample is consistent with this. Open cut have a frequency of 14%

compared to underground at 31%. Both groups saw reduced claim frequency between the periods, improving to 9% for open cut and 24% for underground.

The differences in claim frequency for Safety Index were as expected. The Safety Index High group had a claim frequency of 19% that was lower than the Safety Index Low group's frequency of 26%. These groups also both improve between the periods, improving to 12% for High and 21% for Low. The Safety Index High group achieved the greatest reduction in claim frequency between the periods (an improvement of 38%).

The Safety Index result combined with open cut method also showed the expected relationship (although the difference is relatively small). High index for open cut had a claim frequency of 14% compared to low index for open cut of 15%. The difference is greater for the one year result with High open cut of 8% and Low open cut of 10%.

The result for the safety index combined with underground mining was not as expected. High Safety Index underground mines had a frequency of 43%, which was worse than Low Safety Index underground mines of 29%. This perhaps emphasises the hazards of underground mining, that underground mines that indicated positive responses to Survey questions still have high claims frequency. We note that in our stakeholder meetings that some mine operators had indicated that investments in safety programs had not reduced claim frequency. The reverse result also applied in the one-year period. Possibly because only two mines were in "safety high", as opposed to seven under "safety low".

The differences between small and large mines were not large. The responses showed a marginally lower claim frequency for large mines of 23% compared to 24% for small mines. The difference was marginally greater for the one year period with large mines of 16% compared to small mines of 18%.

There was a strong result for perceived success of the safety regime. Those mines that perceived their regime to be more successful had lower claim frequencies. Mines that rated themselves as highly successful had a frequency of 20%, compared to mines that rated themselves as moderately successful of 24%. This may be because the claims experience influences the perception of success, or that the perception accurately reflects reality. None the less, respondents were able to rate their own success and this rating did reflect differences in claim frequency.

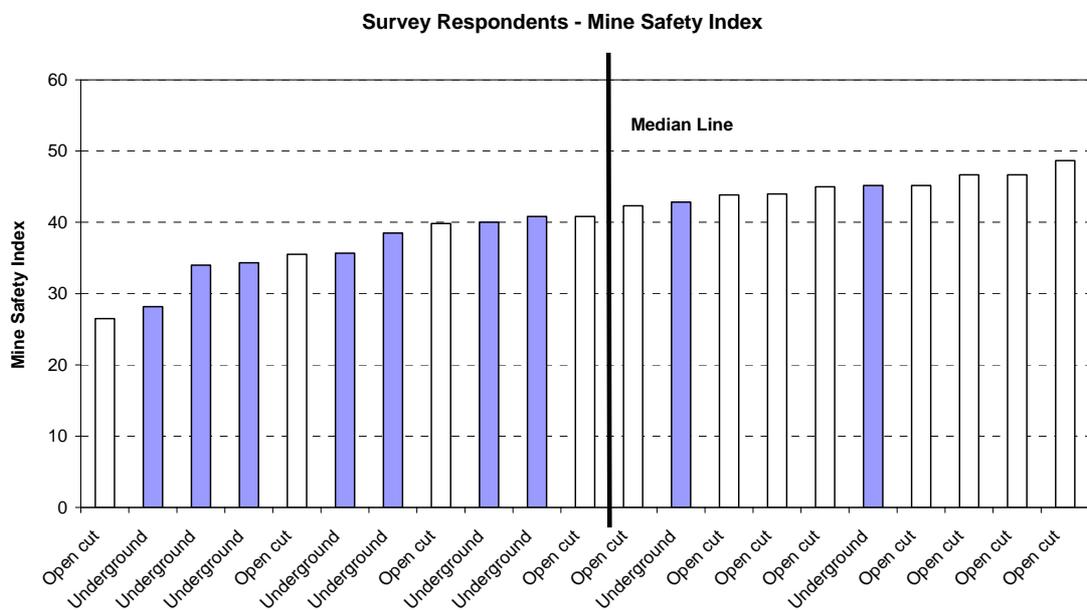
As expected, the mines with safety programs that have been implemented for a longer period had lower claim frequency. Mines that had a safety program in place for more than 3 years had a frequency of 23% compared to 26% for other mines. The difference had marginally increased for the one-year result with results of 16% and 20% respectively. We would expect these results with program effectiveness increasing with length of time since implementation.

In summary, all results were in the order we expected, except for the experience of underground mines.

Open cut mines had an average safety index score of 42.1, which was higher than underground mines with a score of 37.7. There were 12 open cut respondents and 9 underground respondents.

The figure following shows the distribution of results for the Mine Safety Index for each of the mines responding to the survey. The results show that there are only 2 underground mines in the group ‘Safety Index High’, and conversely only 4 open cut mines in ‘Safety Index Low’ (although the lowest score is for an open cut mine). This distribution of results shows there is high correlation between the results for ‘Safety Index High’ and open cut mines. The value mine safety index is the score of the points assigned to each question and response.

Graph 20



4.6 Statistical Significance for the Sample Groups

A small sample statistical test was conducted to determine if the findings of differences in claim frequency between sample groups was statistically significant (i.e. the results are statistically valid).

The test that was used is called a Kruskal-Wallis One Way Analysis of Variance.

This analysis was conducted comparing sample groups based on:

- The mining method.
- The Safety Index Group.
- The mining method and the Safety Index Group.

When we applied this statistical test we found that the only statistically significant result was for the difference between open cut and underground mines, and only in respect to the five-year claim frequency.

There are limitations in the analysis due to the small number of surveys, even though they cover a large portion of the industry.

4.7 Statistical Significance for the Survey Questions

A small sample statical test was conducted to determine if the findings of differences in claim frequency between survey questions was statistically significant (i.e. the results are statistically valid).

Our approach was to match the mine site claim frequency for five-year and one-year periods to survey questions (and their responses), and applying a statistical test to determine which survey questions had the greatest impact on claim frequency (i.e. which survey questions most explained variance in claim frequency between mines).

The test that was used is called “Random Forests” (Breiman, 2001).³ This is a non-linear non-parametric regression model.⁴

4.8 Findings for Survey Questions

The results of the statistical testing are shown below in the order of significance (first is most significant).

Number Question and Response

- | | |
|-----|---|
| Q57 | “What are the toughest challenges in implementing a safety measurement and management system?” with a response of “Lack of resources”. |
| Q52 | “To what extent is safety management assimilated and ingrained into the mine culture and decisions with respect to the following (area listed)”, with a response of, “Employment decisions” and “High, and moderate”. |
| Q2 | “What is your mining method” with a response of “Open cut or underground”. |
| Q45 | “The primary focus of the safety measurement framework is?” with a response of “Workers compensation costs”. |

³ While the data set is very small, and contains a large number of variables, Random Forests (RF) was considered suitable because: It does not overfit; It is one of the most powerful and accurate regression methods available (Meyer, 2003); Each point is assessed on “out of bag” model subsets that were not used in the construction of model; It is relatively insensitive to data sets with a large number of predictors; It makes no distributional assumptions regarding the data; It provides measures of the relative importance of predictors.

⁴ The references for this approach are drawn from, Leo Breiman, “Random Forests: Machine Learning”, 45(1), 2001, and also David Meyer, “Support Vector Machines in R, A Benchmark Study”, 2003, refer to <http://www.ci.tuwien.ac.at/~meyer/svm/final.pdf>

- Q56 “How far along are you towards your organisation’s vision of an ideal safety measurement and management system?” with a response of “Less than 90%” or “Less than halfway”.
- Q51 “To what extent is safety management assimilated and ingrained into the mine culture and decisions with respect to the following (area listed)” with a response of “Production processes and productivity” and “High, and moderate”.
- Q9 “Is there involvement from the parent company in safety for this mine?” with a response of “Yes”.
- Q58 “What challenges remain?” with a response of “Cultural acceptance / buy-in”.
- Q53 “To what extent is safety management assimilated and ingrained into the mine culture and decisions with respect to the following (area listed)” with a response of “General decision making” and “High”.

The results of the statistical testing for the survey questions show the following practices impact mine safety:

- Having adequate resources to implement safety systems.
- Linking employment decisions to safety management.
- Using open cut processes.
- Linking safety measurement to workers compensation costs.
- Measuring progress towards organisation vision of safety.
- Linking production processes to safety management.
- Involving the parent company in mine site safety.
- Achieving cultural acceptance and buy-in to safety.
- Linking general decision making to mine safety.

4.9 Conclusions and Summary

All the tests show there are significant differences between open and underground mining. The majority of open cut mine respondents also had higher safety index scores than underground mining respondents.

The three most important Survey Questions that explained variation in claim frequency were:

- Having adequate resources to implement safety systems.
- Linking employment decisions to safety management.
- Using open cut processes.

Significant matters arising from the aggregate survey responses were:

- One third of respondents did not see aging and fatigue being actively managed.
- 62% of respondents said safety is included in performance agreements of workers, and 52% of respondents said they had linked pay and remuneration to safety.
- 62% of respondents said there were challenges remaining for cultural acceptance and buy-in. 52% of respondents said they still needed to complete the implementation of safety systems.

Whilst the statistical tests showed the results were in the main not statistically significant, we believe observations can be drawn from the Survey about where current safety effort is focused, and the impact this is having on claim frequency.

Premiums (workers compensation costs) could be more closely matched to safety, and to reward improved safety.

Premium discount/loading could be based on mine site risk assessment that considers the practices that impact mine safety.

Experience rated premiums reflect past decisions and activity in respect to OH&S. They are not forward looking, but retrospective.

It is possible to reward mining companies through premiums for better safety programs to provide them with greater incentives to reduce injuries and claims in a prospective manner.

While any such system requires investigation, our suggestions and issues are:

- We favour a system that focuses on mine operators whether they are the mine owner or not, as they are the primary drivers of OH&S.

- Rewards could be a mixture of improvements in safety relative to last year or the absolute level compared to peers. For example, underground versus underground, and open cut versus open cut, or comparison to best practice.
- It may be necessary to determine “best practice” OH&S as a base to rewarding mining companies. This would require considerable research by CMI.
- The level of the reward/penalty would require careful consideration. It should not be too large to threaten the target premium pool but does need to provide significant incentives to improve safety.
- We urge caution regarding how the assessment of each mine’s safety is assessed. We are strongly of the view that the assessment should not be conducted by the mine operator/owner or an organisation engaged by the mine operator/owner. An assessment conducted by CMI or a party engaged by CMI is preferred. We suggest there needs to be a balance between the rewards and penalties. For example, ideally the premium rewards should balance the premium penalties.
- The cost of the assessment may be significant and needs to be measured against the potential benefits. It may be possible to develop a safety index for the assessment. It is preferable if the assessment is objective but this may be too restrictive. Subjectivity of assessment should be minimised.
- The results of our study could be used as a starting basis for the OH&S reward/penalty premium system. Initially the system could be simple and be developed over time.

5. CHALLENGES FOR OTHER SCHEMES

5.1 Introduction

The results emerging from our reviews of the CMI scheme identified issues that workers compensation schemes have not considered in the past and also challenged many views that have been held. The CMI scheme is unique in Australia and possibly the world and from our detailed review it presents some challenges from which other workers compensation schemes may be able to improve their schemes.

Before briefly setting out some of these challenges we point out that the extent to which they are applicable or relevant to other schemes will vary. They may even not be appropriate due to the unique characteristics of the CMI scheme particularly its geographical location and skill set of its workforce. Many of these challenges require further research within other workers compensation schemes.

5.2 Accident prevention is a major driver of scheme costs

We were continually reminded through out our two reviews that if accidents did not happen workers compensation benefits would not be payable and premium rates would fall. We concur with this view. By far the biggest beneficial driver of claims costs and premiums over the past 23 years has been the drop in claims frequency of the CMI scheme especially in the last few years.

In our view there needs to be greater ongoing focus on prevention of injuries and accidents. However, while regulators can regulate to force employers, insurers can provide information and encourage employers and other organisations can advise employers to have safer work places, it is ultimately the decisions of employers that create safer work environments. In our experience employers respond best to financial incentives/penalties. Insurers can greatly assist employers improve the safety of their work places but do need employers to have the right attitude and the right incentives in place to provide that assistance.

5.3 The economic dynamics of an industry is a key driver of claims costs and premiums

The CMI scheme experience clearly shows industry restructuring can have a substantial impact on claims costs to the extent that claims costs may double in poor economic times through retrenchments and lack of job opportunities. While we do not expect such a large impact on most industries we nevertheless believe that at times significant deterioration in the claims experience of an industry may be a result of its poor economic dynamics.

It is somewhat unclear which industries may be more exposed to such events. We suggest that industries predominately in rural areas, lower skilled workers and heavily unionised may be more prone to such events. Examples may include abattoirs, building and construction and some manufacturing industries.

The CMI scheme also illustrates that general scheme claims experience should improve when unemployment falls as it has been in Australia for the last decade. We suggest that the extent to which this happens is an area worthy of further research. However, research outside the NSW coal industry may be difficult since to our knowledge no scheme or insurer captures good data on the retrenchment experience of claimants. We suggest that scheme regulators seriously consider collecting retrenchment data on claims given the significance of the impact of retrenchments on the claims experience of the CMI scheme.

The impact of retrenchments on claims experience especially the substantially higher average claims size suggest schemes should consider:

- Having a special claims management focus on retrenched claims. For example specialised teams focusing on retraining and early intervention.
- A specialised claims service for industries where retrenchments have a more significant impact on the claims experience (e.g. abattoirs). For example some claims teams would focus purely on one industry. This may be difficult in a multi-insurer scheme unless regulators insist insurers specialise in certain industries.

5.4 **Data, data and data**

The CMI claims database is unique in Australian workers compensation schemes as it holds the entire history of an employee's workers compensation claims experience across multiple coal industry employers and also an employers work history in the industry. This creates advantages in management of claims for CMI, employees and employers since many workers have in excess of five and even over twenty claims during their working career. It is aided by the specialised industry based nature of the scheme and the relatively long-term employment of individual workers within the industry.

Other advantages of the CMI database are the identification of the employment status of each claimant and details of claimant's accident pay experience. All these features are missing from other workers compensation schemes in Australia.

Collection of these data items for other schemes would, particularly for some industries assist them to better understand each scheme's claims experience to enable better claims management efforts, risk prevention efforts and claims cost drivers,

We believe it feasible to collect data on employment status and accident pay in all workers compensations schemes in Australia.

However, collecting data on the entire claims and employment history of a worker is probably not feasible unless specialised schemes like CMI are set up for other industries that have the potential for many workers to have multiple claims during their working life.

5.5 The significance of workers compensation benefit design contributions to claims costs and premium levels

- We question the significance at what WC benefit design has on trends in claims frequency and average claims. We believe that a strong argument could be made that benefit design has had little impact on the claims cost and premium levels within the CMI scheme. This is evidenced by:
- The lack of any superimposed inflation over the past 23 years; and
- Claims frequency or accident prevention and industry dynamics have had a much greater influence over claims cost and premium levels than benefit design within the CMI scheme.

We suspect a similar situation arises in many other industries. One major reason is the existence of accident pay. There well may be other reasons. Many industries in each state like the coal industry have industrial awards that include accident pay for a considerable period of time that may be up to 104 weeks. Accident pay can result in little loss of income for employees while on workers compensation compared to their previous levels of weekly income. It applies whether for total, partial or temporary incapacity.

Accident pay is not included within a workers compensation scheme but rather is negotiated between employers and unions as part of their enterprise agreements. During our two reviews of the CMI scheme we had a number of debates about the impact of benefits design on scheme costs. Employers not surprisingly always pointed to the existence of common law and to a lesser extent redemptions as adding additional cost to the CMI scheme and reducing incentives for employees to return to work. It has been demonstrated around the world that high levels of income replacement for long periods of time can substantially reduce the incentives for employees to return to work.

In our view in many industries the existence of accident pay and similar arrangements outside workers compensation can be a more important driver of claims costs and premium levels than workers compensation benefit levels. While we are not suggesting that scheme reforms are not warranted, Governments need to recognise that workers compensation scheme reforms may not reduce the cost to employers in some industries by much as targeted due to as to the existence of accident pay. In this situation employers may have a much greater influence over the cost of workers compensation than Governments.

We suggest that workers compensation schemes need to better understand the impact and extent that accident pay arrangements have on the cost of workers compensation schemes on an industry-by-industry basis.

Not all employers insured by CMI have accident pay in their enterprise agreements. Importantly CMI collects data on accident pay in its database and has an informed understanding of those employers that have accident pay. Perhaps other workers compensation schemes should consider collecting information on accident pay.

One interesting aspect of accident pay within the CMI scheme is its cost. Its direct cost is only about 7% of the cost of all compensation. However, its real cost is much higher due to the incentives it provides employees to remain on benefit.

The existence of accident pay also introduces some interesting challenges for premium rating in both public and privately underwritten schemes as we note in the following point.

5.6 Cross-subsidies within premium systems are possibly greater within Australian schemes than many realise

The unique situation of the CMI scheme has given us a better appreciation of the cross-subsidies that may exist in workers compensation premium systems. Most if not all workers compensation schemes in Australia aim to have no deliberate cross subsidies between industries and employers in their premium systems.

Our experience with the CMI scheme suggests that cross subsidies within premium systems may be greater than appreciated in both private or publicly underwritten systems. There appear to be three possible forms of cross subsidies that are not dealt with in existing premium systems.

- As noted in the previous point the existence of accident pay outside workers compensation can have a significant impact on the claims experience of individual industries and employers and may negate the intention of legislative reforms to reduce claims cost and premiums.
- In the event that legislative reforms are made the usual approach is to uniformly adjust premium rates across all industries and employers. This approach can introduce cross subsidies in premium rates between industries and employers as those employers with accident pay provisions will see less improvement in their claims experience from the reforms than those employers without similar provisions.
- Consequently employers without accident pay will be cross-subsiding the premiums for those employers with accident pay provisions. The situation may persist for some years until the claims experience emerges and actuaries adjust industry premium rates to reduce the cross subsidies.
- As illustrated by coal an industry undergoing restructuring leading to significant levels of retrenchments can have a substantial impact on the claims experience for an industry. The time for the full impact on the claims experience to emerge and be fully recognised may be several years and results in an unintended level of under reserving. The under reserving can arise despite best efforts of actuaries for two main reasons:
 - Actuaries may not be able to establish the extent of and impact of retrenchments as the necessary data is not included in the claims data base.

- Future retrenchments impact the duration and cost of previous claims that occurred. To set adequate reserves actuaries need to form a view of possible future economic conditions in an industry and possible levels of future retrenchments say during the two to three years from the valuation date. This view can then be incorporated into the valuation assumptions.
- Within the CMI scheme any deterioration in the claims experience is financed totally by the coal industry but within wider WorkCover type schemes the funding is more complex. Self-insurers within an industry undergoing restructuring finance the full extent of any deterioration in their claims experience.
- For employers within the main scheme the funding of the claims experience impact may be borne partly by other industries and not the industry undergoing the restructuring. The extent to which the cost is borne by other industries depends on the approach to the setting of premium rates, the details of the premium rating system (e.g. the extent of experience rating including how many years claims of experience are taken into account in calculation of premiums and the extent of any under reserve of claims cost for prior years that emerge).
- We are not suggesting that schemes need to reduce this possible level of cross-subsidy but rather that they should recognise the potential for impact of significant restructuring on the claims experience of individual industries and make a conscious decision how they intend financing the impact within the scheme premium system.
- An employer that ceases to trade and retrenches its entire workforce will typically see its claims experience for prior years deteriorate. That deterioration will not be able to be funded by the employer. Smaller employers typically have a greater propensity to fail than larger employers. During our review of the CMI scheme the question of how this deterioration should be funded between large and small employers arose.
- One view is that cross-subsidies may be considered to exist within an industry between large and small employers. Should larger employers bear part of the cost of funding the deficit from smaller employers or should small employers be asked to only provide the funding. It does seem inconsistent that self-insurers do not have to provide any funding.
- Currently under scheme premium systems both large (except self-insurers) and small employers share in funding deterioration in claims experience of failed companies which would tend to be smaller employers. We are not suggesting a change needs to be made but rather we believe research on this matter be undertaken so that a conscious decision is made on funding and cross-subsidies.

5.7 Industry based schemes may be a significant opportunity to improve the claims experience and reduce premiums in other schemes

We would agree that the CMI is a difficult marriage between unions and employers and creates a complex set of politics but the CMI scheme does seem to work as evidenced by:

- The lack of superimposed inflation;
- Continuing declines in claims frequency; and
- A premium rate lower than may be expected given the generosity of benefits.

The experience of some overseas schemes suggests that a focus on industry-based schemes is “best practice”. To date there has been little focus on the needs of individual industries in Australia and what focus there has been has been of limited success. Our review of the CMI scheme suggests key aspects may need to be present for an industry-based approach to succeed. These aspects may include:

- High claims frequency.
- Heavily unionised workforce.
- A limited number of insurers managing claims. Ideally one insurer is preferable but two insurers can work and provide a level of competition.
- Ownership by unions and employers of the scheme/insurer(s).

These factors suggest that few industries are likely to achieve significantly improved claims outcomes and reduced premium rates from industry based schemes.

Should there be other industry-based schemes? Our view is a “yes” but only for industries having the above characteristics.

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7. APPENDIX A – SURVEY FORM OF MINE SITE ACCIDENT PREVENTION PRACTICES

Section 1

Your contact details

Contact name (if we have questions about the responses).

Contact title.

Contact phone.

Contact Email.

Your mine site

1. Mine site (for E&Y survey purposes only, will not be disclosed).

2. Mining method (please tick (✓) to indicate).

- Opencut
- Underground

3. Coal production (million tonnes per annum).

4. Number of employees (annual average).

Section 2

Safety measurement and management system

Please tick (✓) to indicate, for each Question (in each row).

Question	Yes	No	Comments (if needed)
Who is involved in safety	---	---	---
5. Does your mine have a Mine Safety Manager? (Or a safety co-ordinator, training co-ordinator, or someone who is responsible for safety)			
6. Does your mine have a Mine Safety Committee? (Which involves workers in managing safety)			
7. Is the CEO involved in safety for this mine?			
8. Is there involvement from other mines in safety for this mine?			
9. Is there involvement from the parent company in safety for this mine?			
Safety measurement	---	---	---
10. Does the mine have a database for recording hazards, incidents, and injuries?			
11. Does safety measurement allow for reporting at group level?			
12. Are safety statistics reported at regular intervals?			
13. Can ad-hoc reports be provided quickly?			
14. Can the mine analyse trends in accident statistics?			
Safety management	---	---	---
15. Does this mine have a documented safety management system?			
16. Does it go beyond the minimum legislative needs?			
17. Is the safety system monitored?			
18. Do you have internal checking of your safety system for the mine?			
19. Do you have external checking of your safety system for the mine?			
20. Have you had an external check within the last 12 months?			
21. Do you have on-site first aid officer for this mine?			
22. Do you have drug and alcohol testing for staff at this mine?			

Question	Yes	No	Comments (if needed)
23. Is safety management included in performance agreements for managers?			
24. Do you also monitor health, disease and illness of workers?			
25. Has your mine made operational changes as a result of monitoring your safety systems?			
26. Is safety sign-off part of the purchasing processes for equipment?			
27. Are rosters and shift structures designed for safety goals?			
28. Is there active management of aging and fatigue?			
Claims processes	---	---	---
29. Is there a documented claims and injury process at the mine?			
30. Does your mine have a documented rehabilitation process or "return to work" program?			
31. Does your mine have an Employee Assistance Program?			
People and culture	---	---	---
32. Has your mine received or participated in a Safety Award program?			
33. Is pay/remuneration linked to safety?			
34. Are people recognised in other ways for safety?			
35. Is safety in the performance agreements of workers?			
36. Is there on-site safety training for workers?			
37. Are there behaviour, attitude or cultural change projects?			
38. Is there promotion of safety in the mine?			
39. Is there commitment from management?			
40. Is there commitment from workers?			

Question	Yes	No	Comments
Safety committee	---	---	---
41. Has your safety committee implemented any operational changes?			
42. Is there an expense budget allocated to safety?			
43. Do nominated safety staff have training, competency testing, and professional development?			

Other comments?

Section 3

Other details about your safety program

Please tick (✓) to indicate, for each Question.

44. How long has the safety measurement and management framework been in place?

- More than 3 years
- More than 1 year but less than 3 years
- One year or less
- Not yet in place, but currently implementing
- No implementation planned

Comments: _____

45. The primary focus of the safety measurement framework is?

- Time lost
- Worker compensation costs
- Production volume
- Hazards identified
- Incidents reported
- Injuries reported
- Other (specify):

Comments: _____

46. For the Mine Site, what has changed in the last five years? When was the change made?

Rating the success of your program

47. How successful do you rate your safety program

- Highly successful
- Moderately successful
- Not successful

Other comments?

48. How useful has the safety management system been at this Mine Site?

- It has not provided any new information
- It has provided new information, but no new insight
- It has provided both new information and additional insight
- The additional insight provided has led to / is expected to lead to some action

To what extent is safety management assimilated and ingrained into the mine culture and decisions with respect to each of the following (please tick appropriate level for each area listed)?

Area	High	Moderate but integrated	Moderate but not integrated	Low
49. Coal pricing decisions				
50. Equipment purchasing decisions				
51. Production processes and productivity				
52. Employment decisions				
53. General decision making				
54. Incentive compensation				

55. What has made biggest impact on safety over past five years?

56. How far along are you towards your organisation's vision of an ideal safety measurement and management system?

- We're there
- Less than 90%
- Less than 75%
- Less than halfway
- Less than 25%

Other comments?

57. What were / are the toughest challenges in implementing a safety measurement and management system (tick all that apply)?

- Controlling the costs of project
- Lack of expert knowledge
- Data limitations
- Lack of resources
- Information systems
- Maintaining momentum throughout the process
- Lack of internal support
- Other (describe):

Other comments?

58. What challenges remain (tick all that apply)?

- Automation / streamlining of the process
- Data limitations
- Credibility
- Resources
- Cultural acceptance / buy-in
- Timely reporting
- Completing Implementation
- Other (describe):

Other comments?

59. Do you feel the benefits from a sophisticated safety measurement and management system outweigh the costs (implementation, technology, staffing, time)?

- Yes
- Undecided / too early to tell
- No

Other comments?

Section 4
Future plans

60. What other changes do you anticipate in your operations, due to use of the safety measurement and management framework and process?

61. What enhancements do you anticipate making to your safety measurement and management framework?

... In the near-term (next 12-18 months)? _____

... In the long-term? _____

What other comments and views do you wish to share for our survey?
