acirrt – research report

Safety management of contractors in the coal mining industry: challenges and insights from the field

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1. Introduction and research approach

1.1 Introduction

The use of contractors across the Australian coal industry has increased over the last decade. This increase has been driven by a range of factors, including: a search for greater labour flexibility, more flexible utilisation of plant and equipment, maintenance planning and production output. This has led to an industry focus on how to reconcile increased labour flexibility with organisational structures that preserve the coherence of health and safety systems. There is a concern to ensure that the flexibility delivered by increased use of contractors does not either structurally or inadvertently impact adversely on occupational health and safety (OHS) performance.

Indeed, it is acknowledged that the use of contractors can be associated with an increase in adverse OHS outcomes. This now international concern has led to the European Commission to contract the European Agency for Safety and Health to produce a comprehensive report on the status of contracting and the effects on OH&S[1]. Research on these issues in Australia has been slower, with the exception of work by Quinlan and Mayhew (2002), who have undertaken work in the child-care, transport, hospitability and building industries. Quinlan recently completed an assessment of 141 internal studies which found that more than 90% of them linked work arrangements to inferior OH&S outcomes[2].

These findings are of concern in an industry such as coal, where safety is paramount and the increased use of contractors in non-traditional areas of operation is a relatively recent initiative. Changes to the structure of the internal coal industry labour market that may affect OHS outcomes should and are being viewed with interest. At the same time, evidence from coal industry workplaces that appear to be managing these issues well is not widespread.

As a result, ACIRRT, University of Sydney, successfully applied to the then Joint Coal Board (now Coal Services) to undertake some exploratory research into such industry initiatives. The idea for this project was based

[1] Goudswaard, A et al, (2002), 'New forms of contractual relationships and the implications for occupational safety and health', prepared for European Agency for Safety and Health Work, Luxembourg

[2] Quinlan, Michael, (2002) 'Changing employment relationships – implications for OHS and injury management', presentation at NSW Mining Industry OH&S Conference, 1-3 September
Note: Work arrangements included outsourcing, temporary or leased workers and downsizing and job insecurity

on an evaluation of the "Memorandum of Understanding"[3] between the NSW Government and the major construction companies in NSW. The results of this evaluation highlighted the significance of workplace factors, management structures and sub-contracting relationships on safety outcomes. It also strongly highlighted the variability in outcomes across the industry. The ACIRRT evaluation also identified a discernible pattern of barriers to the implementation of contractor safety confronting even the most focussed safety advocates in the construction industry.

Drawing on these insights from the NSW construction industry, this report aims to:

- Codify the main safety challenges associated with contractors in the coal industry
- Identify how mine sites are currently responding to these challenges
- Explore how those challenges might best be addressed by drawing on other industry initiatives.

1.2 Research approach

The research approach adopted for this project is principally qualitative and interview based. The focus of the research was to study **processes** and **outcomes** in each company in order to identify points of strength and weakness in the implementation of the contractor management process. We did not aim to conduct an audit. [4] Rather the research process is designed to explain where and how safety management systems and practices interconnect and what factors contributes to failure and success.

By tracking the contractor chain through each company we have been able to crosscheck how management policies translate into actual process and outcomes.

Our experience from the evaluation of the MOU in the construction industry demonstrated that it was not at the level of policy that systems fell down. Rather, difficulties arose around the **translation** of these policies into site practice. It was with this understanding of where systems fell down that we approached our research in the coal industry.

[3] An evaluation of the NSW Construction Industry Memorandum of Understanding regarding safety was conducted by ACIRRT in 2001. It is published as a chapter in the **Safely Building Report**, 2001, Workcover NSW

[4] A scoping and audit of the various contractor safety systems is currently being undertaken by Pricewaterhouse Coopers for the NSW Minerals Council.

The research was structured as followed:

a) Identification of representative "best practice sites":

Key informants from the industry were contacted and questioned to determine a representative sample of five best practice sites in NSW for investigation. Ten interviews with key informants provided important contextual information and assisted in the selection of the five sites. A balanced number of under ground and open cut operations representing a range of different models of contractor use were selected including: permanent on-site contractors and intermittent, temporary and daily contractors. Three underground operations and two open-cut mines were involved in the project.

b) Structured site interviews utilising a "slice" approach:

Interviews were conducted on each site with individuals representing all levels of the contractor supply chain. Interviews were with:

- Mine managers
- Site and corporate safety managers
- Operational managers with responsibility for contractors
- Directly employed mine workers
- Contractor and labour hire managers and supervisors
- Contract and labour hire employed mine workers

In total, 40 site interviews were conducted across 5 sites.

c) Additional sub-contractor interviews

In an attempt to better understand the views of contractors, a further 11 contractor owners and workers across the industry were interviewed by phone.

Overall, a total of 61 interviews of between one and two hours in duration have been conducted for this project.

Confidentiality has been guaranteed to every participant. For this reason no company, site or individual is identified in this report and nor will they be disclosed in any other report or presentation unless expressly agreed by the party concerned.

d) Analysis and report structure

We have structured the information collected around key questions, rather than around each of the sites. The key questions we posed were:

- What is the broader context and environment in which contractor safety systems operate in the coal industry?
- What are the major challenges associated with effective contractor safety management at the site level?
- What are the key dynamics that underpin these challenges?
- What strategies have the sites developed to deal with these challenges?
- Drawing on other example, what are the key opportunities for improving safety in the industry in the future?

2. Context

2.1 Understanding what we mean when we talk about "contractors": a framework for understanding

There is potential for some confusion about exactly what is being referred to when discussing contractors. It is therefore important to establish what categories we used in this project. In this way we can also identify that there are different management challenges associated with contractors of varying status.

As in all industries, there are different kinds of contractors operating in the coal industry. These contractors have different employment contracts, conditions and employment status. Key informants interviewed talked about "labour hire", "casuals", "subbies" and "contractors". This is further complicated by the growing phenomenon of labour hire firms bidding for contracted services.

The matrix below provides a structured profile of the various forms of contract work emerging across industry in general. It has been adapted from previous work by Watson et al (1999).

It takes into account both 'time' and the 'employment relationship'. This enables us to differentiate categories of contract and labour hire work including the length of time engaged in the work as a determining factor.

Figure 1: Categories for understanding non-standard work

		EMPLOYMENT RELATIONSHIP					
		Mine operator is employing company		Mine operator is not employing company			
		Permanent	Casual	Labour hire/employment agencies		Independent Contractors ('sole traders' or 'own account workers'	Outsourced Suppliers
				Workers are employees	Workers are 'dependent contractors'		
TIME	Full-time	A	C	F	H	J	L
	Part-time	B	D				M
	Seasonal/ temporary/ intermittent		E	G	I	K	N

Source: Watson et al (1999)
Note that the greyed-out areas are boxes which are either meaningless or extremely uncommon

The framework reveals the complexity of the relationships. When we combine both the relationships between the employing company and the contractual and employment status of the contractors it is obvious that a myriad of combinations is possible. It also highlights the increased distance from the principle employing company made possible by particular arrangements (such as in category "N" when an individual may be a seasonal employee with an outsourced supplier).

The **distance** of the employment relationship from the principle mine operator is a fundamental factor in understanding the dimensions of contract labour. Arguably, the more distant the relationship, the more challenging and difficult it is for the host company to control work processes, including safety management systems. At the same time, how well this relationship is managed will be contingent on other structures and systems in place at a workplace level.

The definition of contractors used in this report

Contracting relationships are increasingly characterised by a complex array of relationships between the principal host companies and the myriad of contracting companies. In addition, there is a further layer of relationships between contracting companies.

- **Relationships between the main host company and contract companies**

The categories referred to in this report as 'contractors' are those in cells F-N where the host company usually retains in some way but does not directly employee contract labour. They can include:

- self-employed contractors who are directly retained (not employed) by the host company
- employees who are employees of other contract and labour hire company but work at the mine site
- labour hire firm contractors who are placed within a company and are employees of the host company for the duration of their time at the site.

A combination of arrangements may prevail concurrently within a particular site . In addition, it is important to understand that labour hire and contracting firms engage **both** 'employees' and what are referred to here as 'dependent contractors'. This means that contracting and labour hire companies will sometimes directly hire employees and/or retain them as sub-contractors disengaged from a direct employment. This groups is different from 'independent' contractors who legitimately work as 'sole traders', working to a range of different employers.

- **Relationships between contracting companies and the host company**

Further complexities are apparent if we examine relationships between the various forms of contracting companies and the host company. As can been seen in Figure 2 below, outsource suppliers can also use independent and dependent contractors, labour hire/agency workers as well as their own employees to service the contract with the host company.

The relationship between the 'worker' and the host company may then pass through the hierarchy of two other organisations. For example, an outsourced provider may have a maintenance contract with a particular mine site. They may service that contract with the use of labour hire personnel. In figure 2 we can see Watson's (2000), further refined categories around contracted labour.

Figure 2: Categories for understanding contracted labour

Employment status of worker	Worker's situation vis a vis host company and labour-supplying company		
	Working directly for the host company	Working for host company with labour supplying company as intermediary	Working for a company with an outsourced contract with the host company
Employee	A	D	G
Dependent contractor	B	E	H
Independent contractor	C	F	I

Source: Watson (2000), 'Labour hire in NSW – an issues paper' prepared for the NSW DIR by ACIRRT
Note that the shaded areas indicate the areas that this research concentrates on.

If we look at the column representing 'employment status of worker' we can see different types of employment. These include:

- employees who have pay as you earn tax (PAYE) deducted from their wages. These may include full-time, part-time or casual workers.
- 'independent contractor' describes work as a sole trader and invoicing for services that are provided
- 'dependent contractor' refers to a worker who appears to be engaged as a contractor but works exclusively with the host and is dependent on a single employer for all their work.

Questions about the legal status and accountabilities exist around each of the non-standard employment categories.

- Cells A-C describe those who work directly to the host with no other companies involved
- Cells D-I capture the nature of the contracting arrangements that are most commonly regarded as relevant in coal mining
- Cells D-F refer to labour hire (supplementary labour predominantly called in to cover shortfalls in the core labour working for the host with the labour supplying company as an intermediary)
- G-I refer to those contracts that are designed around the provision of a particular service, for example supplying a contract to maintain the conveyor system or provide secondary roof support with workers engaged by the contractor company.

The employees in these categories can be full-time, part-time or seasonal/temporary/intermittent. In practice most employees appeared to be of the seasonal/temporary and intermittent variety, generally referred to as 'casual'. However, a significant proportion of those non-standard workers at the sites we studied remained at the same site for a long period of time. For the purposes of the report the workers in cells D-I

will be referred to as 'contractors' to differentiate them from the 'direct' employees of the host.

Finally there is a growing practice in NSW for mine operations to be wholly outsourced to a principal contractor. In this case, the mine lease will be owned by a particular company, but the entire operational management out-sourced to a another, separately owned contracting company.

In this project we have investigated safety management at the site level and in doing so have not concentrated on the relationship between mine owners and principal contractors. Rather, we have focussed on the dynamics between *mine operators* (whether owners or principals) and the contractors they engage. For that reason, this report refers to mine operators rather than mine owners. There are important observations to be made about the outsourcing of whole mine operations and the impact on safety. However, we do not explore these implications in this report.

2.2 The environment in which contractor safety is managed in coal mining

It is well accepted that there has been increased production output and productivity in the Australian coal industry. The production of saleable coal in NSW has increased by 10% over the last 5 years. Over the same period the level of employment has dropped more than 30%, seeing the production of saleable coal per employee increase approximately 40%. [5] These gains in efficiency are generally explained by improvements in technology, labour utilisation and a reduction in the proportion of underground mining to open-cut mining[6]. There is also some evidence of increased hours worked by each employee, although this appears to account for a relatively small proportion of the increased saleable tonnage when we consider that the output per employee per hour has increased approximately 38% over the same period. [7] These trends are outlined in Figure 3 below.

[5] Joint Coal Board, New South Wales Coal Statistics 2000-1, October 2001, JCB, p1
[6] Though several informants explained that mining practices after stripping the open cut pit are now going underground, potentially reversing that trend.
[7] *Ibid*, Table 58, p47

Figure 3: Summary of NSW Coal Statistics

Production '000 tonnes	1996-7	2000-1	Change %
Raw coal	**123,678**	**138,779**	**12.2**
Underground mines	54,642	53,719	-1.7
Open cut mines	69,036	85,060	23.2
Saleable coal	**99,483**	**110,240**	**10.8**
Underground Mines	47,378	46,116	-2.7
Open cut mines	52,105	64,124	23.1
Number of mines	**68**	**56**	**-17.6**
Underground mines	44	32	-27.3
Open cut mines	24	24	0.0
Employment	**14,351**	**9,849**	**-31.4**
Underground mines	8,821	5,740	-34.9
Open cut mines	5,530	4,109	-25.7
Saleable output per employee, tonnes	**6,920**	**11,570**	**67.2**
Underground mines	5,240	8,180	56.1
Open cut mines	9,750	16,500	69.2

Source: JCB New South Wales Coal Statistics, October 2001

Increased use of contract labour

The increase in the use of contract labour has also grown during this period. Whilst specific statistics are not available, feedback from industry informants suggests that the rate of contractor usage at individual sites, has increased, as has the areas of work that contractors are now engaged.

It is equally difficult to make a state-wide assessment of what proportion of the coal mining workforce are now contractors. Based on the current numbers at the five sites studied for this project, there is significant variability between sites. The proportion of contractors to the direct employees of the mine operator over the period 2000-2001, ranged approximately from 5.5% to 35%, with an average of 18%. Levels at each site change, rising and falling depending on the production cycle, maintenance shut-downs, long-wall moves, contractual movements and so on.

The JCB has offered some estimates. [8]. They estimate that in the year 2000-2001, a total of 9 849 employees (including contractors) were engaged in NSW coal mining.. Other estimates suggest that the total average employment amongst contractors with 10 or more employees was the equivalent of 1 916 employees over the year 2000-1. This underestimates the proportion of contractors employed or retained by contractors with less than 10 employees. These figures are therefore likely

[8] JCB, 'Lost-time injuries and fatalities NSW Coal Mines 2000-01', Table 9, pg 16

to be an underestimation of the proportion of contractors across the coal industry. [9]

Industrial relations context

The decrease in direct employment and the concurrent increase in contract and contingent employment have met with varying degrees of resistance from the industry unions. This is an important dynamic when considering the overall environment within which contractor safety is managed in the coal industry. There is a strong subtext of industrial unrest and opposition to the employment of contractors in the industry. At some sites this has created a divide between the direct and contract workforce which has implications for safety. The support and cooperation of fellow workers is critical to quality safety outcomes, so this breakdown in workforce relations is an important aspect of the overall safety environment.

3. Key OHS challenges associated with the use of contractors in the coal industry

3.1 The dynamics of contractual arrangements in the coal industry: towards a model

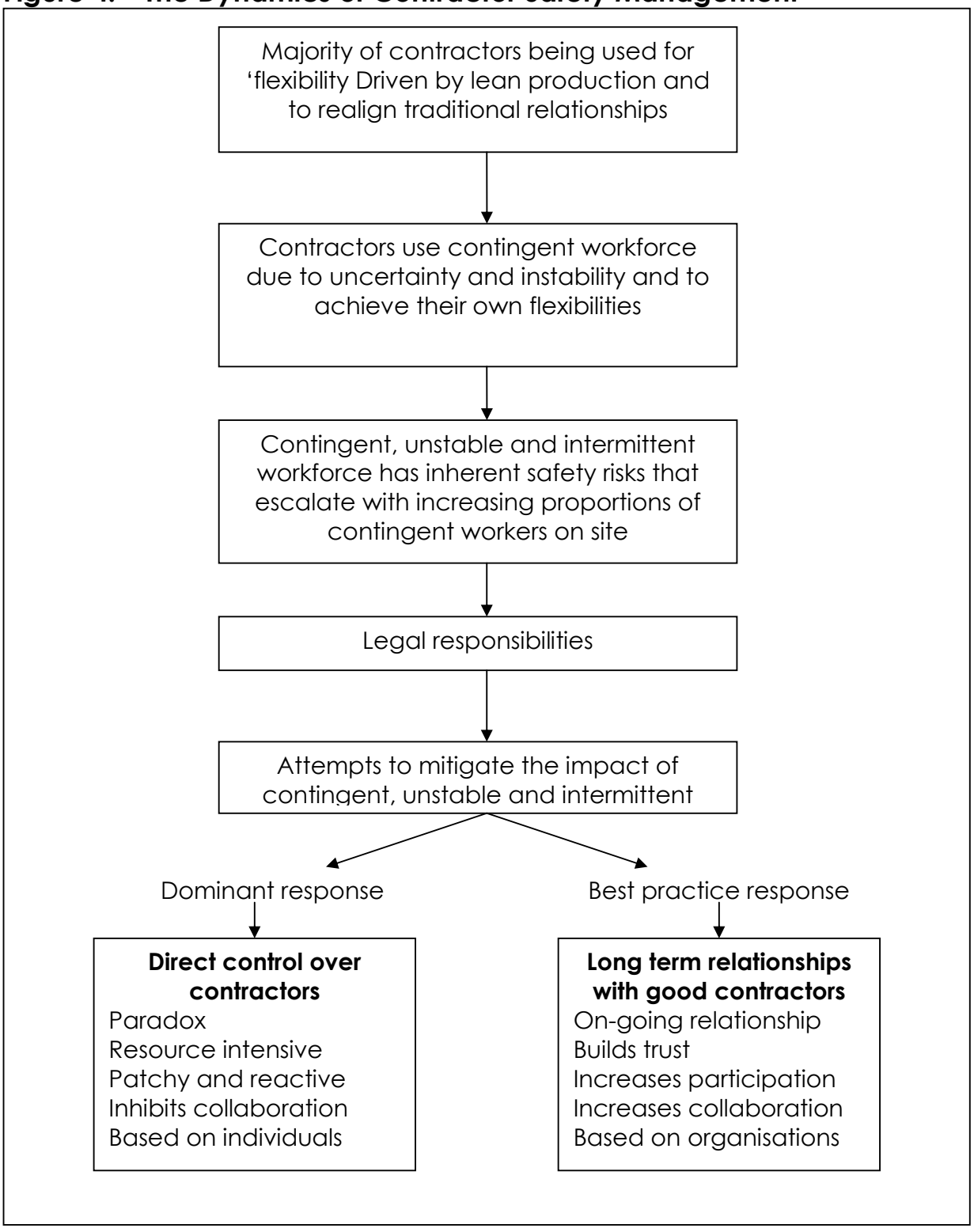
The original intention of the research was to identify effective safety initiatives associated with contractor management that could be shared with the rest of the industry. However, what quickly became apparent was a pattern of what appeared to be significant barriers to effective safety management of contractors. Even at sites with sophisticated and mature safety systems and corporate and local awareness of specific issues to do with contractor safety, there was still evidence of similar barriers to safe work systems.

In the course of the research it became clear that to adequately answer the key research questions, we would have to more fully explore the underlying dynamics that were emerging from the fieldwork.

Outlined in Figure 4 is a model of the dynamic that we contend underlies the relationships we identified in the field-work. We then explain each of these dynamics and the implications for contractors' safety.

[9] Nor do the JCB numbers distinguish between contractors who are mine operators and contractors who are not mine operators. If we take contractors who are mine operators out of the contractor calculation the proportion of contractors drops to approximately 15%, without counting contractors with less than 10 employees.

Figure 4: The Dynamics of Contractor Safety Management



The dynamics of contract employment

a) Companies use contractors primarily to achieve flexibility

Companies in the coal industry utilise contract labour of varying forms in order to achieve greater functional and labour flexibility. This appears to be associated with the introduction of new forms of lean production and a desire to realign traditional employment relationships that prevail across the industry.

- **Employment costs**

Coal operations have undergone a significant process of downsizing over recent years. As was seen in Figure 3 earlier, employment in the industry has fallen by almost a third since 1997, with average employment down approximately 38% since 1992. [10] This has been partly associated with technological change but has also been undertaken to minimise on-costs associated with direct employment. Coverage of many operations is minimal and some operations are being run very leanly, with contract labour used to cover all but essential aspects of the operation.

This has meant that on some sites, planned and unplanned absences are covered by supplementary labour. There is a proportion of contract and labour hire workers who are effectively working full time at a single mine site. In these cases the use of contract labour seems to be mainly about minimising costs associated with a direct workforce rather than new forms of production.

- **Labour flexibility**

In tandem with these organisational changes, mine operators have pursued further efficiency by pursuing other labour 'flexibilities'. For example, mine managers reported wanting to change traditional rostering practices and felt that the level of flexibility they sought was best secured by using contractors. There was significant resistance amongst core employees against some of the organisational changes being proposed by managements. As one contractor said,

> 'That's why they use us….because we are much more flexible. We can't knock back a job because of the details.'

Contractors at some of the sites we visited were regularly working 15-20 hours longer per week than were direct employees. They were generally performing difficult, dirty or unpleasant tasks that were unpopular with mine operation employees and it was also common for contractors to crew a significant proportion of the night and weekend shifts.

[10] Joint Coal Board, New South Wales Coal Statistics 2000-1, October 2001, p38

Mine managers also wanted the perceived freedom to 'hire and fire' made possible by using contract and labour hired workers. It was frequently mentioned by respondents from the mine operations that when a contract employee proved unsuitable for any reason it was less problematic to have them removed. They could either end the contract or request a different individual from the employing firm. This kind of industrial flexibility was not open to them if they took on new employees directly. A mine manager put it succinctly, saying,

> 'To tell you the truth, it's about flexibility. You can put them [contractors] on the worst shifts, doing the jobs no one likes to do…and they have very clear disciplinary procedures. We would have to go through the union.'

- **Industrial relations**

There is a strong union presence in the industry and it is widely accepted that using contractors puts the union at "arms length". It breaks down local site solidarity as well as clearing the way for rewriting local conditions. Several informants openly stated that they had been personally involved in what one manager regarded as:

> '…breaking the union strangle hold'.

It appears that to a large extent the introduction of contractors has been a key aspect of that realignment of industrial relationships. This view was expressed by both union and employer key informants. This has led to a level of antagonism between the industry parties over the use of contractors.

b) Contractors use a contingent workforce to achieve their own internal flexibilities

- **Competition between contractors**

There is intense competition between contractors for jobs at the mine sites. There is also a level of market volatility experienced by the competing companies. There are periods where work is more difficult to secure and others times when demands on them for labour are hard to meet with skilled personnel. Pressure on contractors to deliver work as quickly and cheaply as possible in this competitive environment encourages contractor companies to seek increased internal flexibilities.

As a result, contracting companies are themselves lean operations. The fluctuation in workloads and the open-endedness of contracts disinclines contractors and labour hire organisations to take on workers permanently. As a result, the predominant category of employment we

found amongst contractors was casual. Permanent employment was limited to mainly to management within these organisations.

- **Cost shifting**

Staffing of particular jobs is also lean and can create significant work intensification amongst the workers in these companies. There can be a form of "cost-shifting" where costs are shifted to the contracting company and/or the individuals within it. At two sites it was evident that contractors often operated at the site level with lean teams. For example, in one case a fixed contract price was set, and the contracting company assumed the costs of supervision in order to secure the contract.

This can lead to increased pressure on individuals to ensure that costs are contained. There is a culture whereby individual contractors feel (or are made to feel) that responsibility for ensuring continued employment from one contract to the next lies with the individual. As one supervisor explained:

> *'When we say we work for ourselves it means that so long as the job gets done safely, at a high standard, on time, and within budget, we all stay employed.'*

- **Industrial relations**

Contractors are also very aware that the mine operators are keen to avoid industrial problems. Some contract employers were so concerned about limiting union involvement that they actively recruited from outside the industry. As one supervisor said:

> *'…we prefer to employ "clean skins"[11] [those who have not worked in a coal mine] because they don't have industrial baggage. There is a different culture working to deadlines under high pressure.'*

Some contract employees - when asked about trade union membership - regarded the union as representative for permanently employed mine workers, not casual contractors. These employees often did not feel well-represented by the industry union. Contract employees felt unable to change their circumstances and there was a sense that assistance from the industry trade union was not likely to be forthcoming.

As noted earlier, the divisions between sections of the workforce, based largely on employment status, are likely to have implications workplace cohesion and, as a result, for safety outcomes.

[11] Sometimes referred to as 'green skins'.

c) Safety risks increase as the proportion of contingent workers on site increases

There is compelling research evidence of increased safety risks associated with contingent workers compared to directly employed workers[12]. As Quinlan and Mayhew found, there was significant evidence that safety challenges and barriers were better able to be managed on sites that had fewer contractors as a proportion of all workers on site.[13] Our own research is consistent with these findings.

What follows is a summary of the barriers we found to contractor safety management. More details about each of these issues can be found in Appendix.

- ***Unfamiliarity with the site[14]***

The most frequently reported barrier to implementing contractor safety management was associated with contractor unfamiliarity with the site.

Workers who come to the site infrequently, or as new contractors are often unfamiliar with the mine environment, specific site safety systems, site-specific safe work procedures, management and workforce personnel and cultures. Some contractors, especially during peak periods of production, can be inexperienced working in a mine. This further exacerbates their exposure to hazards. Mine sites - both underground and open cut - have rapidly changing conditions. Contingent workers are rarely present to witness these changes evolve. Inductions and communication systems can mitigate some, but not all, of these problems.

Many operational and safety managers identified this as a hazard. The following is a sample of responses from managers interviewed:

> *'… when they come and go off the site. What you really want is the same people coming back all the time but that's not possible.'*

> *'Just not knowing our systems and practices as much as you'd like them to. You go through it each time or when you need to... I'm not saying that's their fault. They just aren't here as often as others are, maybe not enough to be able to work as confidently. Some of them are but others aren't. Some of the UMSS guys have worked here longer than me.'*

[12] Goudswaard (2002)
[13] *Ibid*, p137
[14] See Appendix pps i-v for more details

'The biggest problem is not knowing them and not knowing what they know. That's not something that comes to you straight away. We manage it here by working closely and using the same men.'

Similar responses were recorded from contractors:

'Well, probably just not being as familiar with everything here…you know, the way things work all the time. We have shift start meetings, when you start at the beginning of a shift, which sometimes you don't, but if you do then that's OK. And you can always go to the deputy. But yeah, probably just not being in the middle of everything.'

'Maybe working on different sites if I had to say something. It's hard to keep up with, do I put my PPE on at the gate or at the whatever. I mean that's not an important one but that kind of thing… The rules can be different. I'm not saying it's unsafe really. You just have to use your sense.'

Concrete examples included contractors getting lost underground and not being aware of where the telephones were located. These are basic systems flaws and as one undermanager pointed out:

'…they seem like little things until they blow up in your face.'

The most common managerial strategy for dealing with this problem was to try to control the particular individuals who were on site. This was possible to some extent by limiting those workers inducted and authorised, but inevitably, contractors were not in a position to guarantee consistent personnel. The other option was to increase the level of supervisors and closely monitor contractors when on site.

- ***Unplanned and extended hours of work[15]***

Long hours are common in the coal industry, among both core and contract workers. However, contingent workers appear to be working **both** very long hours and unstructured patterns which lead to fatigue and adverse impacts on safety -- both for the individuals and those who work along side them. There are also adverse effects on their lives outside of work that often flow onto to both families and broader communities. [16]

[15] See Appendix, pps v-ix for more details

[16] Indeed, the Australian Industrial Relations Commission in the recent decision on 'reasonable hours' accepted the evidence that excessive working hours could impact in deleterious ways on family life and occupational health and safety. More information of this decision can be found at http://www.airc.gov.au/.
For further information see a recent review for the Tasmanian Government of that states' mining industry called 'The Struggle for Time' (2002) by Kathryn Heiler of ACIRRT

At one site contractors' shifts regularly added up to 15-20 hours longer than direct employees. Some of those contractors also worked at other mines, extending weekly hours to between 70-80 hours -- double that of the direct employees. A supervisor for one contracting company explained:

> *'Some of the emergency crews are working phenomenal hours…the only provision is they do 12 hours on one site. There are really big fatigue problems and there are no questions asked really. I've seen them turn up completely wrecked.'*

Some contingent workers explained they were unable to refuse shifts, worried that any refusal would impact on future work offers. They also expressed concerned about the irregularity of work and the need establish a measure of financial buffer to cope with down periods. This results in pressure to accept any shift offered, working without a 10-hour break or commencing shifts without adequate recuperation between shifts.

The effectiveness of the regulation of contractor hours is uneven and inconsistent across the industry. Whilst some companies can enforce hours worked on their site, it is more difficult to regulate what contractors do before they arrive at a particular site. Contract company employers who are competing for contracts may also find it difficult to regulate their own labour supply.

Mine operators claimed extended hours amongst contractors was a problem and acknowledged that their main strategy was to put pressure on the contractors to comply with site standards. There are isolated examples of hours of work being a condition of the contract both at the site and elsewhere but this is not widespread.

None of the sites involved in this project had well-developed strategies to limit extended hours amongst contract employees. The option proposed by the CFMEU (a passport system) is not supported by all stakeholders and is unlikely to be implemented in the near future.

The impact of fatigue on the health and safety of workers is well documented and is of growing interest in the industry. Special consideration must be made for contingent workers who are clearly more vulnerable to excessive hours and disrupted sleep patterns. To date the attempts to mitigate these problems have been limited and have concentrated on directing contractors to enforce 10-hour breaks. It seems unlikely that much headway will be made until the issues specific to contingent work is dealt with directly and better mechanisms of enforcement are found.

- ***Gaps in communication systems[17]***

Effective, reliable employee communication systems are an integral part of good safety systems. They are especially critical in a mining environment.

Informants at all sites involved in this project were able to list multiple systems of communication at their site. They included forums like toolbox talks, shift start meetings, shift changeover meetings, whole mine meetings and more, as well as document trails and procedures. However, it was not uncommon for contractors to slip through the gaps of many of those systems.

At three sites we interviewed contractors who had personal experience of inadequate communication systems. Examples included:

- a tradesperson working five to six days a week in a coal preparation plant missed the fortnightly whole site safety meetings despite clear commitments given by management that all regular contractors were involved
- contractors were rostered for different start and finish times and missed shift start and shift change over meetings which explained recent developments and safety issues
- limited informal communication due to the animosity between the direct workforce and the contractors. This meant that informal, though often critical, communication was compromised.

Despite strong commitments from management to enable participation in communication systems by contractors, the inherent difficulties in arranging regular meetings for an irregular workforce were evident. Though site meetings could be arranged for contractor groups there were real difficulties in some circumstances of facilitating a system of integrated meetings. This challenges the claim that contractors are treated the same as direct employees.

- **Involvement in the development of safety management systems lacking**

Participation of employees in the development of safety systems is critical and required by legislation. The best way to develop, implement and assess safety systems is to have direct involvement of those performing the work developing and shaping it.

Only at two of the five sites did we find evidence of this level of participation by contractors.

[17] See Appendix, pps ix-xi for more details

At one of these sites, there was an example of high levels of contractor participation in the contractor safety management system. This involved contractor companies who had longstanding relationships with the mine operator.

These contractors were actively engaged in designing new and safer work systems with the mining company. Special consideration was made for issues relating to contractors and it was a matter of policy that contractors input their knowledge and experience at each step in the development of the system. At this particular site, contractors were closely involved in re-engineering work that had been responsible for injuries. Given that the work was performed exclusively by contractors, it was crucial that contractors be involved.

At only one site were contractors present on the occupational health and safety committee and there were demonstrable benefits in being able to identify safety issues specific to contractors.

The main obstacle identified to this kind of involvement was the intermittent and finite nature of the working arrangements for contract labour. The contingent nature of the workforce and the relatively short duration of contracts created, at best, only exiguous attachment to those systems for most contractors.

- ***Under-reporting of injuries, accidents and incidents[18]***

The accuracy of reporting of incident and accidents across the industry continues to be a contentious issue.

Whilst most managers believed that reporting was adequate, many contract workers and employees disagreed. There were claims that contingent workers are reticent to document incidents that would otherwise go unnoticed. There were examples provided of contractors carrying injuries rather than report them.

The problem seems to be that despite verbal commitments by mine operators and contractor company owners and managers that reporting is essential, the practice of assessing workers compensation records prior to engaging workers constitutes a barrier. Contingent workers appear concerned that reporting may jeopardise future work opportunities. There is also evidence that working long shifts is a disincentive to report incidents because the paper work process can further lengthen the working day. Several informants reported that near misses are under-reported and that this can disguise potential accidents.

At one site several direct employees in separate interviews related an incident that highlighted these issues. A casually engaged contract

[18] See Appendix, pps xii-xv for more details

worker sustained an injury to his foot. The following day his incapacity became noticeable and the directly employed supervisor instructed the first aid officer to escort him to the surface. While receiving treatment he was extremely distressed at the prospect of the contract company owner hearing of the injury. When two colleagues joked about him clearing out his locker, making light of his employment future, the contractor became extremely distressed and implored them to keep the truth of his injury from his employer. The informants did not regard this incident as unusual or out of the ordinary and explained it as emblematic of the general stress they saw contractors experiencing.

- ***Competence, experience and training[19]***

Many informants reported that the competence of some contractors to perform set tasks was not always adequate.

Undermanagers, deputies and supervisors (both directly employed or contracted), reported that - especially during peak production periods - their responsibilities as supervisors escalated due to the inexperience of some contract workers. They made a definite link between safe work, competence to perform tasks and the experience of the worker. They believed that responsibility for training contractors was being sidestepped by both contract companies and mine operators. The responsibility and cost has been devolved to the individual worker. Consequently systematic and effective training is not in evidence at most sites. There appears to be a vacuum across the industry which does not bode well for a future skilled workforce. This is becoming more critical as the average age of miners increases.

In terms of safety training there also appears to be a significant gap, especially in the area of contractor supervision training. Many contractors had undertaken general safety training and site/industry inductions. However, there did not appear to be adequate training of contractor supervisors. There was evidence that team leader and supervisor training modules were undertaken by direct employees, but not by contractor supervisors.

It has been found in other industries that there are links between outsourcing, labour hire, contingent work, and reduced skill development[20]. The same problems are evident in coal mining at the sites studied for this project; this is compounded by inadequate supervisor training. Both elements may be exposing contractors and those who work with them to increased safety risk.

[19] See Appendix, pps xvi-xix for more details
[20] Hall et al, *You Value What You Pay For: enhancing employers' contributions to skill formation and use*, A discussion paper for the Dusseldorp Skill Forum, June 2002

The main barrier seems to be diminishing financial margins for contractors. Some contractors are working within tight margins, especially those providing generalist skills and work, and training is often considered a luxury rather than a matter of necessity. According to one contract company representative:

> *'Let's say we spend money on training for safety and we pass the cost on…it's factored into the contract price. Another company will come in cheaper because they haven't trained. In the end they're going to choose the tender that adequately does the job for the lowest price. Of course they'd use us if we came in at the same dollars but we wouldn't last long. You'd go out backwards…It's catch 22.'*

Most mine operators do not appear to be willing to assist financially and are not, according to the contractors, allowing the cost of training to be factored into going rates. Mine operators regard training as the responsibility of the contractor firms. At this stage there appears to be an impasse. We were able to find one positive example of co-operation between a site (not subject to this study) and a labour hire firm to give entry level training to the children of mine employees. This appears to be an isolated innovation and though limited in scale is still a valuable example of the collaboration that needs to take place between different links in the labour supply chain.

- ***Increased risks associated with contractor tasks***

There was evidence at the sites visited that contractors are performing tasks that the direct workforce prefer not to undertake. Some of these jobs bring with them a higher risk factor. They include tasks like mega-bolting for secondary roof support and reclamation of roof falls. Due to the competitive nature of the industry, contractors are in no position to refuse these jobs. They are generally not able to rotate into less physically demanding jobs for periods of time because they are retained to perform that specific task. Consequently, contractors do not have the same flexibility for rotation and job mixing to mitigate the risks they face when doing these high risk jobs for continuous periods, especially those that are repetitive and physically taxing.

- ***Nature of the contract***[21]

The way that the contract is structured can generate pressures for the contracting company and impact on how work is undertaken. This can have implications for safety.

For example, a price per product (or piece rate) contract privileges the speed at which work can be undertaken. This can be financially advantageous for the contracting company but can intensify the work

[21] See Appendix pps xix-xxiii for more details

effort for the workers involved. It means that safety must be handled extremely carefully under these conditions to ensure that corners are not cut and safety compromised in any way.

At one work-site, for example, there was a view that a price per product contract had been the cause of a specific incident when contractors had been expediting the job. The response from both parties was not to change from a price per product contract, but to include key performance indicators that asserted the need for safety more strongly. When this was suggested to other contractors as a way of mitigating the danger of speed, they were reluctant to criticise a price per product regime, because under certain circumstances it could be quite lucrative. The contractors saw it as a balancing act.

Short-term contracts can also create instability internally for the contracting company and make workforce planning within those organisations difficult. Recruitment, retention and training of employees can be more difficult under these conditions.

At the same time, the casualisation of the workforce in some of these companies appears expedient rather than unavoidable. Many labour hire workers work at the same site regularly for several years but continue to be employed casually. Many informants interviewed were cynical about employment practices that allowed workers who had been at the same site for up to six years to be still retained as casuals through labour hire firms. At the same time, many would be prepared to on more direct employees but are unable to secure agreement from head offices.

d) The dominant response by managements at all sites has been to institute direct control over contractors.

It appeared that at all sites the response of mine managers to OHS concerns was to increase direct control over contractors in an attempt to intervene in and monitor performance in areas they saw as critical to safety and quality. However, we found that this strategy (when used in isolation) has limited impact and lays the groundwork for problems similar to those in other industries like construction.

- ***Increasing direct control over contractors can be resource intensive***

Supervision

Increasing direct control over contract employees by way of supervision is resource intensive.[22] One of the main reasons mine operators gave for using contractors at the site level was to pass on the responsibility for performing and managing certain pockets of work. This was designed to

free them to concentrate on the core work of the mine. However, it was clear that much effort goes into increasing supervision and intervention on many of the jobs that contractors perform. Mine operators frequently complained about the need to directly manage the different individuals who moved on and off their sites. This appears to be a *shifting* of costs rather than a saving of costs.

Mine managers spoke of an intensive period of "bedding down" contractors. This went beyond safety inductions and included some contractors requiring constant supervision.

Resource shifting
In many cases the legally responsible person must make priority resource decisions about which contractors to monitor. This was especially the case during peak production periods, but was also a particular problem at night and on weekends.

This need for increased supervision during these times meant that either resources were diverted away from other tasks to manage contractors, or a potentially dangerous level of work intensification was taking place among supervisory personnel. A deputy undermanager at one site described some weekend shifts as chaotic and summarised the efficiency paradox. He said:

> *'It's diabolical. All you need is two new faces in one night, and that's not unusual, and going to different areas…you've got no idea what they can and can't do and neither does anyone else… [Interviewer: But haven't they already been found competent and authorised to work at the mine?]…Yeah, they are these days. It used to be that they weren't even assessed…but if you've never worked with them you don't know how they'll go. You don't even know what they understand when you're giving them instructions. You can't just send them off…you take someone off another job who you know you can trust so they can go along and check it out, make sure. It affects all your decisions every shift. I don't reckon that's efficient but it's also risky…I can't be everywhere at the same time.'*

- ***The outcomes of direct control appear to be patchy and reactive***

Actions by mine operators to manage the barriers and challenges to contractor safety were most frequently in response to a particular issue rather than having a systems approach.

Most initiatives tended to be cosmetic rather than designed to address the underlying conditions leading to the problem. For example, when mine management were asked their opinion of fatigue amongst contractors, they tended to regard this as a problem for the contractor. Most of their efforts had been to inform the contracting company of the

site hours policy and the need to enforce 10 hour breaks. Another strategy was for supervisors to keep an eye on the appearance of contractors and to 'talk to' any individuals who looked like they needed sleep. In the long term neither of these practices worked systematically to reduce the extended hours regularly being worked by contractors.

In some cases supervision was reactive. Attempts were not made to control contractors until it was evident that they were not coping with a particular job. At that stage direct employees would be used to supplement the contractors in an attempt to get the job on track. In another case supervision of a task was taken back from the contractor. The workload of the direct workforce was such that the supervision was rarely forthcoming.

- ***The practice of direct control of contractors tends to focus on individuals rather than developing organisational relationships or industry wide solutions***

Mine operators are concentrating on dealing with the safety management of an ever-changing cast of individuals rather than dealing with creating relationships at the organisational level.

This contributes to the patchy and reactive nature of effective safety implementation. Collaboration between principals and contractors is blocked by the short-term nature of contracts and the competition between contracting companies. Rather than working as a network of organisations, the effort appears to be concentrated on controlling individuals on a shift by shift basis. The opportunity to develop continuity of systems and approaches is lost at the conclusion of the contract or the replacement of contractor personnel.

e) There were indications at some sites of an emerging best practice approach to contractor safety management where long term relationships with good contracting firms and labour companies were developing.

The development of long term relationships with contractors appears to be delivering benefits at some sites.

There is an increasing practice at some sites of engaging contractors from a preferred tender list. To some extent, this appears to have assisted in the development of some longer-term relationships with a handful of contractor firms. This also appears to be something that is evolving organically between the parties. Consequently, the full benefits of an alliance are not necessarily being realised.

Decisions about which contractors to engage are generally made on the basis of past personal experience with a particular firm or individual.

In some cases, mine management are not using contractors from the corporate preferred list but taking on contractors they know personally.

Even so, where the relationship between a mine operator and a contractor firm has developed and established for a significant period of time, there is more evidence of being able to redress barriers to better contractor safety.

These include:
- more structured involvement of contractors in engineering and developing safe systems and methods of work
- more structured participation in on-going communications systems
- more structured consultation
- better integration of contractor and direct workforces
- resulting increases in productivity and efficiency.

For example, at one site the long-term relationship with a contracting firm and a labour hire provider has made it possible for contractors to be active members of the OH&S Committee. This was also made possible because mine management facilitation and the longer term continuity the contractors. It would not have been possible had the contractors been short-term.

At another site, a contracting firm performing secondary roof support mega-bolting was involved in a site working party to improve the work process and design. To a large extend this was possible due to a high level of trust between the mine operator and the contractor firm. A further incentive was the inclusion the contract of a clause enabling a profit share for any productivity and safety improvements.

4. Examples from other industries of long term relationships and other initiatives

Other industries have been grappling with the introduction of contractors into their operations and some of them are introducing innovations that appear to have positive affects on safety and the business as a whole.

The two we will turn to briefly are:
- the use of a contractor alliance at Mobil's Altona Refinery
- a recent initiative to improve safety across the sites of several principal contractors in the NSW Construction industry.

The oil industry

The oil industry has many parallels to coal mining. Wages are relatively high, skill requirements are becoming more specific and according to the ABS[23], the petroleum, coal, chemical and associated product manufacturing industry was the most technologically innovative industry in Australia in 1996-1997.

During that period the petroleum, coal, chemical and associated product manufacturing industry recorded the highest level of innovation in both product and process. It was also the equal highest sector in the survey to use advanced technology in communications and control systems, and the second highest user of any form of advanced manufacturing technology. This suggests a dynamic and changing industry and underscores the massive change that has characterised the industry over recent years. [24]

Central to this change has been job redesign, particularly in the chemical and oil sectors, with a major driver of change being the need to respond to intense competition, along with the introduction of computer-controlled technologies and as in coal, there has been an increase in firms outsourcing sections of work. In light of these similarities it seems appropriate to contemplate one of the most noteworthy contractor innovations the industry has experienced.

4.1 Mobil – Transfield Alliance, Altona Refinery

Nearly eight years ago a decision was made by management at the Mobil fuel refinery at Altona to create an alliance with one contracting company.

In the past they would go through regular tender rounds for companies to perform trucking, basic maintenance and industrial cleaning. There had been a directional change taken by Altona management aimed at creating an 'alliance' amongst their direct staff. They flattened management, made a team based structure, introduced annualised hours and, most importantly according to informants from both management and union, established an atmosphere of trust where significant responsibility and autonomy was given to employees over their own work.

With this success in mind management decided to use similar principles in dealing with their contracted labour. They decided to form an alliance with a particular contractor. They chose Transfield, a company they had been working with and which satisfied their criteria to deliver the kinds of quality and stability they were seeking. According to the

[23] ABS 1998, 8116.0 *Innovation in Manufacturing 1996-97*, Canberra

[24] Dumbrell Consulting 2001, *New Skills in Process Manufacturing*, National Centre for Vocational Education Research, Adelaide, p.8

turnaround manager the key reason for adopting the alliance was financial:

> 'safety was in there as a key deliverable but it wasn't the driver'.

However, according to the same manager the safety levels across the site and including the contractors have improved enormously since the alliance. He attributes this to several factors. In the past, prior to the alliance, a movable feast of contractors came onto site and there were logistically difficulties keeping up with how safe and well they were working; management was never sure if they were implementing Mobil safety systems. It was also accepted that inductions were not adequate to manage potential hazards in such a high-risk environment.

Continuity of presence at the site

Under the current alliance arrangement, the majority of contractors are regular workers at the site. In fact, most have worked on the site since the commencement of the alliance. They are have intimate knowledge of the site and have been actively involved, and still are, in the development and implementation of the Mobil safety systems. They also receive the same safety training as direct employees. They are just as aware of the Mobil key performance indicators (KPIs) as direct employees and are given the same incentives and forums to suggest possible improvements to work systems. This is also embedded in the terms of the contract where a quarterly review assesses Transfield input into productivity improvements and profit shares are made.

Integration of core and contract workers

A great deal of importance was attributed to the social integration of the two workforces. In the early days of the alliance there was a considerable amount of animosity between the two groups of workers. Mobil employees felt their job security was threatened by the possibility of further outsourcing and contractors felt they were treated as 'second class citizens'. Over time much effort has gone into closing that gap.

Union delegates maintain that an important part of that integration was the growth of trust between management and workers. Once a shift in the relationship between workers and management had been established (ie control of their own hours and patterns of work) and they began to believe that their internal expertise was valued, they felt more comfortable with the use of contractors to perform certain tasks.

Management also believe that active physical integration was important. They mixed the workforces, had them lunch and meet together regularly, arranged social functions and provided forums for personal and work relationships to develop. Overall integration appears to have been a successful process. It should also be noted that unions

were supportive of the alliance and both the direct workforce and contract workforce are highly and actively unionised at the local level.

In practical terms the alliance is based on a three-year contract, renewable every six months based on established key performance indicators. In effect, there is always at least two and a half years remaining on the contract. Jobs are not at risk through a cyclical tendering process, although Transfield are expected to comply with the Altona wide KPIs and there are set periods for review to fine-tune the contract and associated systems and procedures.

Contractors have become an integral part of the decision-making processes of the business and sit on decision making committees, including those that establish KPIs. They are performing routine maintenance and small construction jobs with a core work force that it is retained permanently by Transfield. The majority of maintenance is retained in-house so that specific knowledge of the plant remains within the company. During periods of turnaround the management of increasing staffing levels is managed by Transfield. They are part of the whole planning process and are given good lead in time to manage these projects with the active participation of Mobil.

In this way many of the contingencies involved with flooding the site with new workers are dealt with cooperatively at the most early stages and Mobil, Transfield and unions work together to mitigate any potential problems. These turnarounds create similar problems for safety as those experienced at the sites studied in coal mining. However, the benefit of having a core of alliance workers is that there are far more employees involved in the turnaround with intimate experience of the site and its safety systems. Alliance employees work on the turnaround and are able to be a significant presence throughout the period.

As with all workplaces, safety issues arise. The difference is that the contractor company is in a much more secure and established position to bring those issues to the attention of the refinery and have forums and procedures to deal with them. Workers are able to have their own representative voice via the union. In effect the use of contingent labour is managed at an organisational level rather than an individual one. Ad hoc and patchy responses to safety problems are less likely to be the norm.

4.2 Construction Industry MOU – Lessons to be learned

Known as the Construction Industry Memorandum of Understanding (MOU), the initiative was a program of safety improvement agreed between the NSW government, seventeen principal contractors, unions and employer associations.

One of the primary foci of the MOU was to create a common process for managing sub-contractor safety across the industry. To that end, the industry cooperated to develop a series of tools and processes that set a standard they hoped would flow through to other parts of the industry. The MOU evaluation highlighted that despite the existence of standard industry protocols, there was a range of stubborn problems in translating these standards at a site level. Essentially, whilst paper systems of safety management appeared robust, this did not always translate into actual implementation at the site level.

What seemed to differentiate 'best practice' companies from others were a unique combination of factors that included:

- the culture of the company and their philosophy about what their responsibilities and obligations regarding contractors were
- the resources put towards managing the problem such as targeted training initiatives of both site and contractor supervisors and foremen in the handling of subcontractors
- additional procedures and accountability checks put in place at the site level.

Sometimes there were simple, but highly effective procedures put in place that made significant differences. The key difference appeared to be how guidelines and obligations were operationalised by the particular company.

The coal mining industry in NSW appears to have a more mature and sophisticated base of occupational health and safety than does construction. Safety systems and the attention given to them by at least three of the mine operations we visited were generally superior to those we encountered at the best sites in the NSW construction industry. However, there may well be a good lesson to be learnt form some of the recent innovations by the construction industry that have potential to be adapted to suit the coal mining industry.

Lessons to be learned from the MOU

Some of the most useful outcomes of the MOU were the development of a series of tools to standardise approaches to paper work for contractor safety management. This appeared to be of a great benefit to small to medium contractor with little or no infrastructure support for safety system development. The tendering process was made more uniform, documents known as Safe Work Method Statements[25] were made into a template that could be accessed by any contractor and was

[25] Safe Work Method Statements are the equivalent of a JSA or Safe Work Procedure. They outline the steps and safety precautions to be taken on any job, detailing the level of risk and the associated response to be taken. They can also be used as the basis of a local audit as well as an external one.

recognised by all of the MOU signatory principals. Workcover supported and disseminated the tools and were able themselves to use it as an audit measure. This gave confidence to the contractors that they were abiding by their legal obligations for the purposes of the regulator. This provided a consistent method for documenting tenders and the details of jobs. The contractors who used the facility felt it freed them up to concentrate on the actual process of implementing safety standards rather than spending all their time redoing paperwork to fit new formats and requirements at each site.

Another key finding from the Construction MOU was that a core of committed and focussed safety managers transformed the commitment to safety improvement from being rhetorical to being realised.

With the support of their relevant corporate hierarchies they were given the power to formulate and instigate increased standardisation of system paperwork. It is also worth pointing out that this was achieved most successfully in companies that were associated with civil engineering works (including mining) and those that had a higher proportion of direct employees at the site level, and supervision safety training programs that included contractors. One of the signatories is active in the coal mining industry in NSW and has transferred those tools into that environment. They believe it has been beneficial for the small to medium sized subcontractors they are involved with.

There are several key observations to be made about these two industry examples:

- the use of alliances in contractual relationships can improve business performance and safety
- standardisation of some aspects of paperwork and procedures across industries can alleviate some of the burdens on contractors operating in a competitive economic environment

This frees up both parties to be more pro-active in safety application and innovation.

5. Conclusions

The use of contractors has increased in the New South Wales coal mining industry. This is an opportune time for industry stakeholders to develop and improve contractor safety management. However, at present, our understanding of the challenges associated with contractor safety management in the coal industry is more developed than is our understanding of effective strategies.

In particular, the industry needs to ensure that in pursuing efficiencies by contracting out work they do not inadvertently increase costs in other ways. There was evidence of significant resources being funnelled into the management of contractor safety via increased direct supervision. Without the establishment of longer-term relationships with quality contractors those costs will arise with the commencement of every new contract.

There is evidence from the oil industry and patches of the coal mining sector to suggest that exclusive and stable relationships with quality and safety conscious contractors can deliver much greater productivity and efficiency than the more frequently chosen alternative, the cycle of contract tendering.

Alliances lead to more sophisticated collaboration between mine operators and contractor companies at the site level. Increased stability for the contractor gives them the opportunity to limit the use of contingent labour and overcome safety barriers clearly associated with that category of employment.

Increased co-operation about safety across the industry would benefit mining and contracting firms. Innovations and safety solutions could be developed in coalition and shared. Simple steps like the adoption of standardised paperwork seem to have been beneficial for small to medium contractors in the NSW construction industry and this may be worth examination by the industry. There are also innovations and emerging practices in parts of the coal industry that deserve consideration by the rest of the industry.

Gone are the days of monolithic enterprises performing every task in the line of production processes. There is an ever-increasing network of small and large organisations involved and it makes good sense to establish strong cooperation between all those links in the chain. Currently there are barriers to that level of collaboration created by high levels of uncertainty, instability and competition amongst many contractor companies and their contingent employees. These barriers need to be overcome for the development of health and safety solutions.

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