Workplace health and safety in the Australian coal mining industry: Mistrust, management and regulation

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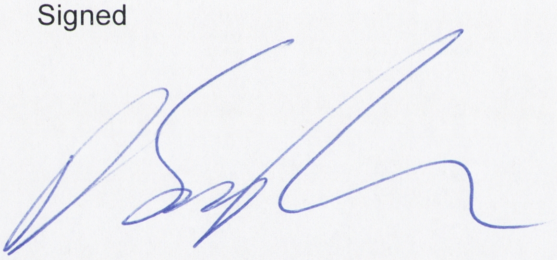
Statement of originality

This thesis is wholly original work drawing on published articles and reports. In all cases, I conducted fieldwork, processed interview material, completed background research and literature reviews, and contributed to and/or finalised early drafts and final papers/reports. I completed four single author publications (Chapters 2, 5, 10 and 11). Six joint author publications (Chapters 3, 4, 6, 7, 8 and 9) were completed in collaboration with my supervisor, Professor Neil Gunningham. In the case of the latter, precise contributions varied between the publications (but nowhere did my contribution fall below 50%) – relative contributions are detailed at the start of each of these chapters.

Signed



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Abstract

Over the last 10 to 15 years, Australian coal mining companies have implemented sophisticated management systems designed to substantially improve workplace heath and safety (WHS). This has led to a distinctive WHS 'architecture' across the industry, and has coincided with steadily declining fatality and injury rates. In conjunction with these developments, government regulators have progressively modified the external regulatory framework. In particular, new forms of regulation have shifted away from prescription towards 'management-based' initiatives. The expectation is that companies will go 'beyond compliance' to achieve WHS improvements greater than that required by law.

The combination of internal company WHS architecture and external management-based regulation has coincided with substantial improvements in WHS outcomes across the Australian coal mining industry. Since the mid 1990s, fatalities have fallen substantially, along with other recorded injuries. However, in the last few years it appears that these earlier gains have not been sustained. Further, WHS outcomes vary widely between individual mine sites *of the same company*.

Against this backdrop, the thesis addresses two overriding research questions. First, what factors have hindered the continued and consistent improvement in WHS outcomes across mine sites? Second, and from a normative perspective, what policies and strategies may be employed to overcome such factors?

In answering these questions, the thesis addresses several inter-related themes, namely: the implementation of corporate-wide WHS management systems; the role of culture, especially mistrust, in influencing the operation of such internal WHS

management systems; the role of mistrust in undermining the operation of external regulation, including management-based regulation; the tendency of WHS codes of practice to be used as a form of creeping prescription; and the competencies, capacities and enforcement strategies of WHS regulatory agencies.

The thesis draws on interview-based fieldwork, desktop research and literature reviews competed between 2007 and 2012. Face-to-face interviews were conducted at three Australian coal-mining companies, as well as with regulatory officials across Australia and officials from national and state mining industry associations and trade unions. In addition, phone-based interviews were conducted with WHS management from over 20 metalliferous and coal mining companies. The thesis also draws on a range of safety statistics, both from the public domain and internal company records. Finally, interviews and statistical data were supplemented by reviews of both the domestic and international literature.

The thesis' findings suggest that WHS management systems may be, to a considerable extent, subservient to the culture into which they are received. And high levels of organisational mistrust, in particular, are more prevalent in those mine sites that appear to have resisted most strongly the imposition of corporate wide WHS management systems and standards. Beyond internal culture, the tools, behaviour and attitudes of mining inspectorates also influence WHS behaviour and outcomes. As such, the thesis considers how mining inspectorates should interact with mining companies in seeking to enforce WHS compliance, what inspectoral competencies, characteristics and behaviours should they possess, and what enforcement guidelines should they operate under. In this respect, the findings of the thesis may resonate beyond the Australian coal mining industry.

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List of acronyms and abbreviations

ACOPs – Approved Codes of Practice

BBS – Behavioural Based Safety

CFMEU – Construction, Forestry, Mining and Energy Union

DPP – Director of Public Prosecutions

EMM – Enforcement Management Model

HQ – head quarters

HWSA – Heads of Workplace Safety Authorities

IAEA – International Atomic Energy Agency

ICMM – International Council on Mining and Metals

ISO – International Standards Organization

JSA – job safety analysis

LTI – lost time injury

LTIFR – lost time injury frequency rate

MCA – Minerals Council of Australia (check first acronym)

NMSF – National Mine Safety Framework

NOHSCEP – National Occupational Health and Safety Compliance and Enforcement Policy

NOSI – National On-Line Statistical Database

OHS – occupational health and safety

OHSM – occupational health and safety management

SMEs – small and medium sized enterprises

SWPs – safe work procedures

TZAPs – Target Zero Action Plans

TRI – total recordable injuries

TRIFR – total recordable injuries frequency rate

WHS – workplace health and safety

Chapter 1: Introduction

1.1 Changing WHS landscape

Over the last 10 to 15 years there have been substantial changes across the workplace health and safety (WHS) landscape within which the Australian coal mining industry operates. This is reflected both in the internal management approaches adopted by large mining companies *and* the external regulation imposed by government authorities.

Some of the changes in the WHS practices of coal mining companies may be attributable to a self-interested recognition that poor WHS outcomes make for poor business outcomes. In the short term, WHS incidents and injuries disrupt the production process, leading to a loss of time and costs. They can also result in increased absences, higher workers' compensation costs and corporate fines (in the event of successful prosecutions). In the longer term, continued WHS incidents may diminish their 'social licence to operate', with the potential to undermine, for example, broad community support and, ultimately, government approval of mine site developments and/or expansions. In turn, this may also result in the imposition of more stringent and onerous regulations. Further, in a form of enlightened self-interest, coal-mining companies are comprised of managers that are not immune to the emotional cost of a serious injury or fatality occurring on their 'watch', something they would undoubtedly wish to avoid.

In this context, international coal mining companies operating within Australia have developed and implemented sophisticated WHS management systems designed to substantially reduce workplace death, injury and disease. Achieving such

transformational change has required a considerable injection of time and resources, and, crucially, substantial cultural and organisational change. Central to such systems are a combination of targets, strategies, tools and risk management initiatives that have evolved into a common and distinctive WHS 'architecture' across the industry. Over time, this internal regulatory architecture has coincided with steadily declining fatality and injury rates, as measured by official safety statistics, and more ambitious WHS improvement targets.

In conjunction with these internal developments, external government regulators have progressively modified the regulatory framework to complement and accelerate the industry's shift towards systemic WHS management. In particular, new forms of regulation have shifted away from prescription towards 'management-based' initiatives emphasising the importance of an integrated systematic approach to WHS, as opposed to a reactive 'piecemeal' approach based on individual remedies. Although far from a complete transition, management-based regulation (sometimes called systems-based or process-based regulation) requires mining companies to establish a documented WHS management system incorporating targets, standards, hazard identification, training, audit and review and major hazard management plans (with obvious overlaps to the approach concurrently being developed by mining companies described above).

In theory, under management-based regulation, inspectors assess the operation of the WHS system itself, as opposed to conducting site-based inspections that may result in prescribed improvements, often of a technical nature. The underlying rationale of this approach is that it is the mining companies themselves that are in the best position to determine technical solutions 'on the ground'. The expectation is that not only does such flexibility reduce compliance costs, but, further, by adopting a WHS management systems, companies will go 'beyond compliance' – that is, implement WHS

improvements greater than that required by law through a process of continuous improvement. This is in stark contrast to the minimum compliance mentality often fostered by prescriptive regulation.

In practice, however, mines inspectors have not completely abandoned their use of prescriptive approaches, and nor has the corresponding mining WHS legislation and regulation entirely rejected prescriptive standards. The result is a somewhat hybridised compromise between management-based and prescriptive approaches (in conjunction with broad-based general duties), with different standards arguably having the potential to pull in different directions (Gunningham and Sinclair, 1999). Nevertheless, the most substantial regulatory developments in recent years within the mining WHS policy framework have been in the direction of management-based regulation.

1.2 Improved WHS outcomes, progress stalled

The combination of internal company WHS architecture and external management-based regulation has coincided with substantial improvements in WHS outcomes across the Australian coal mining industry. Since the mid 1990s, fatalities have fallen substantially, along with other recorded injuries. These improvements compare favourably to other countries, with an international review finding that mining fatality rates in Australia are among the lowest in the world (Ural 2008; Poplin *et al* 2008). This suggests the plausibility of a causal relationship between WHS management-based approaches and improved WHS outcomes, and, indeed, there is some evidence for just such a conclusion (see Gunningham & Sinclair 2012, 12-14).

Despite these positive developments, there is little room for complacency, with the industry still some considerable distance away from its aspiration of 'zero harm'.

Further, in the last few years it appears that the earlier gains in WHS outcomes that followed the introduction of corporate WHS architectures base on management systems and management-based regulation have not been sustained. Instead, improvements in serious injury and fatality statistics have plateaued. Further, WHS outcomes vary widely between individual mine sites *of the same company*, even where they operate under ostensibly uniform WHS management systems. Collectively, this suggests that there may be limitations in current approaches to WHS management systems and/or regulation.

1.3 Thesis scope and research questions

The thesis takes as its starting point, then, the slowing, indeed plateauing, of recent improvements in WHS outcomes *across* Australian coal mining companies, as well as the variation of WHS performance *within* those same companies. In broad terms, these phenomena raise two overriding **research questions**:

- First, what factors have hindered the continued and consistent improvement in WHS outcomes across mine sites?
- Second, and from a normative perspective, what policies and strategies may be employed to overcome such factors?

In answering these questions, the thesis addresses several interrelated themes, namely: the implementation of corporate-wide WHS management systems; the role of culture, especially mistrust, in influencing the operation of such internal WHS management systems; the role of mistrust in undermining the operation of external regulation, including management-based regulation; the tendency of WHS codes of practice to be used as a form of creeping prescription; and the competencies, capacities and enforcement strategies of WHS regulatory agencies (in particular,

mining inspectorates). Each of these themes is expanded on below, including the identification of more detailed research questions.

1.3.1 WHS management system architecture

Over the last 15 years or so, safety statistics have recorded a steady improvement in the WHS performance of the Australian mine industry, including that of coal mining. This improvement has coincided with the progressive introduction of corporate wide WHS management systems. Today, such systems are the centrepiece of WHS policies and programs across coal mining companies. In essence, this entails the development and implementation of WHS targets, processes, reporting, reviews and audits under a single, comprehensive and integrated WHS management system. Whether required to do so by external regulators, or by choice, it is a widely held belief among companies that this approach will inevitably lead to better WHS outcomes (Parker & Nielson 2006). Regulators, too, often subscribe to this way of thinking (Black 2011). As such, there is now a substantial and pervasive ecosystem of system designers, implementation consultants, data management software experts and third part auditors built-up on the back of, and in turn, perpetuating the use of, such WHS management systems in the mining sector.

Given this prominence, and the widespread faith placed in them, it is timely to consider the role and contribution of WHS management systems. In particular, the thesis addresses the following **research questions**:

- What are the defining features of WHS management systems in the Australian coal mining industry?
- How similar are the WHS management systems across Australian coal mining companies?

- To the extent that WHS management systems have 'converged' across such companies, what are the underlying drivers of this phenomenon?
- Has too much emphasis been placed on the role of WHS management systems to deliver continued WHS improvements?
- What are to the potential limitations of WHS management systems, particularly given the apparent slowing of WHS improvements across the industry?

As a subsequent chapter of this thesis elaborates, there is strong circumstantial evidence to suggest that WHS management systems have made a very substantial contribution to WHS improvements in the Australian coal mining industry. Further, not only has the industry converged on a remarkably common approach to corporate-wide WHS management systems, but also these systems, arguably, closely resemble what Parker (2002, Chapter 8) describes as the "institutionalising of internal corporate commitment". Nevertheless, the slowing of WHS improvement across the industry gives pause for thought. One possible explanation is that many of the 'easy' WHS gains already have been made, and as *per* the law of diminishing returns, any further gains will require a much higher investment in energy and resources than that which has occurred to date.

A second possible explanation is that WHS management systems have emphasised items and actions that can be readily measured through internal and external audits. Not only does this risk, to some extent, a 'tick the box' mentality, as the Australian Chamber of Commerce and Industry (2005) and Hopkins (2005) have noted, it potentially ignores more intangible, but crucially important factors, such as safety culture. It is this latter point that the thesis explores in considerable depth.

1.3.2 Culture, mistrust and corporate WHS management systems

There has been much study on the interaction of 'soft' issues, namely culture, on 'hard' issues, namely technology and equipment and, more recently, WHS management systems. A common theme to emerge is that traditional approaches will underperform unless cultural issues are successfully addressed. Reason (2000), for example, has been prominent in arguing that WHS management systems are much more effective in the presence of a 'robust' safety culture, and that this takes on profound significance precisely at the point at which WHS incident rates reach a plateau. Similarly, Parker *et al* (2006) argue that "in order to go beyond this 'low but (seemingly) unassailable plateau' and to continue improvement in safety performance, it is necessary to address the hearts and minds of management and workers". Finally, Hudson (2007) points to a 'generative' safety culture as being crucial to involving an entire organisation in the effective implementation of WHS management systems, including having a chronic unease about safety.

In sum, safety culture, along with closely related concepts such as 'safety climate', have been subject to sustained academic attention, However, this attention – understandably, given the breadth of this field of study – has given insufficient attention to important strands of culture that may have a disproportionate influence in shaping safety outcomes. This thesis hones in on what is arguably the single most important sub-component of safety culture (albeit rarely recognised as such in the literature), namely that of *trust*, or more particularly, *mistrust*. The role of mistrust is something that has gained increasing attention from official inquiries in recent years. For example, the New South Wales Mine Safety Review identified a "debilitating mistrust between the members of the tripartite process" (Wran & McClelland 2005, 7) a major hurdle to better WHS outcomes across the industry. Similarly, the New South Wales Minerals Council (an industry body) nominated mistrust as the single most important impediment

to a building a better safety climate in mining companies (New South Wales Minerals Council 2005).

Where these and other reports fall short, however, is in not identifying the underlying causes of mistrust, the mechanisms by which it undermines WHS performance and, crucially, the potential avenues for reducing its prevalence. The academic literature is little better in this regard. For example, only "a limited number of researchers have examined the concept within the realms of safety research" (Cox *et al* 2004, 827; see also Risk Analysis: Special Issue on Trust, 2006). Nor has mistrust been the subject of any detailed empirical research in the mining industry. Consequently, our understanding of mistrust in the context of safety culture and, ultimately, WHS performance is less than ideal. As Zeffane & Connell (2003, 4) put it, the origins and evolution of mistrust in the workplace remains "complex and elusive".

In light of the above, a central focus of the thesis is to examine the impact of mistrust within Australian coal mining companies on WHS management systems and WHS performance. In particular, the thesis addresses the following **research questions**:

- What are the origins of safety culture, including mistrust, within Australian coal mining companies?
- What are the defining features of mistrust within Australian coal mining companies?
- Where, and between whom, does mistrust manifest itself within Australian coal mining companies?
- Does the presence of mistrust in mining companies negatively impact on the implementation of WHS management systems?
- And if so, how does the presence of mistrust in mining companies negatively impact on the implementation of WHS management systems?

As subsequent chapters of this thesis elaborate, the issue of mistrust resonates strongly in the context of worker-manager and mine site manager-corporate relations (as well as being highly pertinent to relationships between the external WHS inspectorate and mine site managers and workers – discussed further below). The thesis, in particular, identifies the presence of mistrust as a real and present danger to better WHS outcomes, in general, and the operation of WHS management systems, in particular. Further, the often-poisonous industrial relations between workers and management in the coal mining industry in Australia have exacerbated mistrust at many mine sites. As such, the presence of mistrust may limit the gains that can realistically be achieved under WHS management systems adopted by Australian coal mining companies.

Conversely, there has been some academic work on trust and the positive contributions it can make to WHS practices and performance, including, improved communication, better cooperation, generating 'buy-in' of management decisions, fostering a greater propensity to share safety knowledge and, ultimately, delivering improved WHS outcomes (Barling & Hutchinson 2000). While this literature addresses the broader question of how companies can foster organisational cultures that can complement and improve the operation of WHS management systems, there is less discussion of how to build trust in particular, including in the context of coal mining. As such, another detailed **research question** is:

- What actions and strategies, both at corporate and mine site level, can best be taken to restore and build trust across Australian coal mining companies?

1.3.3 Mistrust and variations in mine site WHS performance

In contrast to organisational safety culture in general, differences in culture *between* mine sites of a single company, and their potential contribution to WHS outcomes, have received far less attention in the literature. Instead, much of the literature assumes that, just as WHS management systems are consistent across companies, so too are their underlying workplace safety cultures. Given the geographical separation, the history of semi-autonomous management, and the different physical circumstances of individual mines sites that exist within many mining companies, however, there are risks in assuming they possess homogenous workplace cultures, and by extension, safety cultures, across their mine sites. The limited academic research on this issue that is available is somewhat equivocal (Vaghefi *et al* 2000; Wilcoxson & Millet 2000), and there is a paucity of studies on differences in safety culture, in particular, levels of mistrust, between individual sites in the Australian coal mining industry.

Given the strong emphasis that Australian coal mining companies have placed on the implementation of corporate-wide WHS management systems, the potential contribution of mine site culture, particularly mistrust, on the efficacy of those systems and, consequently, WHS outcomes, is worthy of investigation. In this regard, a crucial first step is to determine if there is variation in the mine safety performance of mine sites within those companies. Having established the existence and extent of any variation, it is then possible to examine the potential contribution of site-specific cultural factors, particularly mistrust. This gives rise to the following thesis **research questions**:

- Is there variation in WHS outcomes between mine sites within Australian coal mining companies?

- Is there variation in safety culture, particularly the level of mistrust, between individual mine sites within Australian coal mining companies.
- Is there a relationship between variation in mine site safety culture, particularly mistrust, and variation in mine site WHS outcomes?
- If so, what is the extent and nature of this relationship?

As detailed in the subsequent chapters, the research revealed not only the presence of strikingly different mine-site sub-cultures within individual coal mining companies, but, further, that such cultural factors can have an adverse impact on WHS practices and performance. In particular, it was found that there is a *cluster of characteristics* associated within heightened levels of mistrust at mine sites within a single mining company that demonstrate poorer WHS outcomes – as measured by a range of internal and external safety statistics. In this respect, various manifestations of mistrust undermined the implementation of corporate WHS management initiatives at the mine site level.

Mistrust is most obvious between workers and mine site management, particularly in an industry such as Australian coal mining that has historically suffered persistently acrimonious relationships between trade unions and management. Beyond this, however, mistrust can also have a corrosive impact on the relationships between mine site management and a geographically remote corporate management. Such mistrust can undermine attempts by corporate management to impose/implement consistent WHS policies and programs. Where mine site management, especially, middle managers, mistrust corporate motivations in pursing WHS policies and programs, their effective implementation may be severely compromised. In short, the thesis addresses the origins, development and consequences of mistrust across the above three areas,

and pinpoints where it can negatively impact on WHS practices and performance. An additional thesis **research question**, however, is:

- How can mining companies foster trust *within* mines sites and *between* their organisational layers, namely corporate management, mine site management, middle management and workers?

In addressing this, the thesis draws on the fieldwork findings to identify the most promising avenues for corporate management, and mine site management, to build trust with workers and middle management to the betterment of their WHS policies and practices.

1.3.4 Mistrust and external WHS regulation

In addition to mistrust within mining companies, both at corporate and mine site levels, there is the question as to the impact of mistrust between mining companies and the regulatory inspectorate on the achievement of broad WHS goals. In this context, the Gretley mining disaster may be viewed as a significant turning point for coal mining company and inspector relations (in New South Wales, at least). Prior to this tragedy, inspectors had employed an 'advise and persuade' approach. Following Gretley, and its protracted legal aftermath; however, considerable political pressure was placed on the inspectorate to adopt a far more adversarial 'deterrence' approach to WHS compliance and enforcement. This was characterised by a much greater propensity to prosecute. In this context, pertinent thesis **research questions** are:

- Has the shift to regulatory adversarialism increased levels of mistrust between Australian coal mining companies and WHS mining inspectorates?

- To the extent that it exists, what impact has mistrust between Australian coal mining companies and WHS mining inspectorates had on the achievement of WHS outcomes through, in particular, management-based regulation?
- What opportunities are there to reduce mistrust between Australian coal mining companies and WHS mining inspectorates?

Briefly, as these issues are discussed in detail in a following chapter, the thesis' findings suggest that despite the apparent appeal of a much tougher enforcement policy stance, the spill over effects in creating mistrust between mine company managers (and workers) and the inspectorate may have delivered perversely negative WHS outcomes. In particular, that communication between mine companies and inspectorates suffers. On the company side, preventative information is withheld for fear of it being used against mine sites in future prosecutions, internal investigations, statistics and remedial actions are kept secretive and personal relations between, for example, mining engineers no longer speak candidly to inspectors. On the regulatory side, inspectors are reluctant to give out advice for fear of that exposing them to potential future litigation and/or undermining future prosecutions. These findings highlight the importance of mistrust in shaping efficacy of WHS mining regulations, and through this, WHS outcomes in the Australian coal mining industry.

1.3.5 Codes of practice

Codes of practice are central to the changing landscape of WHS regulation in Australia. Ideally, as regulators step back from overtly prescriptive and traditional forms of regulatory oversight, codes of practice have an important role to play in providing guidance to mining companies and others as to ways in which they can meet their regulatory obligations. Crucially, however, they are not mandatory – companies may

incorporate all, some or none of particular codes of practice into their corporate WHS management systems, as best suits their individual circumstances. In practice, there are risks that they may be relied on as a default regulatory standard by inspectors and the courts. As such, the inappropriate application of codes of practice may stifle the progress of WHS management-based regulation and innovative approaches to WHS in mining companies. The importance of codes of practice is recognised in efforts, *albeit* recently stalled, to harmonise them across Australian jurisdictions. This gives rise to the following thesis **research questions**:

- How have codes of practice been used under current WHS regulatory systems?
- Has this inhibited the progress of WHS management-based regulation?
- How has the process of WHS legislative harmonisation fared in relation to codes of practice?
- How might codes of practice be designed and used to best meet their potential contribution, particularly in the context of WHS management systems?

As explored in depth in a following chapter, codes of practice are an important step in the journey towards management-based regulation in the Australian mining industry. However, there are serious deficiencies in the design and implementation of codes in Australian mining jurisdictions. In particular, there is a large gap between theory and practice in that mines WHS inspectorates use codes as a form of 'regulation by stealth'. Further, the national harmonisation process has largely failed to design codes of practice that are best suited to a mining industry specific context. As such, there are various reforms that are needed for them to fulfil their promise as a key component of effective and efficient WHS management-based regulation.

1.3.6 Inspectoral competencies, capacities and enforcement strategies

In addition to the issue of mistrust with coal mining companies, and the misuse of codes of practice, the institutional capacities and capabilities of WHS inspectorates (both generic and mining specific) are a key determinant of WHS compliance and enforcement outcomes. This is the case irrespective of the presence or not of particular regulatory policy tools. In this respect, it is apposite to identify what constitute core inspectoral competencies for regulatory WHS in the Australian mining sector. And beyond institutional competencies, there is the closely related issue as to what makes a 'good inspector'. Relevant issues include the capacity to conduct effective workplace inspections, to foster preventative actions and to build trust with mine site managers and workers in order to facilitate better WHS outcomes. Further, it may be useful to identify and present the critical decision-making steps on the ground that, arguably, are instrumental in determining the efficacy and consistency of inspectoral behaviour and actions. As has been noted, "making decisions about appropriate enforcement is fundamental to the role of an inspector" (Health and Safety Executive 2005a, 1). In this regard, a practical, comprehensive and practical enforcement guide may assist raising the inspectoral bar in the mining sector across Australian jurisdictions. These issues give rise to the following thesis **research questions**:

- What are the core competencies and capacities that mining WHS inspectorates should possess?
- How do WHS inspectorates (including mining and generic) measure up against such core competencies and capacities?
- What should an enforcement guide for inspectors look like?

As a following chapter expands on, an investigation of WHS mines inspectorates of seven Australian jurisdictions revealed that there is a high degree of variability in their

inspectoral competencies with many falling short in critical areas. In light of this, the identification of core inspectoral competencies is pertinent. The thesis does this by drawing on relevant international precedents, including those from outside the mining sector, as well as workshops conducted with Australian WHS regulators. Further, and, again, explored in a following chapter, there is scope to provide specific guidance to inspectors in making enforcement decisions. In this regard, the United Kingdom Health and Safety Executive's (UK HSE) (2005a) 'Enforcement Management Model' (EMM) and the Heads of Workplace Safety Authorities' (HWSA) National Occupational Health and Safety Compliance and Enforcement Policy (NOHSCEP) provided a useful starting point, although there is considerable room for improvement on these earlier efforts. In so doing, the proposed enforcement guide incorporates the principles of risk-based regulation and responsive enforcement.

1.3.7 Summary

In summary, the thesis addresses two broad themes. The first theme seeks to identify those factors that may have substantially impeded the achievement of continuous improvement in WHS outcomes across the industry, as well as at individual mine sites within coal mining companies. This analysis encompasses internal company WHS operations, in particular, the interactions between WHS management systems, culture and mistrust. Specific issues include the nature and efficacy of corporate WHS architectures; potential difficulties in applying sophisticated WHS management systems across multiple mines sites *within* a single company; the reasons why some mines sites have much worse WHS outcomes than other ostensibly comparable mine sites, again, within the same company; the nature of and extent to which cultural factors, and in particular, mistrust, impact on WHS operations; and potential avenues for enhancing the effectiveness of WHS management systems through building a culture of trust.

Collectively, these issues raise an important question. Has too much faith been placed in the efficacy of WHS management systems? The thesis' findings suggest that WHS management systems may be, to a considerable extent, subservient to the culture into which they are received. In this regard, the Australian coal mining industry is, arguably, especially vulnerable – geographically remote mine sites that have traditionally enjoyed a high degree of autonomy and evolved distinct cultures, and a history of antagonism between highly unionised work forces and management, conspire to impede the effective adoption of WHS management systems. And high levels of organisational mistrust, in particular, are more prevalent in those mine sites that appear to have resisted most strongly the imposition of corporate wide WHS management systems and standards.

The second theme addresses the external regulatory environment, in particular, how the tools, behaviour and attitudes of mining inspectorates influences WHS behaviour and outcomes. Specific issues include the interplay between WHS regulatory compliance and enforcement and company WHS responses, in particular, the role of mistrust; potential limitations with the use of management-based regulation in the context of persistent cultural resistance; whether the use of codes of practice, in particular, have overreached their usefulness and instead begun to undermine policy intentions to pursue management-based regulation; and, ways in which external regulation can best complement and enhance internal WHS management systems adopted by coal mining companies. More broadly, this theme considers how mining inspectorates should interact with mining companies at the 'coal face' in seeking to enforce WHS compliance, what inspectoral competencies, characteristics and behaviours should they possess, and what enforcement guidelines should they operate under.

The findings of the thesis may resonate beyond the Australian coal mining industry. In this respect, this is most likely in other industries that share relevant characteristics with coal mining, namely multiple and/or geographically separated sites, the widespread application of management systems to improve their WHS outcomes and/or a history of fraught management and union relations.

1.4 Thesis structure

The chapters of this thesis are based on seven published articles, one recently submitted article and two reports, with the following structure. Chapter 2 – 6 address, broadly, WHS managements systems, safety culture and mistrust within Australian coal mining companies and their mines sites. Chapter 2 sets the scene for the rise of WHS management systems within the coal mining industry by examining the corporate safety architecture of five coal mining companies operating within Australia. It is revealed that there is a high degree of convergence of corporate safety tools and strategies, including: agenda setting; systems, standards, rules and procedures; core arrangements (WHS risk management, investigation, major hazards and worker participation); behavioural and cultural change; monitoring, auditing and accountability; and the centralised provision of resources. The positive features of this architecture are described, including how it has contributed to a substantial improvement in WHS outcomes. However, as the rate of WHS improvement has slowed, possible explanations for this are explored.

Far from being homogenous organisations, Chapter 3 reveals that Australian coal mining companies experience considerable variation in mine safety performance across their mine sites. Notwithstanding impressive gains in WHS across the industry, some mines substantially outperform others in terms of WHS outcomes. This raises the

question as to why this occurs, particularly given the introduction of sophisticated and systemic risk management. This chapter considers and rejects several potential contributory factors, before examining the role of safety culture. As such, it provides insights as to whether, to what extent and in what circumstances site specific cultural variables served to undermine or reinforce the effectiveness of a company's overall risk management strategy.

Chapter 4 examines the relationship between mistrust, adversarial industrial relations and safety performance across Australian mining companies, and their respective coal mines. A key finding is that the formation of mistrust is closely associated with a cluster of characteristics that, in turn, may negatively impact on mine site safety performance. Consideration is also given to the broader ramifications of these findings for non-mining sectors, in particular, for companies with a corporate head office overseeing separate sites.

Chapter 5 considers the question: what are the origins of different safety cultures at mine sites? Safety culture is often assumed to be uniform across companies. In this chapter, however, substantial and persistent differences in WHS performance across mines sites of a single coal mining company are associated with the formation of a 'bottom-up' safety culture. This has significant implications for the implementation of corporate-wide, 'top-down' corporate WHS initiatives.

Given the 'cluster of characteristics' closely associated with the formation of mistrust identified in Chapter 3, and the negative impact such characteristics can have on WHS outcomes, Chapter 6 considers how best to overcome such mistrust. In particular, it suggests ways to nurture trust between workers, mine site management, corporate management and trade unions, in the context of WHS management.

Chapters 7-11 consider the roles, interactions, strategies and regulatory styles of mining inspectorates that impact on WHS practices and outcomes. In this regard, the chapters mirror to a large extent the *internal* mining company WHS issues addressed above. Chapter 7 investigates how regulatory style can undermine trust, and, in so doing, stifle potential WHS improvement. The role of prosecution in achieving compliance with social regulation is a highly contentious issue in regard to WHS in the New South Wales mining industry. Following a mining disaster, political pressure prompted the mines inspectorate to abandon its traditional 'advise and persuade' approach in favour of a much tougher, deterrence oriented approach. While the former approach can result in regulatory capture, the latter can be equally counterproductive. Interactions between inspectors and the regulated industry are frequent and ongoing and trust is central to constructive relations between them. When those relations break down (as under an inappropriate prosecution policy) then dialogue ceases, information is withheld rather than shared, company accident investigation, prevention and remedial action are inhibited and both sides adopt an adversarial posture that undermines regulatory effectiveness. In addition to demonstrating the centrality of trust to regulatory effectiveness, this chapter identifies both how it can be lost and how it can best be regained.

Chapter 8 examines WHS management-based regulation through two case studies. The first describes how corporate WHS management systems and standards were interpreted and implemented differently at different mine sites *within* the same company and how, in particular, mistrust between workers and management underpinned variations in WHS outcomes. The second explores the difficulties in moving from highly devolved WHS responsibility to a externally mandated and centralised approach, in particular, the impotency of regulation in changing behavior at site level in the absence of a supportive workplace culture. Notwithstanding the heavy emphasis currently being placed on both internal (company driven) and external

(government driven) management-based regulation, a commitment at corporate level does not necessarily percolate down to individual facilities where ritualistic responses or resistant sub-cultures may thwart effective change.

Codes of practice have the potential to do much of the 'heavy lifting' under management-based regulation. Chapter 9, however, identifies various deficiencies in the design and implementation of codes under Australia's harmonising WHS legislation, including a failure to design codes of a type or types that are best suited to their industry specific context; and a failure to implement codes appropriately. In particular, there is a gap between theory and practice and that, far from providing a form of authoritative guidance, codes of practice, in the hands of the mines inspectorates, more frequently become a form of regulation by stealth. The chapter concludes by identifying various reforms that will be needed if codes are to fulfil their promise as a central plank of an effective and efficient WHS regime.

Chapters 10 and 11 are two parts of two related reports to the National Mine Safety Framework (NMSF) to improve the operation of WHS inspectorates (whether mining specific or generic) under the achievement of a nationally consistent WHS regime for the mining industry. Chapter 10 draws on the national and international literature to identify best practice principles for inspectorates with WHS mining responsibilities. In particular, to identify the competencies that an 'ideal' inspectorate should possess. In this regard, five key outcomes govern inspectorate capabilities: the ability to recognised those risks and hazards with the greatest potential for adverse WHS outcomes; assisting industry to comply, while also maintaining an effective mix of positive motivators and effective deterrents; consistency, both in terms of process and outcomes, to ensure fairness in the treatment of different regulated entities and to maintain the credibility of the inspectorate; developing and maintaining good professional relationships with mines sites and other stakeholders; and complementing

and enhancing internal corporate systems and controls, in order to encourage and facilitate continuous improvement.

To give effect to the identified competencies of the ideal inspectorate, Chapter 11 outlines a set of national enforcement implementation guidelines to provide practical guidance to mines inspectors in their compliance and enforcement decisions. In particular, this takes the form of a decision-making framework based on five discrete steps, and an associated enforcement matrix. The intention is to generate more effective enforcement through greater consistency, a more efficient allocation of regulatory resources and improved transparency for and understanding by duty-holders.

1.5 Methodology

The findings in this thesis are drawn from a mixture of interview-based fieldwork, desktop research and literature reviews. Each chapter describes in more detail the specifics of the methodology applying to that piece of research. Nevertheless, an overview of the research sources and methodology is as follows.

The fieldwork spanned a period from 2007 to 2012. During that time, face-to-face interviews were conducted at three Australian coal-mining companies, across two jurisdictions (New South Wales and Queensland) and encompassing – mine sites, as well as their respective corporate headquarters. A typical sample of approximately 12 interviewees from each mine site consisted of the mine manager, shift or process supervisors, undermanager, safety officer, engineering (mechanical and/or electrical) managers, crew leaders (deputy under managers, team supervisors), and mine workers and tradesmen (including local 'check' inspectors and mine site safety

representatives). In most cases the balance between mine managers and employees was approximately even. In addition, senior corporate managers from each of the mine companies were interviewed (including the chief executive, head of safety, head of risk management, and operations managers). In total, over 180 mining company interviews were completed.

The mine site interviews were conducted during two-day site visits, and corporate interviews were conducted during a single day visit. All interviews were held in private, generally lasted between 40 and 60 minutes and consisted of a series of pre-determined questions or prompts, with only those questions that elicited a substantive response being explored in greater detail. This approach ensured that a diversity of perspectives was explored, and that respondents were not constrained to address only particular preconceived issues. Consistent with the University ethics approval, interviewees were provided with an information statement of the research project, a consent form (signed by each participant) and informed in advance that all information arising from their interviews would be treated confidentially, and used anonymously in any subsequent publications. They also had they right to withdraw from the interview at any point.

Theses coal mining interviews are summarised at Table 1 below. The findings from these interviews were used in Chapters 2-8.

Table 1: Interviews at five coal mining companies, across three jurisdictions

	Company A	Company B	Company C	Company D	Company E
Location	NSW	NSW	Queensland	Western Australia	Western Australia
Mine sites	7	4	2	nil	nil
Mine site interviews	83	45	23	nil	nil
Corporate interviews	8	7	4	5	6

In addition to the mining companies, face-face-interviews were conducted with officials from WHS regulatory agencies in New South Wales, Victoria, Queensland, Western Australia, South Australia, Tasmania and the Northern Territory. This included specialist mining regulators as well as generic WHS regulators. In the case of the former, both senior management and mining inspectors were interviewed. In the case of the latter, only senior management was interviewed. Interviews followed the format identified above. A total of 38 such regulator interviews were completed.

Finally, two other stakeholder groups were interviewed face-to-face. These were WHS representatives of national and state mining industry associations (New South Wales, Queensland and Western Australia) and, trade union representatives (New South Wales and Queensland). Again, all interviews followed the above format. A total of 16 such stakeholder interviews were completed.

In addition to, and, in some cases, as well as, face-to-face interviews, phone-based interviews were conducted with WHS management from over 20 metalliferous and coal mining companies across New South Wales and Queensland.

Theses additional interviews are summarised at Table 2 below. The findings from these interviews were used in Chapters 8-11.

Table 2: Interviews at additional mining companies, and with regulatory inspectors and other stakeholders

	Additional coal mines	Metalliferous mines	State regulatory inspectors	Mining industry associations	Trade unions
Total interviews	6	14	38	11	5

Beyond interviews, the thesis draws on a range of safety statistics. These included both those available in the public domain, and internal company records. In the case of the former, the major sources of safety statistics were those published by the mining regulators of New South Wales and Queensland, Safe Work Australia, as well as those produced by the New South Wales Minerals Council and the Queensland Resources Council. In the case of the latter, each of the three mining companies that engaged in face-to-face interviews also provided unfettered access to their internal WHS policy documentation and databases (including audit results and safety statistics in addition to those required to be supplied to regulators by law). As with the interviews, internal company statistics were provided on the basis of confidentiality and anonymity.

Qualitative material derived from the interviews and public and company statistical data were supplemented by reviews of both the domestic and international literature, including covering regulatory theory and practice, organisational and safety culture, mine safety, and WHS in general.

Detailed methodologies are provided at the beginning of each of the thesis chapters that are based on published articles.

Chapter 2: Corporate WHS management architecture in the Australian coal mining industry

This chapter is a reproduction of an article by Darren Sinclair published in *Policy and Practice in Health and Safety* (Volume 10, Number 2, 2012, pages 3-24).

2.1 Introduction

Managing WHS remains a substantial challenge for many corporations, especially those with multiple, complex and hazardous operations. Companies in the Australian coal mining industry, which have all of these characteristics, have particular reason for concern. Theirs is a dangerous industry that has in the past had more than its share of injuries, disease, fatalities and disasters.

However, since the early 1990s, the Australian coal mining industry has committed substantial resources to reducing work related injury and disease. Mining companies now regard WHS performance as a priority, for which there is a compelling 'business case' (Health and Safety Executive 2005b). Mining injuries can cause serious disruption of the production process, escalate already high workers' compensation costs, and increase staff absences and reputation risk. They can also threaten the company's 'social license to operate', which is increasingly important, given that community expectations of WHS performance have risen, that failures in WHS may spill over and threaten access to new mine sites, and the imposition of more stringent environmental controls (Gunningham 2007).

Responding to these pressures the industry has made considerable efforts to improve its WHS performance. The rates of fatal and other recorded injuries in the mining industry as a whole, and in the coal mining sector of that industry, have declined markedly in the last 20 years. As Table 3 below shows, for the period for which national data are available since the late 1990s, there has been a downward trend in the number and incidence rate of fatalities in the coal sector, and in the mining industry generally. Table 3 also shows the general decline in the incidence rate for occupational injuries and disease claims, whether measured as an injury incidence rate (per employees) or frequency rate (per hours worked), in both the coal sector and the mining industry as a whole.

Table 3: Trends in fatalities and other injuries in the coal mining sector and the mining industry overall.[1]

Year	Fatalities – number[2]		Fatalities – incidence rate[3]		Injuries – incidence rate[4]		Injuries – frequency rate[5]	
	Coal	Mining	Coal	Mining	Coal	Mining	Coal	Mining
1997/98	1	18	4.3	23.1	62.6*6	43.3	32.3	19.6
1998/99	3	13	17.5	17.1	56.4*	32.8	26.0	14.4
1999/00	3	14	15.3	18.8	43.9*	32.6	21.5	13.9
2000/01	3	18	16.9	23.9	34.3	29.9	15.5	12.7
2001/02	3	10	16.2	13.1	38.3	30.4	18.3	13.3
2002/03	0	13	0	15.7	37.9	27.5	17.6	11.7
2003/04	2	8	10.1	8.8	39.5	26.0	18.8	11.4
2004/05	0	7	0	7.0	31.8	24.2	16.7	10.5
2005/06	3	15	10.9	12.2	25.4	19.4	13.9	8.6
2006/07	0	7	0	5.4	30.5	20.3	16.5	8.8
2007/08	0	7p	0	5.0	24.1p7	17.8p	12.9	7.9

1 The data in Table 1 are sourced from Safe Work Australia 2010, Safe Work Australia 2008 and Safe Work Australia's National On-Line Statistical Database (NOSI).

2 These are fatalities for which workers' compensation was paid.

3 The incidence rate of fatalities is the number of fatalities for which compensation was paid expressed as a rate per 100 000 employees.

4 The incidence rate of injuries is the number of claims for occupational injury or disease that resulted in an absence from work of one working week or more, and expressed as a rate per thousand employees.

5 The frequency rate of injuries is the number of claims for occupational injury or disease that resulted in an absence from work of one working week or more, and expressed as a rate per million hours worked by employees.

6 Due to limitations in the estimates of employees and hours worked for detailed industry categories (such as coal mining), incidence and frequency rates should be used with caution, as they may vary slightly from the true figures.

7 Safe Work Australia denotes data by the letter 'p' if they are subject to change as more claims are accepted or absence from work increases to be equal to or greater than one working week.

It would appear then, that whatever the industry has been doing (particularly the large companies whose improved WHS initiatives substantially accounts for the statistical improvement of the industry as a whole), they have been doing something 'right' with generally improving performance. If so, then the practices of these companies may suggest lessons for other companies within the mining industry (in particular, mid-sized/national companies) and for other industries more generally. However, the data in Table 3 also show that improvement has slowed in recent years and, for the coal sector in particular, there has been some fluctuation in performance, with injury or fatality rates in some years being higher than in the preceding year.

This chapter is centrally concerned with the question: how have major coal mining companies addressed the WHS challenge, and how have they achieved such substantial improvements in their overall WHS performance? To answer this question the focus is particularly upon the particular and distinctive WHS management architecture that they have employed, why they have employed it, and what results it has achieved across the industry.

Before engaging with these questions the methodology is described (Section 2) and theorising on WHS summarised, locating this research's contribution within it (Section 3). In the results, based on the study of five mining companies, the central pillars of WHS management architecture identified are described. Discussion then turns to the forces underlying architectural convergence, the relationship between this architecture and improved WHS performance, and the extent to which limitations in this architecture may be constraining further WHS improvements (Section 5). The chapter concludes by examining the policy implications of this analysis (Section 6).

2.2 Methods

The chapter is based on the corporate WHS management architecture of five Australian coal mining companies, four of which are large multinationals (A, B, C and D) and one which is a medium sized domestic company (E). Consistent with the precepts of qualitative social science research, neither the identities of the companies to whom 'in confidence' access was given, nor those of the interviewees, can be disclosed. The five companies operate multiple mine sites across three Australian jurisdictions (New South Wales, Queensland and Western Australia). Unfettered access to internal WHS policy documentation was provided by all five companies, and to their WHS databases (such as audit results and safety statistics) at three of those companies. In addition to desktop research, interviews were conducted with 15 senior managers at corporate (across all five companies, and including chief executives, corporate safety managers and operational managers) and 120 senior, middle and line managers and workers at mine site levels (10 mine sites, across three companies – four at C, two at D and four at E) – the ratio of site management to worker interviews was approximately one to one. Interviews were typically conducted during a two-day site visit, were held in private, generally lasted between 40 and 60 minutes and consisted of a series of questions or prompts addressing WHS management architectures (it is important note that the interviews covered a broad range of WHS topics, the majority of which have been addressed in separate articles – those relevant to this chapter are highlighted in the box below, and as can be seen, are restricted to identifying and detailing the characteristics of each company's corporate WHS management architecture). Consistent with the research's ethics clearance, interviewees were provided with an information statement of the research project, a consent form (signed by each participant) and informed in advance that all information arising from their interviews would be treated confidentially, and used anonymously in

any subsequent publications. Finally, the WHS management profile of Company A was supplemented through the records of a Ministerial WHS Inquiry into the WHS practices of this company (with regard to which the first author was specialist WHS advisor).

2.2.1 Interview questions

Corporate managers were asked to identify and explain the operation and implementation of corporate wide WHS policies, targets, programs, standards and procedures. Key follow-up prompts were:

- What was the origin of corporate-wide WHS initiatives?
- Have corporate WHS initiatives been adopted and implemented at mine sites?
- Are mine sites granted flexibility in how they adopt and implement corporate WHS initiatives?

Mine site senior and middle managers were asked to identify and explain the implementation and operation of key corporate WHS polices, programs, standards and procedures at their mine site. Key follow-up prompts were:

- Have corporate WHS initiatives been adopted and implemented at mine sites?
- Are mine sites granted flexibility in how they adopt and implement corporate WHS initiatives?

Workers were asked what knowledge they had of corporate WHS policies, targets, programs, standards and procedures, and their operation and implementation at their mine site. Key follow-up prompts were:

- Have corporate WHS initiatives been adopted and implemented at your mine site?

- Are you granted flexibility in how to adopt and implement corporate WHS initiatives?

2.3 Theory

Since the mid 1990s, large mining companies have devoted considerable attention and resources to the prevention of work related fatalities, injuries and disease. Each company has sought to achieve increasingly ambitious WHS targets by invoking a variety of instruments, mechanisms and strategies that in combination form their corporate WHS management 'architecture'. The architectural metaphor is an apt one to encapsulate the way WHS management approaches and strategies are integrated into an overall structure that is much more than its individual parts. For example, one company describes its WHS initiatives as involving "a process of cascading goals and targets from the corporate level to the individual level [that] provides clear linkage and alignment to support the vision of Zero Harm and also provides the framework for accountability through performance reviews and evaluations". Thus it is made clear that its overall WHS management strategy is not just about the individual elements or management tools, but also about how these different elements integrate and interact.

To locate the evolution of a common WHS management architecture to contemporary WHS theory, it has been said that WHS had developed through a series of stages.[3] While there is some disagreement as to precisely what these stages are, they are widely recognised to include a technical age, a 'human factors' age, a management systems age and a culture age (Hale & Hovden 1998; Hudson 2007). While some suggest that these 'ages' are sequential it is more likely that each age has been superimposed on, and to some extent integrated with, the subsequent one. Indeed

Glendon *et al* (2007) argue that we are now approaching an 'integration age' in which the learning of previous ages is not rejected but rather informs a new synthesis.

But this begs the question of exactly what such a synthesis might involve and why a particular form of synthesis, rather than any other, gains traction, and what the broader implications of this might be for WHS outcomes. It is with these questions that this chapter is concerned.

One striking finding, explored below, was the degree of convergence in the WHS architectures of the various firms in the sample. Was this because all had independently realised the virtue of a particular approach, or by trial and error, found the same path to improved WHS performance? Drawing from the new institutionalism perspective on organisations, a rather different explanation is persuasive (Powell & DiMaggio 1991; Scott 1995; Meyer & Scott 1992). According to DiMaggio & Powell's (1991) well-known classification, three distinct mechanisms are capable of producing what Marquis *et al* (2007) term 'community isomorphism' (the resemblance of a corporation's social practices to those of other corporations within its geographic community): normative/cultural; coercive; and mimetic mechanisms. Normative or cultural isomorphism is driven by a desire for organisational legitimacy, which is achieved by being aligned with institutionalised models of what constitutes a properly constructed corporate body – a wide range of actors influence these perceptions, including business and legal academics, consultants, managers, business associations etc. (Marquis *et al* 2007). Coercive isomorphism entails external pressure in the form of state legislation, regulation and intervention by the courts. To bring about isomorphism there must be a degree of uniformity in the coercive approaches adopted across jurisdictions to encompass disparate multinational mining corporations (it is also possible to conceive of intervention by a remote corporate headquarters on their individual mine sites as being a form of internal coercion). Mimetic isomorphism is

simply a form of imitation. Organisations imitate the behaviour of others, particularly industry leaders. This imitation may be focussed on particular operational aspects, such as environmental responsibility of WHS. This imitation facilitated and promoted through a range of industry networks, communications, contacts, peer-to-peer engagements and third parties, such as accountancy firms. The role of isomorphism in explaining convergence is returned to in Section 2.5.1.

2.4 Results

A striking feature to emerge from the research was the extent to which the corporate WHS management architecture of the four large Companies A – D have converged (with the fifth, medium-sized Company E, to some degree playing 'catch-up'). This is not to suggest that the corporate WHS management structures of these companies are identical (there is, for example, considerable variation in terms of worker participation, the role of trade unions, the importance of incentives, and the use of interactive databases). However, in terms of their use of the very large majority of WHS management practices described below, and their integration into an overall corporate architecture, the similarities are compelling. Each of the architectural pillars is discussed in more detail below.

2.4.1 Agenda setting

This arises from a desire to provide a clear statement of corporate intent of what a company aspires to achieve and what it 'stands for' in terms of WHS. This corporate vision is communicated throughout the company structure and, in most cases, is also addressed to the general public as part of a broader commitment to corporate social responsibility. Agenda setting therefore serves both as an internal moral compass for a

mining company as a whole, and as a yardstick by which WHS performance may be judged by external stakeholders.

The principal value of agenda setting lies in how it contributes to other aspects of the overall WHS architecture (alone it could be little more than empty rhetoric). Once a company has articulated its broad aspirations, it can develop a range of concrete and detailed policies, practices and programs to achieve them. Agenda setting can also support the development of a safety culture (see below) to the extent that it is invoked to inspire and lead WHS improvement across the company. Agenda setting includes policy statements, target setting and framing.

The research revealed that the companies in the sample have produced broad statements of WHS policy referred to variously as 'mission statements', 'charters', 'policies', 'goals', 'principles' and 'objectives'. They all include: an ambitious, overarching statement of the WHS aspirations for their company and workforce (eg "to create a workplace environment free of work related fatalities, injuries, and diseases"); a statement that WHS takes priority over production (eg "there will be no compromise on safety"); a commitment to the very highest standards of WHS performance (eg "to achieve health, safety, environment and community leadership in all levels of management"); recognition of personal responsibility for achieving safety outcomes (eg "every employee and contractor shares responsibility for the safety of themselves and their fellow workers"); a statement that injuries are preventable, and that the best way of achieving this is through WHS risk management (the identification of hazards, and assessment and control of risks); and a commitment to continuous improvement.

Interviews with corporate managers revealed that all the companies are progressively establishing measurable and publicly available WHS improvement targets. These have implications for corporate reputation – once a target is in the public domain, companies

can be held accountable by stakeholders if they fail to achieve it. Companies choosing to go down this path, by implication, also commit themselves to revealing their progress towards these targets, and to justifying any shortfall in meeting them. Such targets, provided they are widely communicated and understood, also send a message to individual mine sites that they will be held accountable in contributing to the aggregate corporate-wide targets. They may be high level targets, for example the 'zero harm' target, or the target of maintaining certification to the Australian/New Zealand Standard 4801 on WHS management systems.

The third element of agenda setting, framing, is a means of providing the parameters and language for internal and external WHS discourse. Framing is a means by which corporate management attempts to shape how WHS issues are perceived and acted upon at its geographically remote and semi-autonomous mine sites. In this respect, framing is a crucial step in extending the reach of corporate management, and provides a vital link between agenda setting and subsequent practices and outcomes on the ground. Farming includes a clear outline of a company's WHS priorities (and how they are defined and to be integrated into mine site operations), but framing is much more than priority setting as it also addresses underlying corporate values. For example, if the company regards workers as valued members of a team, they need to be fully engaged and consulted on all aspects of their job, and worker participation will be a priority, as well as open two-way communication, the provision of training and consultation about new technologies (Barling & Hutchinson 2000). In this way framing has implications for other pillars of WHS architecture.

As framing is a means for shaping response to WHS in far-flung locations, on the basis of the interviews, it is not coincidental that it is the larger coal mining companies with multiple sites that emphasise WHS framing. However, even with smaller mining companies, framing is increasingly evident. Perhaps the best example, and one

endorsed and adopted by the sample companies, is the Minerals Council of Australia (MCA) statement of vision and beliefs. This not only identifies the ambitious industry target that no minerals fatality, injury or disease is acceptable, but also states that all such occurrences are preventable, that no task is so important that it cannot be done safely, that all hazards can be identified and their risks managed, that everyone has a personal responsibility for their own and others WHS, and that WHS performance can always be improved (Minerals Council of Australia 2007).

2.4.2 Systems, standards, rules and procedures

Having determined a corporate WHS 'agenda' through policy statements, targets and framing, the next major challenge lies in translating these aspirations into better mine site WHS practices. This involves establishing management systems and arrangements that convert broad objectives into practices for dealing with WHS systemically (rather than as individual deficiencies) – putting the 'flesh' onto the 'bare bones' of broad policy statements. At the five companies this was achieved by a number of related mechanisms with different degrees of specificity. These included the organisational structures, responsibilities and resources for implementing, maintaining, monitoring and reviewing the effectiveness of WHS management, and correcting problems in order to improve overall WHS performance. Appropriate training and development, supervision and communication are critical elements, as are the documentation of arrangements in standards, rules and procedures.

Although there are variations in the precise details, respondents in the interviews revealed that all the companies have located WHS management systems as the cornerstone of their internal corporate control of WHS preventative strategies. For example, all Company D sites maintain certification of their WHS management system to the Australian and New Zealand Standard for Occupational Health and Safety

Management, AS/NZS 4801. On the other hand, Company B states that it has "world-class safety systems in place and used by all", and that its "systems are simple and developed with employees" and "designed around programmes and methods to identify hazards, aspects and opportunities in the business processes".

There is some variation between companies with regard to the degree of flexibility that mine sites have in implementing and conforming to corporate WHS management systems. Company A, for example, is very prescriptive in its requirements for mine sites to comply. On the other hand, Company C allows some discretion as to precisely how they construct their WHS management system, as long as each of their corporate-wide standards is adequately addressed. In Company E, until recently, there has been little corporate guidance as to the scope or contents of WHS management systems with the result that individual mine sites have established largely independent (and diverse) systems.

According to interview respondents, the companies seek to ensure consistently high levels of WHS performance across their mine sites through the use of corporate-wide standards (although these are at varying stages of development and implementation). These form the basic WHS infrastructure upon which virtually all other mine site WHS management strategies are built. The four large companies (A-D) have introduced similar corporate WHS standards, including: leadership and accountability; legal compliance and document control; risk and change management; planning and targets; health and hygiene; communication and consultation; incident reporting and management; assessment, monitoring and reporting; suppliers and contractors; emergency and crisis management; incident reporting and management; stewardship; operations and maintenance; community; competency and behaviour; and project design, management and commissioning. Individual standards are further sub-divided into more specific components. The medium sized Company E has not yet developed

equivalent corporate wide standards, preferring to let individual mine sites determine their own WHS priorities. This has led not only to substantial variation in sites' WHS priorities but also in how they translate their priorities into WHS practices and, unsurprisingly, substantial variation in WHS outcomes.

The interviews also revealed that corporate-wide WHS rules are established to specify in very precise terms what managers or workers should do when confronted by a particular task or challenge and how they should do it (prescriptive rules), or specify the WHS outcome or desired level of performance but leave open the concrete measures for achieving this in local circumstances (performance rules) (Gunningham & Johnstone 1999). Rules may also specify disciplinary action where breaches occur.

In particular, the five companies rely substantially on prescriptive rules. For example, company B has seven 'Golden Rules', two of which are never working on equipment without first applying personal isolation lock(s) in accordance with isolation procedures, and never working above 1.8 metres without fall protection and fall prevention. In serious cases, non-compliance can result in dismissal or, at a minimum, 'recorded counselling'. Company D has a similar approach with its ten-rule version of the Golden Rules, and also threatens dismissal for breaches.

A further mechanism that came to light during interviews, and common to the five companies, was 'safe work procedures' (SWPs). These specify the action to be taken by workers, allowing them to carry out tasks without needing to know about the company's WHS management system as a whole. This approach has the advantage that individual SWPs can be updated without requiring management system modification. However, it is impractical to prepare SWPs for every single task in a mining environment that is inherently changeable and unpredictable. Accordingly less formal decision-making mechanisms are also employed.

2.4.3 Core arrangements – WHS risk management, investigation, major hazards and worker participation

Interviews clearly indicated that central to the companies' corporate-wide WHS management systems is WHS risk management, which is also a mandatory requirement under mining WHS regulation. This includes the organisational arrangements for proactively identifying hazards, assessing risks and controlling risks. Although all the companies have comprehensive processes in place, it is not always practical to complete a fully-fledged risk assessment. As such, they have also introduced different forms of 'mini-risk assessment'. For example, Company E employs a 'job safety analysis' (JSA) and Company B has a hierarchy of risk assessment procedures, from 'Take 5' and 'Job Hazard Analysis' through 'Qualitative risk assessment' facilitated by a leader and involving a cross functional team' to 'Semi Quantitative Risk Assessment' for any risks rated as 'High and Critical'.

Another specific component of overall WHS risk management to emerge was the development of major hazards management plans by individual mines sites (under corporate guidance) to address hazards that may have catastrophic or very serious consequences. Here, the focus is on identification of, the potential for, and management of low frequency, high consequence events (spontaneous combustion, inundation, strata control and so forth), with an emphasis on critical controls. Such plans are also mandatory in some jurisdictions. The companies have adopted similar processes, albeit with different names, to identify and manage major hazards. For example, at Company C:

> [E]ach of our operations identifies opportunities for improvement following a formal hazard review and includes these in the site strategy review and business

> plan. We undertake targeted programs to address a specific hazard ... [We have] developed a leading practice process for monitoring the critical controls of major hazards. ... [We] are now customising this process to monitor critical controls of all major hazards more effectively.

Company D's version of this is its 'Target Zero Action Plans' (TZAPs). The purpose of TZAPs is to clearly enunciate practical solutions to key safety challenges and each plan comprises various interventions and programs to support the achievement of Target Zero. Site and line managers, as well as corporate management, are accountable for the successful implementation of TZAPs. Company A has pioneered the use of 'fatal risk protocols' to eliminate fatalities in its activities across the world. Here, common hazardous activities have been identified (by workers and managers) from the analysis of incidents, and practices developed to eliminate both the fatalities and the incidents that could cause them.

In all of these activities, worker participation can play a significant role and is fundamental to reducing work related fatalities, injuries and disease. Workers have the most direct interest in WHS of any party, and often know more about the hazards associated with their workplace than anyone else. Workers are also more likely to abide by WHS rules if they have contributed in a meaningful way to their design and implementation. Thus genuine participation facilitates the development of positive safety behaviours in the workforce. However, effective participation requires constructive dialogue between management and workers (Gallagher 1997; Vassie & Lucas 2001) and such dialogue has often been in short supply in the mining industry. According to respondents, all the companies are actively pursuing worker engagement through a variety of initiatives. These include: peer-to-peer behavioural based safety (BBS) programs (see below); regular meetings and consultations between workers and senior mine management (both formal and informal, and including WHS committees);

worker involvement in risk assessments and accident investigations; feedback through incident reporting and WHS suggestion programs; and participation in internal audits.

2.4.4 Changing behaviour and developing a positive safety culture

Even with the presence of highly sophisticated corporate WHS initiatives, mine sites may still struggle to achieve desired WHS practices and performance levels on the ground. Ultimately, workers determine how they carry out mining tasks (and managers how they should be supervised and enforced) and, if either workers or managers choose to resist or ignore corporate standards, rules or procedures, this can seriously compromise WHS performance. Shaping worker and management behaviour therefore depends as much on changing culture as it does on enforcing rules. Indeed there is considerable evidence to suggest that culture, and the institutional structures that support culture (routines, incentives, cultural scripts), exert an important influence over both managers and workers, and may sometimes trump standards, rules and systems (Gunningham & Sinclair 2009).

Safety culture is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour (norms) that collectively determine the commitment to, and the style and proficiency of, an organisation's management of health and safety management (United Kingdom Health and Safety Commission 1993). Potential contributors to culture are therefore extensive and include: personal characteristics (eg the capability to learn and develop competency); past behaviour which guides future behaviour; values supporting and attitudinal barriers towards WHS; perceptions of risks, and of long term versus short term benefits; motivations which affect whether individuals 'buy into' organisation goals, how willing they are to learn, how they rate safety and risk behaviours, and emotional reasons underlying their decisions and actions related to safety; and trust. Trust between workers and

management is of particular importance in extracting the maximum benefit from WHS management initiatives – an absence of trust can result in workers treating management initiatives with suspicion and refusal to buy into them.

While respondents from all the companies were in agreement about the desirability of having a positive safety culture at mine sites, the challenge confronting them is how best to inculcate such a culture given that many existing attitudes, norms and motivations at mine sites may be pushing in the opposite direction. Longstanding antipathy between trade unions and management and an entrenched 'us and them' attitude amongst workers and management (Gunningham 2007) conspire to undermine the establishment of a positive safety culture. Consequently, respondents across all five companies acknowledged that they have only recently begun to contemplate how to build a robust safety culture at mine sites. In particular, it was claimed, that to date they have principally sought to address some of the ingredients of safety culture through BBS programs, training and leadership programs.

BBS programs that focus on changing workers' behaviour have found currency across industry sectors (Lingard & Rowlingson 1998). Proponents claim that unsafe behaviours account, either directly or indirectly, for some 90% of WHS incidents (Hollnagel 1993) and that these can be most effectively addressed through the techniques of BBS. The approach entails formal 'observations' or 'inspections' of one party by another which are intended to provide a non-judgmental record of work practices (especially unsafe behaviour), followed by one-on-one feedback to draw attention to the undesirable behaviour (Health and Safety Executive 2002; Hopkins 2006a; Latham & Locke 1991). The results of observations are recorded, and patterns of unsafe behaviour identified by an oversight committee that can then make recommendations intended to change them (Geller 2004). The goal is modification of

hazardous behaviour, rather than worker participation or modification of a hazardous work environment.

It emerged in the interviews that all five companies have introduced some form of BBS program. For example, Company A has applied the Du Pont 'STOP' program, a central tenet of which is that if you can change behaviour then values will follow. Company B employs 'peer to peer' safety actions, and 'safety interactions' that entail targeted discussions between employees to better understand WHS issues. Company C requires middle managers to complete a specified number of 'safety observations' per month (workers do not conduct observations, which is a departure from conventional BBS theory). Company E has not introduced a corporate wide BBS program, leaving it to individual sites to initiate and implement any such programs, which several sites have done with varied success.

Training in WHS provides another way for companies to influence safety culture through changes to attitudes, perceptions, competencies, norms and motivations. This influence can be indirect, for example, through technical training programs aimed at developing competency in the safe operation of particular machinery that also contain an element of norm reinforcement. Alternatively, training programs may directly address attitudes, perceptions, norms and motivations. For example, Company D uses the 'Zero Incident Process' and 'People Performance Growth' training packages, which unlike conventional competency based training, address the psychology underpinning safe behaviour with the aim of moving away from extrinsic to intrinsic motivation (Sentis 2010). According to respondents, all the companies have comprehensive training policies and programs that aim to maintain operational competencies, although there are differences arise in the extent to which training programs are administered centrally, or devolved to mine sites.

In addition to BBS programs and training, respondents noted that all the companies have programs and strategies to improve leadership in their workforces (and, as noted at Section 4.2, leadership is a key component of corporate wide WHS standards). For example, in Company A, responsibility and accountability for WHS rests with the company vice president and departmental managers who are charged with integrating safe thinking and behaviour into every aspect of their work by: demonstrating strong leadership and commitment; providing goals, a clear purpose and responsibilities for direct reports, teams and individuals; supporting and driving new initiatives; and recognising safe behaviour and correcting unsafe activity. Similarly, at Company B: "leadership for health and safety is a line function and an integral part of management accountability. Good safety and health leadership is built upon a foundation of solid understanding regarding core skills, competencies, planning and execution". This company has "worked collaboratively to develop the Safety Leadership Development Programme (SLDP) which all sites and offices can use to improve the quality of safety leadership at all levels of the business".

In summary, the companies studied were beginning to take steps to build a positive safety culture but their initiatives were in the early stages. Support involves working with the leadership of an enterprise, as management concurrence is needed to be able to alter priorities and resource initiatives to change how things are done within an organisation (Dejoy 2005). Such leadership is essential to shaping safety culture and instituting a WHS morality, both of which lie at the heart of effective WHS management.

2.4.5 Monitoring, auditing and accountability

Following the mantra 'what you measure is what you manage', the companies studied place an emphasis on monitoring and verification to ascertain WHS performance

across mines sites, and their success in implementing corporate-wide WHS management. To do so they rely to a substantial extent on information provided by individual mine sites. However, this gives rise to concerns about consistency and accuracy of reporting, leading to the development of performance indicators. Ideally indicators should be chosen so that they are not vulnerable to manipulation, while being closely linked to the target setting process and to company standards (described above). Performance must also be independently verified to increase the credibility and confidence in results. Knowing that periodically there will be external assessment can also provide an ongoing incentive for those who are monitoring and measuring performance to do so accurately.

One critical step in the monitoring process is a robust system for reporting, collecting and analysing data, but what sort of data should be collected? As noted above, it is widely acknowledged that lag indicators can have serious limitations. The most widely used indicator in industry generally, the lost time injury (LTI) is particularly vulnerable to manipulation by providing restricted work to injured workers so that lost time is not recorded. Further, there is no relationship between the causes of LTIs (often minor, slips, strains etc) and low frequency but very high consequence events (that is, disasters) (Flin *et al* 2000).

Respondents from the five companies acknowledged while they do monitor LTIs, they compensate for some of its limitations by also monitoring total recordable injuries (TRIs), which include LTIs, restricted work injury or medical treatment injury, as well as incident reporting, and provide mine management with valuable information on WHS management practices and areas of vulnerability. For example, incident reporting may reveal a high safety failure rate in certain operations or hazards not previously identified. All the companies, it was claimed, have mechanisms in place to encourage incident reporting. The companies also use forward-looking positive performance

indicators (lead indicators) that can anticipate rather than react to failure (Flin *et al* 2000; Falbruch & Wilpert 1999). Appropriate indicators are still being developed but include: the percentage of training completed against that planned; the percentage of emergency exercises and training of personnel carried out against that planned; the percentage of incident investigations completed within the due date; and the percentage of risk assessments completed against those planned. There is considerable variation in the lead indicators currently being applied by the companies.

Self-reporting against lag or lead indicators is the most common form of monitoring, but it raises concerns of conflict of interest: mine sites may be reluctant to make full or accurate disclosure when this would reflect poorly on their performance. Some operations may also resist such reporting because it is administratively demanding. For both reasons auditing, either at corporate level or by independent auditors, is needed to verify performance.

Respondents from all the companies described how they conduct some form of external audit, that is, an audit by parties' external to the mine site. For example, Company C conducts comprehensive external audits of mines within its geographical sphere against corporate wide WHS standards on a twice-yearly basis. The results are used to determine each mine's progress towards implementation of the WHS standards, and to rank its performance against other mines in the company. Managers of low performing mines are required to explain why they have failed to meet corporate WHS expectations. They also conduct a series of external 'system audits', involving a detailed investigation of an entire operation, with a focus in each audit on selected discrete safety systems, such as crisis management or cabling. Similarly, at Company A, all sites are externally audited at least every three years to verify performance results, to check that standards are being applied, and to identify gaps in management systems. The audit team is drawn from those who have had responsibility for key WHS

matters at other company operations – a peer-review process. Company E, with fewer resources, does not conduct corporate audits, or a single corporate wide external audit (nor does it have a set of corporate wide WHS standards against which to conduct such audits). Instead, it relies on each mine site contracting professional auditors. All the companies also require their mines sites to conduct their own internal audits.

In addition to monitoring and auditing, the respondents from all companies claimed that they placed a high priority on accountability and have in place structures and processes that make it difficult for managers (wherever they are sit in the chain of command) to avoid their WHS responsibilities. Company A, for example, in its Guide to Business Conduct, states that: "managers are held accountable for [the company's] policies and standards, even if compliance costs the Company business in the short term". To this end, management performance is measured, monitored and assessed, to ensure that it is transparent to others (eg by demonstrably completing recommended audit actions and responding appropriately to incident reports). On this view (shared by the other companies), accountability is a vital supplement to both framing and rulemaking. Without it, there is no assurance that WHS policy statements, targets and programs will translate into improvements on the ground.

It was also claimed by respondents across the companies that there is increasing reliance on interactive databases to ensure accountability. A sophisticated example of this approach is found in Company C where its interactive WHS database is applied across all their mine sites, and has three principal attributes. First, it acts as a receiver of safety statistics, such as injuries, near misses, and other incidents, in a common format that allows for analysis and performance comparison. Second, it is a repository of vital safety information concerning management systems, risk analysis, audit information, and safety alerts that is readily accessible to staff and capable of transmitting information rapidly between different sites. Third, it provides a mechanism

for allocating responsibility for actions arising out of its receiver and repository aspects, and for ensuring that such actions are acted upon and completed.

Although less obvious, corporate managers noted that they also rely on peer pressure as a form of accountability. This may be harnessed through a variety of mechanisms that encourage critical evaluation of colleagues' WHS practices. For example, some companies apply peer pressure at mine site level using their audits and other statistical comparisons to construct 'league tables' which serve to alert corporate management to poor performing mine managers and can also fulfil a 'peer shaming' function. At Company C mine managers are required to attend quarterly meetings with corporate management at which the first item on the agenda is the WHS performance of each mine during the previous quarter, with managers of poor performing mines being required to account for their level of performance.

2.4.6 Centralisation and the provision of resources

Until quite recently, some mining companies allowed their mine sites to operate as semi-autonomous business units, with little direct intervention from corporate management. A consequence of this approach was that individual mines, even within a single company, adopted markedly different approaches to WHS management, including unique WHS management systems, databases, BBS programs and training programs. This devolved approach had substantial resource implications. Mine sites, in effect, had to 're-invent the wheel', with limited opportunities to learn from others' experiences, and were not able to capture the economies of scale inherent in a more coordinated corporate approach to WHS management.

There was consistent responses from respondents all five companies in describing have they have moved away from largely devolved operations towards much more

centralised management (with the development of corporate WHS management policies, tools, systems and reporting procedures), although some have gone faster and further than others. Companies A and B (and, to a lesser extent, C and D) have sought to allocate additional resources to their corporate WHS divisions commensurate with additional WHS management responsibilities, making centralisation more effective. In contrast, at Company E, which is still transitioning away from a centralised approach to WHS, resource provision lags badly behind stated ambitions. For example, when this company's corporate office conducts a program of systems audits across all its mine sites, a single corporate manager has responsibility for the entire audit program – this is an ambitious workload given several different systems to audit, and more than ten mines to cover. Not surprisingly, corporate audit resources are badly stretched and the audit program is far from comprehensive.

2.5 Discussion

Examined below are, first, the factors that may have contributed to the form and content of the prevailing corporate WHS management architecture identified above, in particular, the obvious convergence, and, second, the effectiveness and potential limitations of this architecture.

2.5.1 Architectural convergence

How and why has such a striking convergence of corporate WHS management of five different companies, with unique histories and corporate cultures, eventuated? In terms of external pressures for change, regulation, in particular, is often seen as an important driver of company behaviour (coercive isomorphism). Certainly there has been a profound shift away from prescriptive standards towards process- and principles-based

approaches, including management systems, in some of the mining jurisdictions in which the sample companies are based. Although such regulation is undoubtedly a contributing factor, it falls considerably short of explaining why coal mining companies have convergent WHS management architectures for four reasons. First, existing mining WHS regulation applies to individual mine sites, not entire companies. As such, there is no obligation to adopt uniform WHS management systems across mine sites with a single company. Indeed, until the last decade, in Australia at least, most companies left their individual mines sites to develop their own approaches independent of one another, with inevitable differences arising. Second, principles-based regulation still leaves regulated entities with considerable discretion as to how to achieve required regulatory outcomes, and the type and nature of management systems employed (Gunningham 2007). Third, regulatory requirement are far more limited in their scope than convergent corporate WHS management architectures. For example, regulation does not specify mission statements, improvement targets (including leading and lagging indicators), cultural and leadership issues, or the use of third party audits, all of which are addressed under convergent architectures. As such, they have the capacity to go further than that required by legislation to bring about beyond compliance practices and performance. Fourth, not all jurisdictions have gone down, at least not to the same extent, the path of process or principle-base regulation. For example, in general, regulation in the United States is more prescriptive and adversarial than that in Australia (Gunningham 2007). And yet, mining companies have adopted convergent architectures across international jurisdictions.

The findings suggest that it is not external, but internal drivers that are the most potent determinants of corporate WHS management architecture – with legislation following, not leading change. In particular, new technologies of control available to corporate head quarters (HQs) such as WHS management systems, standards and audits (which have enabled large companies to focus on systemic problems and to do so across

multiple facilities, and multiple jurisdictions) have been shaped by the collective influence of major corporations – with a greater influence than that exerted by governments, or trade unions. In the language of the new institutionalism (Powell & DiMaggio 1991; Scott 1995; Meyer & Scott 1992), normative/cultural isomorphism (striving for organisational legitimacy), coercive isomorphism (uniformity in and through external interventions) and mimetic isomorphism (imitating others whose practices are believed to be beneficial) may be pertinent in the context of corporate WHS management architecture.

In the case of multinational companies (including the four largest companies in the sample, comprising Anglo/American, Anglo/Australian, Australian/South African and European corporate backgrounds) the international aspect is important, as in each the architecture of internal control adopted has been largely shaped by their international HQs (arguably, this is form of internal coercive isomorphism, with HQs taking the role of external regulator). For example, the international HQs of Company B has developed 17 corporate wide WHS standards, which have been progressively rolled out across all international its operations – subsequently, each site is extensively audited to ensure compliance. And Company D has completely revised its internal WHS architecture in line with directives from its international management. However, the dictates of international HQs is far from the only factor explaining convergence – and in any event, it only explains convergence within the multi-national corporations, not between them.

As to the latter, one plausible explanation for convergence between such companies is that they form a 'community of shared fate' in terms of their WHS performance. As history demonstrates, an incident involving multiple fatalities at a single site can reverberate throughout the industry and produce a regulatory and societal backlash. This in turn can undermine the industry's 'social license to operate' (that is, the wider

community's consent for a business or industry to exist, and which is in addition to conventional regulatory licences). According to Gunningham *et al* (2004, 308):

> Corporations no longer perceive their social obligations as necessarily synonymous with their legal obligations. Two decades of tightening regulatory rules and legal threats have led many businesspeople to assume that any hazards and harms that their enterprise engenders, even if not clearly illegal today, will sooner or later be subject to public censure, government action, and legal liability. ... In consequence, corporation executives increasingly talk about the importance of operating in accordance with their "social license", meaning that they are constrained to meet the expectations of society and to avoid activities that societies (or influential elements within them) deem unacceptable. And in some instances the conditions demanded by "social licensors" may be tougher than those imposed by regulation.

Rees (1994) in describing a similar phenomenon in the nuclear power industry, refers to companies as 'hostages to each other'. From this perspective, it is in the interests of companies to not just reduce WHS incidents within their own mines, but across the industry as whole.

Being part of a community of shared fate may be a powerful motivator for mining companies to improve WHS performance across the industry, but does it necessarily mean that they will adopt a similar WHS management architecture? There is ample evidence to suggest that they have indeed overcome their competitive instincts to cooperate on WHS, bringing about, in effect, a form of normative/cultural isomorphism. For example, at annual WHS conferences, corporate initiatives, strategies and experiences are freely shared. WHS managers from different companies also regularly meet to address a range of WHS issues. Like self-regulation professionals more

generally (Parker 2002), WHS managers in the mining industry build professional networks, meet informally with colleagues from other companies, and acquire values and skills independent from the business of their organisations. The companies also regulatory benchmark their standards and systems against their industry peers (mimetic isomorphism).

The opportunity for corporate mimetic isomorphism in the WHS sphere is also provided by the activities of mining industry associations, with the MCA in particular playing a WHS leadership role. It has developed a statement of vision and beliefs, identified an ambitious and clearly defined industry target, and embarked upon the task of building an industry WHS morality through identifying a broader set of Safety and Health Beliefs (Gunningham & Rees 2008). The role of the MCA is supported and supplemented by the state bodies (especially the New South Wales Minerals Council and Queensland Resources Commission), and replicated at the international level by the International Council on Mining and Metals (ICMM) which has its own set of principles and recommended practices that, it is hoped, individual companies will copy (International Council on Mining and Metals 2010; MMSD 2002).

Once, as a result of a combination of the above drivers, an almost 'off the peg' corporate WHS management architecture is readily available, then even companies of lesser resources, sophistication and/or economies of scale may begin to copy it (this encompasses both normative/cultural and mimetic isomorphism). A case of such imitation of specific organisational architecture is arguably in process at Company E, particularly in its use of the ICMM principles and international recognised management systems. Here, however, the company was also strongly influenced by coercive isomorphism in the form of new WHS regulations with which they (in contrast with their larger brethren) were not yet in compliance.

2.5.2 Effectiveness and potential limitations

Australian coal mining companies have achieved considerable success in reducing workplace injury and disease over the last 15 years. This has largely coincided with the implementation of the corporate WHS management architecture described above. Although a correlation is not necessarily a cause, the striking improvement in WHS performance, in the absence of any other plausible explanation, is at least suggestive of the effectiveness of this architecture.

Further support for this proposition is provided by a related study in which a comprehensive examination of 13 mine sites at Companies C and E was examined (Gunningham & Sinclair *forthcoming* (b)). This study examines the effectiveness of this architecture at the mine site level, highlighting its considerable virtues and providing data as to how it can lead to improvements in WHS practices and performance in many circumstances. Within Company C, for example, internal WHS measures (based on safety statistics and extensive corporate safety audits) indicate that as individual mine sites progressively implemented initiatives under its corporate WHS management architecture, their performance improved, sometimes dramatically so – in two cases, mine sites with very poor WHS records have, since the introduction of this architecture, become industry leaders over a period of three to five years.

Moving from the empirical to theory, there are many 'in principle' reasons why the current architecture might be expected to be effective. At its core, it employs a systems-based approach built on a clearly defined WHS agenda, documented standards and procedures, ongoing arrangements for investigating and managing WHS risks, including major hazards, and mechanisms for systematic monitoring, auditing and accountability. This approach, which can be termed 'management-based internal regulation', holds the promise of delivering improved WHS outcomes

(Coglianese & Nash 2006). In terms of companies' self-regulation of social and business responsibilities generally, Parker (2002, Chapter 8) has suggested that "institutionalising internal corporate commitment" might best be achieved by a diversity of mechanisms:

> High level statements and demonstrations of commitment to compliance with the law or ethical obligations; institutionalised in management and worker accountability and performance measurement systems and in standard operating procedures; communication and training programs for dissemination of information about these policies and systems and management and worker responsibilities under them; internal reporting and monitoring systems for gathering information about compliance with those obligations and procedures; processes for gathering and resolving relevant complaints, grievances, suggestions and whistle-blowing reports from those both internal and external to the organisation; and internal and external reviews or audits of the functioning and performance of the whole system and provision for that to feed back to the highest level and into the design and operation of the systems.

It will be apparent that Parker's above list of necessary ingredients of what might be required for self-regulation to work is a long and demanding one, but the gap between Parker's ideal and the architecture of internal control in the coal mining industry (leaving aside issues of implementation) is remarkably modest. Indeed, although the language adopted in this chapter is sometimes different, the substance of Parker's list and the pillars described above for the industry is substantially similar.

Despite the potential attractions and successes of the prevailing WHS management architecture, as indicated earlier, recent WHS statistics for the Australian coal mining industry show that the rate of improvement has slowed. In particular, there are still

fatalities periodically (if low in overall frequency), and the downward trend in injury incidence and frequency rates has levelled off and fluctuated in recent years, albeit at a lower level than previously (see Table 1 above).

One possible explanation for the slower improvement in WHS performance is the 'low hanging fruit' argument, namely that most, if not all, of the easy WHS gains have now been captured, and that from here on in any further WHS improvements will require a much larger injection of effort and resources. Closer scrutiny of national data for the continuing injuries and diseases at mine sites suggests that this explanation has some merit. Safe Work Australia's analyses of serious workers' compensation claims indicate that musculoskeletal injuries are an enduring challenge. This is the case across all Australian industries with 43% of serious claims in 2007-08 being for sprains and strains but in the coal mining industry the rate was 56%, which was also higher than for the mining industry generally (48%) (Commonwealth of Australia 2008; 2010). Key causes of these injuries were lifting, carrying and otherwise handling objects.

A rigorous approach to recognising and controlling manual tasks risks is indicated. This would include maximising learning from manual task related injuries by thoroughly investigating each instance of such injury in order to identify organisational, work environment and individual contributors to these injuries, as well as proactive and systematic identification and minimisation of risk factors. As companies develop and implement preventive programs they will also need to evaluate these to determine and share learning about the most successful preventive initiatives within the industry.[8]

While there is a case to inject more effort and resources into tackling 'higher hanging fruit' (and there are other persistent problems in coal mining such as exposure to noise

[8] For an example of such a program see Burgess-Limerick *et al* (2007).

(Commonwealth of Australia 2008; 2010)) there may be additional factors underpinning the slowing of improvement in WHS performance. Reason (2000a) in particular, has argued that an organisation's safety culture takes on a profound significance precisely at the point where accident rates reach a plateau, that is, arguably at the point the mining industry has now reached. Others similarly have argued that that "in order to go beyond this 'low but (seemingly) unassailable' plateau and to continue improvement in safety performance, it is necessary to address the hearts and minds of the management and workers" (Parker *et al* 2006) and to achieve a 'generative' safety culture (Hudson 2006). The latter implies actively involving all people, encouraging work initiatives in WHS, being willing to try new ideas, being obsessive planners, constantly scrutinising procedures, training and re-training and having a chronic unease about safety (Hudson 2006).

This, and others recent and related, research suggests that there may be a substantial gap between the architecture as it is intended to operate, and as it operates 'on the ground'. Again, drawing on the related study highlighted above, some mine sites within Company C (and therefore subject to the same WHS management architecture) are much more successful than other sites in adopting and implementing corporate WHS initiatives – this is evidenced by widely divergent WHS outcomes between these mine sites (Gunningham & Sinclair *forthcoming* (b)). Another study identified the coal mining industry as being susceptible to the formation of a 'bottom-up' mine site safety culture resistant to 'top-down' corporate WHS initiatives – such characteristics include industrial polarisation, remoteness from corporate HQ, and underground work teams with little exposure to senior site management (Sinclair 2010). In a further study, in particular, a lack of trust between management and workers, borne of years of antagonism, as having a corrosive impact on the implementation of corporate WHS initiatives was identified (Gunningham & Sinclair 2009). Crucially, where mistrust is not overcome, workers treat almost all management safety initiatives with suspicion and

refuse to 'buy' into them. Finally, some studies have identified that even a highly sophisticated corporate architecture, with a systems-based approach built around safety management systems, audits and risk management, may be undermined by a unsupportive workplace culture (Gunningham *et al* 2003; Parker & Neilson 2006).

Another possible explanation for the plateauing of improvement is that the remaining WHS incidents and injuries are occurring in smaller companies, in particular, those that have not embraced the sophisticated WHS management architectures of larger companies. Whilst this is certainly plausible, in the context of this study it is not relevant as there are no small companies operating in the Australian coal industry.

Although this scope of this chapter does not extend to a comprehensive analysis of the implementation of the prevailing corporate WHS management architecture, some of the responses of senior and middle managers and workers at the mine sties resonate with these other related findings, and point to some of the potential difficulties in applying the existing architecture. Impressive sounding policy statements do not necessarily translate into meaningful WHS change at site level, ambitious targets (zero harm) may be so far from the reality that they cease to have any practical meaning, or the targets may be so broad and general that it is unclear precisely what is being measured. Equally, data may be manipulated at site level so that targets appear to be met (as is common with LTI data), at the expense of genuine improvement, while the spread of standardised approaches may encourage a 'tick the box' mentality. Alternatively, rules may be perceived by the workforce or local management as lacking in credibility, or as being merely for the benefit of corporate management (to 'protect their arses') and accordingly fail to inspire confidence or compliance. Rules may also encourage mindless compliance in workers when to protect themselves and others they actually need to attend to the risks they face (Hopkins 2005). Even BBS programs, which are widely supported by senior management, may encounter

opposition from middle managers (usually required to conduct the observations) and work crews (that may perceive them as a 'blame the worker' approach). They may also channel safety effort into observation of rule compliance rather than rigorous identification and control of hazards, as they arise.

Beyond possible implementation limitations of the prevailing architecture, there is a potentially more profound, inherent and structural limitation: whether the striking convergence (brought about by various isomorphic drivers) ultimately undermines future improvements in WHS practices and performance by reducing the amount innovation and experimentation. That is, if all companies are effectively the adopting the same approach, then, ipso facto, none can be trialling novel approaches outside the mainstream. This entirely speculative point is worthy of further investigation.

2.6 Conclusions

It is clear that large Australian coal mining companies have increasingly focused on corporate WHS management and in doing so, have converged on a single well-developed corporate architecture. This architecture, based as it is on a sophisticated systems based approach to WHS management, has coincided with a steady and impressive improvement in WHS outcomes across the industry. Moreover, there is evidence to suggest that is has been at least partially responsible for this improvement.

The are several potential drivers of this architecture, including external regulation and international HQs; however, the high degree of convergence evident may also be a consequence of several synergistic isomorphic tendencies, where companies put aside their natural competitive rivalries to cooperate on a single issue, namely improved WHS outcomes across the industry. The suggestion that they perceive themselves to

be part of a community of shared fate, with a collective social license to operate (in relation to WHS), is supported by the many formal and informal mechanisms established across and within the industry to facilitate WHS cooperation. This in turn has led to increasing similarities in WHS management architectures across companies.

Despite these largely positive developments, challenges remain. The current architecture appears to be have been adopted unequally across mine sites within the same company, and may to date have dealt largely with the 'low hanging fruit' of improvement in WHS practices and performance. Further, additional improvements may require corporate initiatives to overcome historical antagonism, pockets of resistance and mistrust (amongst both workers and middle managers), and the 'us and them' divide between management and workers, particularly at some mine sites. The result can be that without worker (and often middle management) 'buy-in', the best systems in the world are destined to be ineffective and corporate WHS initiatives built around the an elaborate WHS management architecture will be undermined.

Such shortcomings of WHS architecture may well explain an otherwise puzzling phenomenon: why an impressive reduction in workplace injuries and fatalities has been followed in recent years by a levelling off of WHS performance, with an inability to maintain the momentum of earlier gains. It also remains to be seen whether, in the longer term, continued architectural convergence stifles corporate WHS management innovation across the industry. To the extent that the practices and experiences of the Australian coal mining industry are mirrored in other jurisdictions, and other industries, similar benefits and challenges may apply.

Chapter 3: The impact of safety culture on systemic risk management

This chapter is a reproduction of article by Neil Gunningham and Darren Sinclair accepted for publication in a forthcoming volume of the *European Journal of Risk Regulation.* The relative contributions were split 60/40 respectively between Sinclair and Gunningham. Sinclair contributed to the fieldwork, the processing of interview material, the background research and literature reviews, the preparation of initial drafts and the preparation and editing of the final draft.

3.1 Introduction

Over the last decade the Australian mining sector has achieved impressive improvements in WHS performance. During this period, there has been heavy reliance on systemic risk management that is mandated by mine safety legislation. Many large mining companies now use this approach as the principal vehicle through which to improve safety performance (sometimes referred to as 'internal regulation'), often going 'beyond compliance' with safety regulation.

However, recent statistics suggest a plateauing (or even a reversal) of safety performance *across* companies (Department of Natural Resources and Mines 2012a; 2012b), and uneven outcomes *within* companies. These raise questions as to the difficulty of achieving consistently high WHS outcomes, even with the advent of mandated management tools, and, in terms of the latter, the reasons for internal variation.

There has been a growing realisation that while 'hard' safety management variables (technology, equipment and risk management systems) have achieved a great deal, further improvement and greater consistency is only likely to be achieved through addressing 'soft' issues such as trust and 'safety culture' (Clarke 2006).

This chapter examines the relationship between mandated systemic risk management safety performance and safety culture (including trust) through the experiences of five mine sites within a single Australian coal mining company.[9] This company has in place a uniform approach to safety risk management across the entire organisation. The mine sites are subject to the same safety risk management systems, standards and tools. These prioritise hazard identification, along with assessing and controlling risks, and are built around the central pillar of a *safety management system* (the structures, responsibilities and resources for implementing, maintaining, monitoring, reviewing and improving safety risk management). And yet, as we will see, the mines experienced substantial variation in safety outcomes.

The primary objective of the study was to understand the causes of this variation in safety performance. This included examining the role of localised safety cultures, and whether, to what extent and in what circumstances, *they undermined the effectiveness of the company's safety risk management strategy as mandated by law.*

Safety culture has been the subject of numerous empirical and theoretical writings (Gadd & Collins 2002; Guldenmund 2000), but remains a difficult concept to operationalise, not least when it comes to issues of trust (Consortium of Social Sciences Association 2014). Our concern, however, is not with safety culture *per se*,

[9] We are grateful to the coal mining company for providing us with access to five of its mine sites in order to interview managers and workers, as well as corporate management, and to detailed internal safety statistics and audit data.

but with the relationship between safety culture and regulatory mandated systemic risk management (commonly applied in Anglo-Saxon countries, in particular the USA (Coglianese & Lazer 2003). As such, we set out to test the claim that 'culture eats systems for breakfast' – that cultural variables may mediate (or even neutralise) the impact of safety risk management systems of a leading mining company. Recognising that the coal industry may be in some ways atypical, we sought to identify both particular characteristics that shape its culture and safety outcomes, and some more general insights.

3.2 Methods

The research is based on the experiences of five mine sites of a single coal mining company operating within New South Wales, Australia. The research was conducted with the cooperation of the company in question. The identities of the company to which we were given 'in confidence' access, or those of our interviewees, cannot be disclosed.

The five mine sites included one open cut and four underground. They were selected in consultation with the company, with the intention of having both leading and laggard mine sites to provide a broad range of safety experiences. Access was given to internal policy documentation and safety statistics, in particular, lost time injury frequency rates (LTIFRs) and total recordable incident frequency rates (TRIFRs), as well as internal safety audit data.

Interviews were conducted with six senior managers located at corporate headquarters (chief executive, head of safety, head of risk management and operations managers) and 62 workers and managers across the mine sites. A typical sample of

approximately twelve interviewees from each mine consisted of the mine manager, shift or process supervisors, undermanager, safety officer, engineer (mechanical and/or electrical), team leaders (deputy undermanager, team supervisor), mine workers (the 'crew') and tradesmen (including safety representatives). The balance of managers to employees was approximately even. Interviews were conducted during two-day site visits, held in private, generally lasted between 40 and 60 minutes and consisted of a series of questions or prompts, with only those questions that elicited a substantive response being explored in greater detail.

Interviewees were not constrained to address only preconceived issues, and were provided with an information statement on the research project, a consent form (signed by each participant) and informed that all interview material would be treated anonymously. Reviews of both domestic and international literatures, including organisational and safety culture and mine safety literatures, were conducted.

3.3 Internal variation in safety performance

We began by ranking the safety performance of the five mine sites. Internal safety statistics and audit data were collated over a five-year period,[10] and annual information was aggregated and weighted (with the highest weighting given to the most recent statistics/data[11]). This yielded a single percentage score for each mine, with a lower

[10] The five-year period was chosen because it corresponded to the period in which corporate management had imposed uniform WHS standards and systems across the five mine sites, and it also minimises the chance of annual aberrations in WHS performance outcomes.

[11] The most recent year's data was given a weighting of five, the next most recent data was given a weighting of four and so until the five-year old data was given a weighting of one. This was done to reflect the greater likelihood that more recent data would accurately reflect current circumstances, but at the same time attempting to smooth our results over a longer time frame so as to minimise annual anomalies.

score reflecting a better safety performance (see Table 4, below). This produced close to a two-fold range in safety performance, with Mines A and B clear leaders, Mine C having a middle ranking, and a large gap to the worst safety performers, Mines D and E.

Table 4: Variation in safety performance

Mine A	Mine B	Mine C	Mine D	Mine E
51%	62%	77%	96%	98%

In addition, five corporate managers were asked (independently) to rank the five mines according to their subjective views of safety performance. This produced similar results both across corporate managers, and as compared to the quantitative results: Mines A and B were the undisputed safety leaders, and Mines C and E were ranked as near unanimous poor performers. Only the ranking of Mine D produced some dissension in that it was placed somewhere above the bottom group of Mines C and E, but still well short of the top ranking Mines A and B.

Finally, and subsequently, the company conducted a series of additional safety audits on the sites using a team from its international headquarters. Encouragingly, these audits produced remarkably similar results to our independent quantitative and qualitative rankings, again placing Mines A and B as the clear leaders, with Mines D, C and E at a substantial lower level (in that order).

The extensive overlap between the different rankings provides a considerable degree of reassurance as to their validity. This is despite legitimate criticism that has been raised about the susceptibility of LTIFRs to manipulation (Hopkins 2002a).[12]

3.4 Explaining variation

Possible explanations for the large differences in safety performances across the mine sites fall into three categories. First, there may be differences in the physical environment and/or technologies employed. For example, one mine utilised open cut mining techniques, which are arguably inherently safer than underground mining, whilst other mines had more recently been refurbished with new equipment, again with the potential to deliver safety advantages. Against this, however, differences in physical environments and/or mining techniques *within* each of the top and bottom ranked groupings of mines are just as great as the differences *between* the two groups. Further, prior to the introduction of corporate management's safety risk management system, the two highly ranked Mines A and B were among the worst performing mines

[12] Critics point out that there are many mechanisms and practices that result in workers under-reporting injuries – making many commentators rightly suspicious of reliance upon LTIFRs as a measure of injury levels (Ekevall *et al* 2008). However, in the jurisdiction in question, LTIFRs have become much less capable of manipulation since it was made a statutory requirement to also report injuries to the regulator. In any event, for purposes of our analysis LTIFRs are just one of the multiple measures that we use to 'triangulate' (validating our data through cross verification). Moreover, we do not rely on LTIFRs as a measure of injury levels, but merely suggest that *at most*, they might be one (but only one) useful indicator of *relative* safety performance if the degree of underreporting is consistent across mines. We cannot be sure that this is the case but there is nothing in our interviews with union officials or a diversity of other industry insiders to suggest it is not. It is also noted that the safety statistics employed in the quantitative ranking gave equal weighting to TRIFRs that, arguably, are far more difficult to manipulate.

in the company. If the physical and/or technology factors were a significant determinant of rank, then this influence would persist to some degree over time.

Second, there may be differences in the systemic risk management systems, standards and tools mandated by law and those utilised by the company – whether in terms of structure or implementation (this is addressed in detail below). And third, there may be differences in mine site culture.

3.5 Safety risk management systems and regulation

The company has sought to impose an ambitious and uniform safety risk management approach across its mine sites, against which they are regularly and comprehensively audited. The evolution of such systems in coal mining has occurred in tandem with developments in government ('external') regulation. Regulators view safety management tools (especially risk management) as a new form of regulation – requiring companies to achieve public goals through a systemic approach rather than through remedying individual deficiencies:

> Effective management of OHS ... nearly always requires employers to develop measures to address OHS risks. To supervise and enforce OHSM regulations effectively, labour inspectorates therefore have to find ways to influence duty-holders to build better capacity to manage risks at their workplaces. Influencing how employers achieve this through improving the organisations and management of their operations in ways that take full account of OHS risks may require different approaches to inspection to those with which traditional inspection of technical risks have been addressed (Walters *et al* 2011, 9).

Consequently, there has been a shift away from traditional, prescriptive regulation towards 'management-based regulation' (Coglianese & Lazer 2003; Gunningham 2007), although there are more than a few vestiges of prescription.

Mine safety legislation provides a quintessential example of management-based regulation. In Queensland, Australia, mines are required to develop, implement and document a safety and health management system that incorporates risk management – it must be adequate and effective to achieve an acceptable level of risk (*Coal Mining Safety and Health Act 1999* (Qld) s 62). Comparable provisions apply in New South Wales (*Coal Mine Health and Safety Act 2002* (NSW) s 23; Gunningham 2007, Chapter 1). It is these systems, rather than technical or performance standards, that *are intended to become* the focus of government inspections.

A distinguishing feature of both New South Wales and Queensland regulations is that they go beyond general obligations to require highly detailed and specific safety management plans. For example, New South Wales imposes Major Hazard Management Plans to address slope stability, surface transport, underground transport, strata failure, inrush, fire and explosion, dust explosion, explosives and airborne dust (and relate these to standards for ventilation quantities, gas levels, and incombustible content of roadway dust). The plans are just one component of a broader safety management system (*Coal Mine Health and Safety Act 2002* (NSW) ss 19-23, 32). Similar arrangements exist in Queensland (where there is a general duty to manage risk to an acceptable level), including requirements for standard operating procedures and other measures to control risk (*Coal Mining Safety and Health Act 1999* (Qld) ss 62, 63; Gunningham 2007, 26-31).

In complying with external regulatory requirements, each mine in this study has a safety risk management system. This includes identifying assessing and controlling

risks, and developing major hazards management plans (under corporate guidance) to address low frequency, high consequence events (eg spontaneous combustion, inundation and strata control).

To a large extent, the company implements safety risk management systems through SWPs. These specify the action to be taken by workers, allowing them to carry out tasks without needing to know about the company's safety risk management system as a whole. An advantage is that individual SWPs can be updated without requiring system modifications. However, it is impractical to prepare SWPs for every single task in a mining environment that is inherently changeable and unpredictable. Accordingly, less formal decision-making mechanisms are also employed.

Finally, there is an emphasis on worker participation and nurturing constructive dialogue between workers and management (often in short supply in coal mining). This is being pursued through regular meetings and consultations between workers and senior mine management (both formal and informal), worker involvement in risk assessments and accident investigations, feedback through incident reporting, safety suggestion programs and internal audits.

The mines must also conform to a further set of safety standards issued by the international headquarters – these are subject to additional regular audits by international auditors. Monthly and quarterly meetings are held where individual mine managers are required to report on safety processes and performance. In addition, they have behavioural-based safety programs with regular 'safety observations'.[13] Finally, all safety risk management systems, reporting and actions from each mine are

[13] Contrary to the substantial literature that the most critical safe behaviour is that of *managers* the company's approach was exclusively worker-oriented (see: Hopkins 2000; Vaughan 1996).

placed on an interactive database that is accessible across all mines *and* to corporate management.

Clearly, the company's safety risk management approach is comprehensive. For example, it would appear to be more sophisticated and extensive than those described in another Australian study of a large chemical plant.[14] The key point, however, is that the company *has also gone to very considerable lengths to minimise differences in safety risk management systems between its different mines.* For this reason it appears implausible such differences are the primary source of variation in safety outcomes across the mines.

It might be argued that even if safety risk management systems were uniform between mines, implementation was not. However, as evidenced above, great attention was given to consistency through internal and external auditing and reporting – only if there had been a serious auditing failure would discrepancies have failed to come to light. But there is no evidence to suggest any such failure. Audits were conducted at arms-length by professional audit teams drawn from the company's international operations, and their findings were consistent with other performance indicators described above.

Nor would it be plausible to argue that the standards set out were so vague and 'fuzzy' that managers at some mines could avoid them without formally violating them. On the contrary, individual standards specify in very precise terms what managers or workers should do when confronted by a particular risk, task or challenge, specifying the safety outcome or desired level of performance, but leaving open the concrete measures for achieving this in local circumstances.

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[14] See Hopkins 2000; and for broader reviews of risk management development see Frick *et al* (eds) (2000).

One may also discount the influence of different regulatory requirements, as all five mines exist within the same regulatory jurisdiction. It would appear, then, that the striking variation in safety performance cannot be explained by differences in the physical environment/technology or safety risk management systems. It may be that a more plausible explanation can be found in terms of mine site safety culture. What, then, do we mean by 'safety culture' in this context?

3.6 Defining safety culture

Safety culture derives from the broader concept of organisational culture that refers to:

> A pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as a correct way to perceive, think and feel in relation to those problems (Schein 1992, 20).

The International Atomic Energy Agency (IAEA), through its report 'Safety Culture', attracted widespread attention to its extension of this concept (International Atomic Energy Agency 1991). Subsequently, the term 'safety culture' entered mainstream policy discussion with bodies such as the United Kingdom's Health and Safety Executive (Health and Safety Executive 1993).

Unfortunately, safety culture is a much used (and abused) term, with disputes about how it is to be defined and measured, and its influence on safety outcomes (Guldenmund 2009; Tharaldsen & Haukelid 2009). Some argue that it is a dubious 'catch-all for social-psychological and human factor issues' (Mearns & Flin 1999, 8).

Similarly, Guldenmund (2000, 216) points out that however appealing such 'umbrella' concepts might be to management, there is a danger that because "these concepts are so global and abstract, they can also run the risk of becoming virtually meaningless".

Guldenmund (2010) suggests that three principal approaches as a way out of a definitional morass: an *academic approach* where culture is something an organisation 'is' rather than something that it 'has'; an *analytical approach* where culture is an attribute of an organisation (something it 'has' rather than 'is'), with a focus on the present over the past and its impact on worker behavior (Clarke 2006; Sibley 2009); and a *pragmatic approach* where organisational structure is seen as involving the division of authority, responsibility and duties, and culture as the basic assumptions and processes as patterns of activity taking place throughout that structure.

Our own approach is closely aligned with Guldennmund's academic approach, as it emphasises field research or ethnography and is qualitative in nature. The priority is to locate safety culture in the specific context of the coal mining industry, which has a distinctive history involving decades of acrimony, dissent and disaster that continues to shape current perceptions, behaviours and outcomes. To this end, we are guided by Cooper's categorisations in exploring the influence of the cultural characteristics of the five mines sites on safety performance (Cooper 1998 and 2000).

Cooper describes three main components of safety culture as being *psychological*, *situational* and *behavioural* (Cooper 2000). The psychological component includes peoples' norms, values, attitudes and perceptions of safety. The situational component involves the structure of the organisation, its policies, working procedures and management systems. And the behavioural component addresses practices adopted by employees that can be observed. These categories readily accommodate the distinctive circumstances of coal mining: psychological factors are to be ascertained

through interaction with workers and managers (this occurs independently at individual mine sites); situational factors through the study of an organisation's rules and policies (this occurs company wide through corporate WHS arrangements); and behavioural factors can be empirically observed (and are examined internally through safety observations).

Cooper's approach allows for the concept of 'reciprocal determinism' that sees each category interact with, and bear influence, upon the others (Cooper 2000, 119). In comparison, Schein (1992) and the UK HSE (1993) have definitions that favour linear chains of causation: underlying beliefs manifest themselves in behaviours and outcomes (Cooper 2000, 121-123). Cooper's more nuanced approach is suited to the interaction of company wide, high-level policies with distinct behavioural and psychological profiles of its various worksites in producing divergent outcomes. It also addresses the process by which such cultures are created, for example, the interaction of safety risk management (situational factors) with the psychological and behavioural factors that are so often analysed as measures of the efficacy of a safety culture.

3.7 Safety culture and safety performance

There is much in the literature to suggest that safety culture can influence safety performance. Reason argues that safety risk management systems may operate far more effectively if they exist in the presence of a 'robust safety culture' (Reason 2000c). More generally, Deal & Kennedy (1982) and the IAEA (1991; 1996 and 2006) highlight culture as *the* most important factor in determining company safety performance. Clearly, while safety culture definitions may be contested, there is little disagreement on its impact on safety outcomes.

Generally underplayed in the literature, however, is whether culture can play an important role not only at the level of the corporation, *but of individual sites within it.* Do companies, for example, possess one readily identifiable homogenous culture or a number of distinct mine-site sub-cultures? (Willcoxson & Millet 2000). Support for the former is provided by the advent of large, multinational companies with numerous sites – the Toyota Motor Company is cited as an example of this (Vaghefi, Woods & Huellmantel 2000, 65). An alternative view suggests that often a number of distinct sub-cultures exist within a single organisation in the form of 'silos', which in turn may act to preserve their own interests, sometimes at the expense of wider company goals, including safety (Willcoxson & Millet 2000). This accords with our focus on differences in safety culture and performance between mines sites within the same company.

3.7.1 High ranked mines (Mines A and B)

Mines A and B shared considerable historical and cultural similarities. Both mines had, until the last five years or so, been among the lowest ranked safety performers in the company. In particular, it was claimed that there were serious and ongoing disputes between workers and management, poor housekeeping standards, and a 'bad' culture, the only answer to which, according to management, was radical change:

> Bad culture goes with old mines. It produces a 'them and us' approach, and mistrust of management. Lots of people say the only way to change is a forced closure - to put the mine in care and maintenance for a minimum of six months and a maximum of twelve, and then cherry-pick a new workforce.

Following brutal worker-management conflicts, and the equally brutal closure of the old mines, both were reopened as 'new' mines (Gunningham 2008). As such, they were

able to recruit new employees (including the *selective* hiring of some of the previous workforce), with a clear bias towards those seen as more sympathetic to management's production and safety initiatives. Common patterns that contributed to their overall positive safety culture were as follows.

3.7.1.1 High norms of safety risk management

Following their closure and re-opening, senior management claimed that there was a concerted effort at both mines on setting and maintaining high safety risk management standards. There were clear goals to 'be the best' coal mines in their jurisdiction in terms of both safety *and* production (which, according to the internal statistical data, they achieved). In this respect, integrating safety risk management with mainstream decision-making was key (see below). Our interviews suggested workers and middle management 'bought into' this approach soon after the mines re-opened by engaging them in the formation of the mine sites' safety risk management goals.

These goals were then promulgated throughout the mines through communication, devolution and accountability. Communication is discussed in detail below. Devolution and accountability are 'two sides of the same coin' with middle and line managers being given greater authority to make decisions about safety risk management issues, confident of senior management support, at the same time as having greater accountability. In terms of daily operations, good 'housekeeping' ('a tidy pit is a safe pit') was targeted as a key area for instituting high safety risk management standards: 'if the guys know that you are *fair dinkum* well then they adopt that standard'.

3.7.1.2 Safety risk management placed above production

At Mines A and B, mine managers took the initiative in halting production for safety reasons. This gave a clear message down the management hierarchy about the importance of safety risk management. Middle and line managers at these mines did not hesitate in articulating a willingness to halt production if circumstances warranted it, and in several cases were able to point to specific examples where this had occurred. Workers in turn reported a belief that mine management had a commitment to safety risk management. Overall, this helped build trust between management and the workforce.

3.7.1.3 Integration of WHS risk management systems

A striking feature of Mines A and B was the integration of safety risk management in mainstream decision-making. For example, weekly management meetings have safety as their first agenda item – and senior managers are expected to provide a detailed account of safety risk management performance and actions across their areas of responsibility. Further, managers allocate safety risk management actions to each other, which remain on a company database until they have been addressed (senior management receives regular updates on any outstanding actions). Although this system operates across the company, it is only at Mines A and B that senior management has insisted upon its application. Internal audits revealed that Mines A and B had far fewer outstanding action items than that other mines, and managers throughout the hierarchy expressed strong support for the system.

Another example where Mines A and B appeared to be far more diligent in implementing safety risk management is in respect of monthly 'safety observation' obligations under the company's BBS program. Again, internal audit data and mine-site

interviews supported a much stronger commitment to this as compared to other mines – as one manager noted, 'it can be a pain to do them, but it is worth the effort'.

3.7.1.4 Communication, consultation, reporting and feedback

At Mines A and B it was reported that the mine management emphasised communication and consultation. As one worker put it: 'the mine manager does lots of things to be seen around the workforce – and chases up all the complaints'. Mine managers engaged directly with the workforce, and middle management and workers confirmed the high visibility and approachability of senior management. Specific examples included, managers' maintaining an open door policy, regularly conducting 'rounds' of the crews as they are working, holding regular shift meetings, and having monthly 'rostered-on' mine meetings.

Crucially, from the workers' perspective, management was seen to respond promptly to safety risk management issues raised by workers. Workers reported that individual feedback occurred even in cases where no action was taken. As such, managers and workers reported a strong emphasis on reporting incidents, even where this might potentially cast the worker in a poor light – the emphasis was gathering safety risk management data, not apportioning blame. Internal audit data confirmed that these two mines had substantially higher rates of incident reporting, particularly near misses, over the other mines, suggesting the successful introduction of 'blame free' reporting (Reason 1997).

3.7.1.5 A reduction in 'us and them'

Although 'us and them' attitudes were not entirely absent, respondents reported a notable reduction in the traditional adversarial relationship between workers and

management. A key explanation was that workers had a 'stake' in the future prosperity of the mine, and that effective safety risk management was key to this collective vision. The placement of management and workers into discrete processed-based teams helped break down barriers between workers and management. And a 'flatter' management structure with line managers being elevated to overall shift based management responsibility had, from the workers' perspective, meant 'one of their own has been put in charge of day-to-day operations'.

Respondents at both Mines A and B claimed that there had been a conscious effort to foster trust, through: social gatherings where workers and management can mingle informally; seeking workers' views on safety risk management; and emphasising the long term benefits of a safe and productive mine. Consequently, it was claimed that workers had confidence that when raising safety risk management concerns or suggestions with management they would be given a genuine hearing. As such, worker input and engagement (in short, ownership) was actively sought in the implementation of new safety risk management systems and initiatives. Again, although not all responded positively to these overtures, it was claimed by workers and managers alike that many workers had.

3.7.1.6 Cooper's categories

In summary, Mines A and B align with Cooper's (2000) safety culture typology as follows: (i) psychological factors - high safety risk management standards, a preparedness to halt production if safety is compromised, high levels of trust between workers and management; (ii) situational factors – integration of corporate safety risk management into mainstream decision-making, and middle and line management accountability; and (iii) behavioural factors – good communication, good housekeeping,

regular quality safety observations and blame free reporting. Collectively, these created of a virtuous safety cycle.

One difference between the mines was management's relationship with trade unions. In the case of both Mines A and B, management had excluded 'union troublemakers and hardliners' in selecting workers for employment. It was claimed that this provided an opportunity to create a new, more production and safety orientated culture. Since then, however, management at Mine B has pursued a more conciliatory approach with unions through constructive engagement, including regular meetings with senior management and informing them of key management decisions including those relating to safety risk management. In contrast, Mine A has sought to marginalise union input. As such, we tentatively conclude that a successful nurturing of a new safety culture was due not to the exclusion of unions *per se* but rather direct engagement with the workforce, whether mediated via a union or not.[15]

3.7.2 Middle and low ranked mines (Mines C, D and E)

At Mine C, it was claimed that geographical remoteness fostered a more independent, autonomous culture, despite the advent of comprehensive corporate safety risk management systems. This was compounded by a relatively high turnover of management, and a workforce that was drawn predominantly from the local farming community – with little experience in mine work, and inclined to self-reliance.

At Mine D, there was an undercurrent of antagonism between workers and management dating back to a pay dispute, approximately four years previously. In

[15] While noting the considerable volume of literature that suggests that a powerful trade union committed to WHS issues is a strong determinant of improved WHS outcomes (Gunningham 2007, Chapter 9).

response to strike action, mine management had taken over production. This generated resentment amongst workers that has continued to permeate relations with management, even with those not involved in the original dispute. Almost without exception, middle managers identified this as impeding safety risk management, despite the considerable efforts of contemporary management.

At Mine E, there was a widespread perception that the mine was operating under a threat of closure. Workers reported that this had detrimental implications for safety risk management. Many were resistant to new safety initiatives, as they did not see a long-term future. An aging workforce – with many looking forward to retirement – and historically adversarial union relations, exacerbated this.

Beyond these individual mine characteristics, there were several shared experiences that, collectively, undermined safety risk management outcomes.

3.7.2.1 High levels of mistrust

Mines C, D and E were characterised by high levels of mistrust between management and workers, and to a lesser extent between middle/line management and senior management, and senior and corporate management:

> It's an inherent thing ... nobody will trust anybody ... we've been told things that many times and the opposite's just happened ... the bigger the company gets, the less they trust.

Mistrust has its roots in the long history of antagonism between workers (unions) and management (often contributed to by a catalytic event, eg 'spilling' the workforce, that soured relations). Mistrust creates a negative prism through which subsequent

management actions are interpreted – workers are less likely to report incidents for fear of 'getting nailed for something' and resist initiatives such as safety observations as they feel threatened or doubt management motivations. They may also choose not to follow safety procedures because they resent management telling them how to do their job, they have little trust in management's abilities or they believe such procedures are really there to 'protect management more than workers'. Apart from workers, senior management at these mines expressed mistrust of corporate management and viewed, in particular, corporate safety initiatives as unwarranted and unwelcome attempts to keep 'tabs' on their behaviour and performance.

3.7.2.2 A lack of commitment to middle management 'accountability'

In mines C and E, middle management's obligations to conduct 'safety observations' and 'safety action items' remained largely unmet (Mine D, in contrast, has made some progress on these fronts, though still well short of Mines A and B):

> It has only been very partially implemented. It is not taken seriously by middle managers, with overdue actions allowed to accumulate unimpeded.

This lack of accountability flowed from the attitudes and behaviour of senior managers:

> Some have a very cynical attitude towards it, in particular that it is a malicious attempt by management to control their behaviour. Others think it is just another extra burden that makes their job harder.

Further, middle managers left audit recommendations 'on the shelf', did not follow safety risk management systems and delivered safety briefings by 'going through the motions'.

3.7.2.3 A widespread acceptance of poor housekeeping

Apart from cleaning up the accumulation of rubbish, good housekeeping involves planning for equipment, materials and storage, and is closely associated with improved safety outcomes – one manager claimed that the quickest and easiest way of assessing mine standards is to 'look around and see how much crap has been left around the place'. However, housekeeping standards were especially poor at Mines C and E:

> They would rather walk or trip over something or walk around it than move it, because that is not my job. 'I didn't put it there, that's your problem'.

Such attitudes contributed to an increased risk of WHS incidents, through slips and trips, and to a lack of 'safety pride' by lowering expectations of acceptable safety standards. Further, there was a perception that housekeeping would detract from production, and that line managers either lacked the inclination and/or authority to insist upon higher housekeeping standards. Line managers, in their defence, cited a lack of support from their supervisors.

3.7.2.4 A perceived (or real) reluctance on the part of mine management to respond to worker feedback

Another consistent finding at Mines C, D and E was that workers reported, rightly or wrongly, being ignored or 'taken for granted' by management. Consequently, they claimed that they did not see value in the process of reporting safety incidents, since they had no confidence that any action would be taken. Internal audits supported these claims. Systematic underreporting has the potential to seriously undermine risk management.

3.7.2.5 A focus on short-term production

Underlying many of the above characteristics at Mines C, D and E is an emphasis on short-term production. Worker bonuses are geared towards production because of below par performances over time. This creates a 'catch 22' whereby they avoid implementing practices, such as safety risk management initiatives, that could lead to long-term improvements in both production and safety for fear of sustaining short term losses: "[we're] always playing catch-up and never taking a stand". This reluctance to 'take a stand' sends a message to the workforce that safety is not taken seriously by mine management.

3.7.2.6 Cooper's categories

A summary of the key individual and collective features of safety culture at Mines C, D and E, according to Cooper's (2000) typology, is as follows: (i) psychological factors – independent 'can do' attitude, lack of mine safety background, reluctance to embrace corporate management safety vision (Mine C); lack of trust between management and workforce, resentment of management by workers (Mine D); adversarial relationship between workers and management (Mine E); and limited middle management accountability in safety risk management systems; (ii) situational factors – disconnect with corporate safety risk management systems (Mine C); and (iii) behavioural factors – poor communication, poor housekeeping standards, safety observations either not conducted or perfunctory, and an unwillingness to report safety incidents.

In summary, Mines C, D and E have a 'negative feedback loop' whereby mine management is suspicious of corporate safety interventions, and workers mistrust mine management, resulting in a lack of commitment to safety risk management systems – they are viewed as being "simply there to protect management's arses".

3.8 Conclusion

Over the last decade or so, large sophisticated mining companies have increasingly been subject to management-based regulation. As such, they have sought to improve safety performance across their mine sites through the introduction of corporate-wide risk management systems, standards and tools. Indeed, in this respect there has clearly been a high degree of policy convergence between major international mining companies. The Australian coal mining company that is the subject of this study is a prime example of this trend. Over a five-year period, it has implemented uniform standards (focused on risk management), safety management systems, key performance indicators, regular reporting, in-house auditing, safety observations and an interactive safety database. These have been allocated considerable resources, with the full backing of corporate management.

Despite these efforts, however, the company has been unable to achieve anything close to consistent safety performances across its various mine sites.[16] A twofold difference between the best and worst mine sites safety performances (over the same five-year period) was confirmed by the subjective assessments of corporate managers, and a subsequent international audit program. This finding indicates that other factors beyond corporate risk management systems and standards are at play.

Since neither differences in equipment/technology, nor standards and wider risk management arrangements, provided a plausible explanation for mine site variation, attention turned to the culture of individual mines. Utilising Cooper's categories, a number of distinctive patterns linking safety culture to safety performance emerged between high and middle/low ranking mines. In terms of *psychological* characteristics,

[16] We make no comment concerning health, since no reliable statistics are available.

high ranked mines demonstrated a willingness to stop production for safety concerns, and high levels of trust between management and workers (and benefited from selective recruitments after earlier purges of staff and workers). In contrast, middle/low ranked mines displayed antagonism between management and workers, and an emphasis on short-term production goals. In terms of *situational* characteristics, differences emerged in their embracement of safety management systems and databases to achieve middle management accountability. In terms of *behavioural* characteristics, differences in housekeeping, incident reporting, safety observations and communication were even starker.

While corporate safety risk management standards and systems are increasingly employed by multinational mining companies to improve safety outcomes, a receptive workplace safety culture would seem to be a necessary pre-condition for their success. The variation in safety performance witnessed across one company's mine sites in this study demonstrates the determinative influence (positive and negative) localised safety cultures have on corporate management's safety risk management initiatives (and, by extension, management-based regulation).

It may well be that the coal mining industry, with its history of conflict and polarisation, and geographically isolated mines sites, is more susceptible than many industry sectors to the influence of local safety cultures on the success or otherwise of corporate safety risk management systems. However, some industries, e.g. commercial shipping and offshore petroleum, may also be susceptible to such influences. And although somewhat speculative, it is plausible then that these findings will resonate for other such industries, particularly those struggling to achieve consistency in safety outcomes across sites. More generally, the results may be relevant to a deeper understanding of the potential limitations of a regulatory imposed systemic based approach to safety risk management (and indeed to environment and

other social challenges) that fails to also address safety culture. At the very least, the findings clearly demonstrate that corporate safety standards and systems are often dependent on the culture into which they are received, and that culture can indeed 'eat systems for breakfast'.

Chapter 4: A cluster of mistrust: Safety in the mining industry

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4.1 Introduction

There is growing evidence that trust between corporate and site management and between management and the workforce, is crucial to improved safety outcomes. Indeed, trust is often referred to as the lubricant for open and frequent safety communication (Reason 1997), and as crucial in maintaining co-operation (Morgan & Hunt 1994), promoting the acceptance of decisions (Tyler 2003), improving knowledge sharing (Dirks & Ferrin 2002), supporting all aspects of organisational functioning (Bijlsma & Koopman 2003) and enhancing safety performance (Barling & Hutchinson 2000). Lack of trust is closely associated with a history of adversarial industrial relations, although a number of other factors also contribute to its development.

Trust can be regarded as an individual or group's belief that another individual or group makes good faith efforts to behave in accordance with explicit or implicit commitments, is honest in negotiations preceding such commitments, and does not take excessive advantage of the other, even when the opportunity arises (Cummings & Bromley

1996). In the context of worker and management relations around safety, trust is best understood as an individual's willingness to rely on another person, based on expectations that he or she will act safely or intends to act safely. For example, management might trust workers not to 'cut corners', break safety rules or take unreasonable risks. Workers in turn might trust management to keep them safe (Risk Analysis 2006).

Notwithstanding the crucial importance of trust to improving safety performance, there is a paucity of research examining the concept within the realms of safety (Cox *et al* 2004). There is still much we do not know about how trust is best nurtured, how it is lost and might best be regained, the consequences of an absence of trust, how it varies between different groups within an organisation, and the relationship between trust and industrial relations (Risk Analysis 2006; Conchie *et al* 2006; Zeffane & Connell 2003).

This chapter explores trust in the context of the Australian mining industry, an industry that has more reason than most to have major concerns about a lack of trust, given its long history of acrimonious industrial relations. Indeed the 2005 New South Wales Mine Safety Review identified a "debilitating mistrust between the members of the tripartite process" (Wran & McClelland 2005) as a principal obstacle to improved safety in the industry. In Western Australia the Ritter Report documented the enormous difficulties of successfully implementing managerial safety strategy with "a workforce of whom a significant number had strong opposition to a key management strategy" (Ritter 2004). In Queensland, a 2005 report pointed to a series of disputes that have had a detrimental effect on trust between the inspectorate, the Construction Forestry Mining and Energy Union and mine operators, and the antagonistic and confrontational climate that is not conducive to optimal safety outcomes (ACiL 2005).

In Tasmania, the report of the investigation of the Beaconsfield Gold Mine collapse provides several pertinent insights (Melick 2006). In particular, the report detailed that there was a prevailing atmosphere of mistrust that had undermined safety reporting and responses prior to the incident (Quinlan 2007). Further, it highlighted the limitations of relying on 'top-down' safety management, which in turn can undermine worker perceptions of the effectiveness of, and trust in, corporate safety initiatives (a phenomenon that may be replicated across the industry). Finally, in his concluding report, the Coroner highlighted the failings of risk assessments that did not adequately consult workers (Chandler 2009).

There are a variety of reasons why building trust is far from easy in the mining industry. For many years, workers and management have been polarised on a plethora of issues; relations between unions and mining companies are often acrimonious; and although safety might arguably be kept separate from industrial relations (Carson & Henenberg 1988), in practice it is often ensnared within it (Creighton & Gunningham 1985). Hostile labour relations, it is argued, may be further entrenched within export orientated and/or foreign owned companies (as applies to many Australian coal mining companies, and two of the three companies in this research) that have historically been less amicable towards Australian labour interests (Bennett 1994).

Notwithstanding the argument that there is no place for industrial relations in safety because both sides have common interests (Robens 1972), this is not a view supported by history. On the contrary, in the event of disagreement (as when the production process is speeded up to the detriment of safety), common interest evaporates (Nichols & Armstrong 1973; Berman 1978; Carson 1981). On this view, industrial relations and safety cannot be kept apart. As such, achieving a co-operative and constructive approach to safety, and enlisting worker participation to improve

safety outcomes, presents an enormous challenge, which is unlikely to be resolved in the absence of trust.

In the Australian mining industry (and coal mining in particular), trust has been an extremely scarce commodity. Many managers express a strong mistrust of union dominated workforces, and of union representatives in particular and, even in the absence of unions, regard the entrenched attitudes and behaviours of many mine workers as being antithetical to modern management and improved safety outcomes. In turn, many workers and their representatives have a deep mistrust of, and hostility towards management, borne from a history of death, injury and disease for which employers were, historically, hardly blameless (Hargraves 1993; Shaw & Bruns 1947). Lockouts, strikes, and the use of leverage (by both sides, depending on the economic climate) have also left their scars (McColl 1982), reinforcing negative stereotypes. The fact that both government and employer priorities sometimes seemed to exclude safety considerations and that the 'welfare of mine workers and families is regarded as subsidiary' (Bullimore 1999), served to entrench worker mistrust.

This chapter examines the relationship between trust (and mistrust) and safety. Section 4.2 outlines the methodology. Section 4.3 describes a cluster of characteristics identified as being at the heart of mistrust between workers and management. Section 4.4 discusses the implications of these findings, including the interaction between different characteristics and a 'tipping point' beyond which mistrust becomes both entrenched and a potent constraint on safety. The chapter concludes with some comments on how mistrust might best be overcome and trust created.

4.2 Methodology

This research was based on in-depth interviews with corporate and mine management, union officials and miners across ten mine sites, three companies (four each from the first and second companies, and two from the third), and two states (eight in New South Wales and two in Queensland). The intention was to identify and examine (where they existed) critical relationships between safety and trust (or a lack thereof). Researching different mine sites within individual companies enabled a number of variables to be held constant across those companies (in particular, corporate management approaches and safety systems), while exploring variation in others (namely differences in safety performance and levels of trust at the mine site level).

We began by identifying high and low safety performing mine sites within each of the companies (and avoiding sites in the middle of the spectrum) – no attempt was made to pre-judge individual mine sites as being either high or low in trust. To do this, internal WHS statistical measures (including LTIs, TRIs, incident reporting and workers compensation data), together with the annual results of internal company safety audits, were collated over a five-year period[17] and then aggregated and weighted (with the weighting factor of 5 given to the most recent year's data, stepping down by 1 through each year to a factor of 1 for the five year old data) to give each mine a safety performance ranking (the combination of different statistical data makes it makes it more reliable than if we relied on, in particular, LTI data alone, which has been subject to legitimate criticism of being open to manipulation (Hopkins 2002a)). In addition, corporate managers (including corporate safety managers) provided a subjective (and independent and confidential) ranking of the safety performance of the mines sites within each of their respective companies.

[17] A five-year period was chosen because this was the extent to which companies could provide consistent data, and was deemed to be sufficient to overcome annual aberrations.

The combined ranking process produced three striking results. First, there were very large differences in the aggregated statistical weightings between the highest and lowest ranked mines. Second, the spread of mines was highly polarised, with distinct groupings at the high, middle and low rankings. Third, there was a very high degree of consistency between the quantitative (aggregated statistics) and qualitative (managers' views) rankings, with only limited differences in the middle rankings. On the basis of these results, then, mine sites for inclusion in the research project were selected from only the highest and lowest safety rankings. This methodology was deemed sufficiently robust for the purpose of this research project (which was, simply, to identify mine sites within each company at either end of the safety performance spectrum, not to identify and quantify in detail the precise gradations across the entire spectrum).[18]

Following the selection of high and low safety performing mine sites, fieldwork was conducted between August 2007 and May 2008 with the full cooperation of the participating companies, key unions and the workforce. The principal means of data collection was semi-structured interviews, as this method yields more unexpected insights and candid revelations than a more structured interview or survey method, and allows the interview to be tailored to the circumstances and experiences of each interviewee.

A total 120 interviews were conducted. In each two-day site visit, typically, twelve interviews were conducted spanning senior, middle and line management, and workers. The balance of management and worker interviews was approximately equal. In addition to the site interviews, 12 representatives from corporate management

[18] Subsequent to the research, the mines sites of one of the companies underwent comprehensive international safety audits conducted by a specialist team of auditors from their international head quarters, the results of which were entirely consistent with our own safety rankings – this provided external support as to the credibility of our ranking methodology.

(including chief executives, corporate safety managers and operational managers) were interviewed across the three participating companies. Twelve inspectors were interviewed across both jurisdictions, including mines inspectors and electrical and mechanical engineering inspectors, and discussions were held with a chief mines inspector. Six union officials were interviewed across both jurisdictions (either district check inspectors, industry safety representatives or industry check inspectors), and discussions were held with a senior union official. Generally, interviews lasted between 40 and 60 minutes and were conducted in private (but in the field) and consisted of a series of questions or prompts addressing the following topics: the nature of the relationship, communication, history with their superiors, subordinates and/or peers (in case of company managers and workers, and depending upon applicability), the nature of their relationship communication, history with company managers and workers (in the case of union officials and inspectors), the impact of these relationships on safety practices and performance and their perceptions of company safety policies and procedures. Interviewees were provided with an information statement of the research project, a consent form (signed by each participant) and informed in advance that all information arising from their interviews would be treated confidentially, and used anonymously in any subsequent publications.[19]

Qualitative data arising from the interviews was subject to 'grounded theory' - this entailed transcript material being codified and collated into 'like' categories, which in turn were analysed for relationship patterns and used to inform our research findings (Charmaz 2006). The qualitative data was supplemented by reviews of the domestic and international literature, and internal policy and safety related information provided by the three participating mining companies.

[19] This process was in accordance with the ethics clearance provided by The Australian National University to the authors for conducting the research.

4.3 Findings: A cluster of mistrust

The mine sites with low safety performance displayed a cluster of characteristics strongly associated with a heightened presence of mistrust. This is not to suggest that all the lower performing sites expressed identical characteristics, or that such characteristics were uniformly displayed throughout each site, or that mistrust is the only factor at play. Nevertheless, it became clear that not only is mistrust a central theme running through each of the characteristics included in the cluster, but that combinations of these characteristics had a tendency to interact. Overall, the greater the number of the characteristics, the greater the likelihood that mistrust impacted negatively on safety processes, practices and outcomes.

The cluster of characteristics closely associated with the formation and maintenance of mistrust (and conversely their absence, with high trust) were: (i) a catalytic event; (ii) a divided workforce; (iii) mixed messages, inconsistent actions; (iv) a high turnover of senior management; (v) closed management style; and (vi) a resentment of corporate intervention. In identifying these characteristics, our primary interest was in the factors underlying mistrust, not its subsequent effects.

4.3.1 A catalytic event

In many of the lower safety sites, a single catalytic event had precipitated a serious breakdown of trust between management and workers. For example, one mine experienced a mishandled downsizing, where all worker positions were 'spilled', and workers who wanted to resume working at the mine had to reapply, generating considerable fear and uncertainty. The consequences, in terms of animosity between workers and the managers perceived to be responsible, continued for several years. At

two other mines, management 'cut coal' during the course of industrial disputes, crossing the picket line to do so. This meant that management was able to hold out for much longer than would otherwise be the case, and in so doing put considerable pressure on workers to reduce their demands. This action generated acrimony that continued several years after the event.

Although the precise events varied from case to case, there were striking similarities between the mines that had experienced such an event in terms of their negative consequences. Such events created a ripple effect throughout a mine site's operations, with mistrust infusing relationships outside the original context. For example, a dispute concerning a specific incident might impede good management and worker communications more generally with a corrosive effect on safety initiatives. The ill-feeling on the part of the 'wronged' party (usually workers) often persisted for years, flaring up at points of stress, such as changes in management practices or structures.

In terms of safety, a particularly debilitating consequence of a catalytic event is its potential to reshape perceptions. Subsequent disputes or disagreements become framed in such a way as to reinforce prejudices arising from the original event. In consequence, even when senior management introduces safety initiatives in a genuine attempt to raise standards, these may fail to penetrate a powerful cultural mythology of mistrust. Where this mistrust was not overcome, workers treated almost all management safety initiatives with suspicion and refused to buy into them, safety observations were perfunctory, incident reporting was trivialised or ignored, systems were honoured more in the breach, and sophisticated electronic monitoring systems were side-tracked. This suggests that once lost, trust may be particularly hard to regain.

4.3.2 A divided workforce

A second feature found in four lower safety mine sites was the presence of highly visible and distinctive divisions within the site workforce, such as between workers on staff agreements and those on collective agreements (or enterprise agreements), between miners who had been rehired in the face of an impending pit closure and those who had not, between managers (and some workers) who had come over to a new mine as a 'block' from another mine and those already employed at the recipient mine, and between company employers and contractors.

Clearly, all work environments to a greater or lesser extent are prone to the formation of cliques or factions. What was distinctive here was the ways in which such divisions became a prominent feature of the prevailing work culture. At one mine, individual contracts (as opposed to collective agreements) were offered to workers, the inducement to sign such contracts being a higher pay structure. Among miners, a commonly voiced opinion was that there was a management attempt to divide and conquer, with the strategy being to get enough of a core of workers to run the mine without the union. The fact that some union members chose to go onto contracts created a high degree of animosity, directed at those who accepted management's offer to go onto contracts by those who did not. Threats were made, and individual contract workers were ostracised. Outside, property, such as private vehicles, was damaged, and the extended community of miners' families, split.

Such divisions generated tension that undermined both productivity and safety. It is difficult to maintain high safety standards when one group of workers will not speak to another group.

4.3.3 Mixed messages, inconsistent actions

A third characteristic associated with mistrust, and common at lower safety mines, was a perception of management giving 'mixed messages' and failing to 'walk the talk' in terms of safety. The most commonly cited example of such behaviour involved management exhorting workers to 'put safety first', while placing greater pressure on them to achieve production targets (these two goals commonly being in tension).

For example at one mine, workers were required to complete a JSA card at the start of each shift and when starting a new job. However, workers told us that management had not provided adequate training nor allocated time to complete the cards. Instead, they reported that if they took the time out to complete a card, they would incur the wrath of management for wasting time. In short, there is a strong 'production comes first' message undermining the value of the program. This in turn leads to tokenism. Miners admitted it was common practice to take a week's worth of JSA cards home and complete them in advance of the actual jobs, completing them without thought to actual risks or safety mindfulness as a 'tick-and-flick' exercise, or completing them after the job.

Such mixed messages and management turning their backs on workers not doing things the safe way generated cynicism and mistrust. There was a widespread view that the real purpose of safety initiatives is 'arse-covering' by management.

One aspect of management inconsistency that is deeply resented by workers and enormously damaging to trust is when there is a perceived breach of 'no-blame' policies. Many companies have introduced such policies in relation to the reporting of WHS incidents and equipment damage, as one important step towards establishing a safety culture (Reason 1997). However, in some of the lower safety sites the no-blame

policy was not evenly applied. At one mine, for example, workers acknowledged that they were not reporting 'micro-sleep' incidents (where a worker momentarily falls asleep on the job), notwithstanding the fact that such incidents could be extremely dangerous (particularly when operating large, mobile machinery), for fear of losing their job, despite management claims to the contrary.

4.3.4 High turnover of senior management

At four of the five lower safety mine sites there was a high turnover of senior management, including mine managers. One site, for example, had lost approximately 50% of its senior management team in the last six to nine months, and another had several managers in the space of two and half years. Such experiences can greatly inhibit attempts to build and maintain trust between management and workers. A worker explained:

> This creates inherent problems because people are unable to relate to the mine manager, they're unable to relate to the superintendent, because you can't build that trust relationship up. ... with each new person [there are] new ideas, new values, new ethics, and those situations are confusing sometimes, especially for lower level management and employees.

High turnover of management also raises doubts in the minds of workers as to the viability of the mine, some workers interpreting this as evidence that management has no long-term commitment to the mine. It also stands in stark contrast to the experience of workers, who often remain in the same job for decades. Consequently, if workers fall-out with a manager they can simply wait them out, the attitude that, 'I'll still be here long after you are gone, so you've no hold over me'. This makes it difficult to develop a sense of shared destiny and overcome mistrust.

4.3.5 Closed management style

A fifth characteristic was the wider issue of a 'closed' management style. There are a number of dimensions to this. One is the extent to which the management team is isolated from the workforce, as where they are perceived to be reclusive and isolated. This causes a distancing often accompanied by a lack of understanding and trust of management actions. At one low safety mine, for example, workers observed that managers 'disappear into their offices' whenever there is a change of shifts, an act which workers perceived as a cowardly way of avoiding interaction with them. At another mine, senior management is rarely seen. As one worker stated:

> I'd say 80 per cent of the workforce here probably don't interact with management too much at all, except maybe when another manager comes into their section ''how you fellows going, blah, blah, blah, see you later'.

In contrast, at higher safety mines, management created opportunities for informal and formal engagement, for example, taking advantage of shift changes to engage with the workforce. Workers expressed a strong preference for this style of management and reported that it was an important component of building trust.

Another aspect of a closed management style is a lack of consultation. Workers at lower safety mines reported that management safety initiatives appear 'out of the ether', with little input from the workforce in their design or implementation. This can be particularly debilitating to the 'ownership' of safety initiatives for which worker engagement is essential. For example, at one mine there were complaints about the constant stream of new safety initiatives accompanied by little or no prior consultation with the crew, and at another, miners were scathing about the lack of consultation in

the introduction of mandatory mini-risk assessments for every shift, resulting in rampant tokenism.

Particularly important, according to workers at all mines, was the extent and means by which management provided feedback, especially in the context of reporting on WHS incidents, near misses, equipment damage, and hazard identification. At some low safety mines responses to reports are simply posted on a notice board, without any feedback. In contrast, at higher performing mines, feedback is a priority and is provided directly to the worker who is the original source of the report. This occurs even where no action is taken. Workers do not object to a no-action decision provided they are kept informed in a timely fashion, and a reasonable explanation is provided. Not coincidentally, timely feedback served to build trust in management motives and commitment to safety.

4.3.6 Resentment of corporate intervention

As corporation-wide safety management becomes more sophisticated, this is inevitably followed by greater corporate intervention in mine site operations, including safety standards, systems, benchmarks, monitoring, and accountability mechanisms. In Australia at least, this has been magnified by safety legislative requirements. These twin drivers can reduce site autonomy, and to some extent flexibility and capacity for innovation. At some lower performing mine sites, corporate intervention may have a second, and unintended consequence, generating resentment and mistrust. It was striking that the three lowest performing mines (one from each company) displayed the highest levels of mistrust towards corporate management. As one interviewee stated:

> [At] the higher levels, they've decided that they can't trust people at the mines ... 'so we're going to give them these standards or we're going to audit them

against these standards and that will force them to get into line. Tell them that this is what they have to do before the next audit or there'll be consequences and so on'.

Management at each of the lowest performing sites typically complained that the site: was an 'easy target'; was unfairly represented (as the poorest performer) in safety statistics and corporate audits (and other sites manipulated their results); did not have the same access to resources or quality equipment and technology as better performing sites; was burdened with a more militant and/or older workforce; and confronted unfavourable physical characteristics (such as fractured seams, high levels of methane, water intrusion). In short, these sites maintained that the 'cards are stacked against them'. It was beyond the scope of this project to determine the validity of these claims independently. However, when these views were put to corporate managers, whilst they acknowledged that some mines do indeed confront greater physical difficulties, they rejected any consistent and causal relationship to safety performance – as evidence of this one manager noted that their two best safety performing mines had vastly different physical characteristics, while another asserted that a mine site that had once been one of their worst safety performers had, over several years, become one of their best performers with no discernable change in technology (over and above that of all their mines) or physical conditions.

There was an element of circularity in the phenomenon of local resentment of corporate intervention. Lower safety performing mine sites often perceived that they were unfairly targeted. This created mistrust and resentment that undermined the success of corporate interventions, and in turn invited further corporate scrutiny and intervention.

Two distinct types of mistrust were identifiable. First, site management doubted the competence of corporate management to carry out their stated safety intentions and this bred resentment, exemplified by the statement:

> I've got no time for corporate at all. I just think they are pretty hopeless. Some of the systems, there's no communication ... Well, they just put it out, no training, no nothing, just dump it in their system ... We're always the last to find out. ... Well they say every pit stands on its own. Then they want to enforce things over the top of you from corporate.

This resentment was typically coupled with a belief that corporate management had placed an unfair safety burden on the site and had failed to provide the necessary resources to discharge that burden, exemplified by the comment:

> I have to say they had a point to prove and they were there to do it. They were there to give you ... an overview of your operation. The problem is that I found that some of the review, the outcomes of that audit, I didn't have ownership to say well that's not my area, but it was all lumped back to me to fix it after the audit. Why? I had no resources, how the hell am I supposed to do all of this, how am I going to do it?

Others had little trust in the ability of corporate management to understand the ramifications of their safety policies. Seemingly innocuous changes can have adverse impacts at the mine level, as an interviewee explained:

> What they change at the stroke of a pen can have dramatic and far-reaching consequences at the mine site. We have had to completely revise our management systems to accommodate a fickle change in one of our standards.

A second, more insidious form of mistrust was where site management doubted the motivations of corporate management, and interpreted corporate intervention as an indicator of corporate mistrust in site safety competence. In some cases, this generated resentment and a barely concealed contempt:

> Others I think are tolerating it [corporate intervention] because they realise that they won't get a job unless they do pay lip service to it. We have a small core of managers who think it's a load of crap and they've said so, 'this is all bullshit' and when you get to the mine level, because they think it's all bullshit, they don't do anything until the last minute and then your attempts at being professional come to nothing because you're operating without all the information.

In contrast, at many of the better safety performing mines there is far more acceptance of the desirability, effectiveness and benefits of corporate safety interventions. Although, site management readily admitted they were initially very sceptical, they have changed their minds and recognised the need for greater corporate oversight, and consequently, greater site accountability. Several site managers acknowledged this had been a difficult personal journey, but that their initial opposition was unfounded. The net effect was an increase in trust of corporate safety capabilities and intentions. Management at lower safety mines were yet to make such a transition.

4.4 Conclusions

Based on the experiences of ten mine sites, across three companies and two jurisdictions, this chapter has identified six cluster characteristics closely connected with the development of mistrust at site level. Such mistrust has a corrosive effect on the implementation of safety initiatives at site level. Although the six cluster

characteristics have been examined individually, they may interact synergistically to amplify mistrust. For example, a catalytic event, such as spilling and subsequently rehiring a workforce, can accentuate or create divisions in the workforce. Similarly, a high turnover of senior mine management positions, with the inevitable loss of corporate memory, will increase the likelihood of mixed messages being given to middle management, line managers and workers. Organisational structures can influence management style, as when a more hierarchical structure reduces opportunities for workers, middle management and senior mine management to interact, accentuating tendencies for senior management to be reclusive. Equally, combinations of opposite characteristics can interact to reduce mistrust, as when new organisational structures result in a flatter management structure that brings line management much closer to senior management.

When a sufficient number of negative characteristics are present at one mine site, it is very difficult to prevent that site from spiralling into a cycle of mistrust, where every interaction or decision (including new and genuine safety initiatives) is perceived through the prism of past history and mistrust, and discounted and/or resisted accordingly. Conversely, the absence of a sufficient number of characteristics can foster the building of trust. This suggests the presence of 'tipping points', where a critical mass of characteristics is reached, 'tipping' a site down the path of mistrust.

The behaviour of the mine sites included in this study was consistent with the tipping point hypothesis. There was a clear division between the lower and higher safety mines in the frequency of the cluster characteristics. The three lowest ranked sites, each possessed six of the cluster characteristics. In contrast, the five leading safety sites each had three or fewer cluster characteristics. The two remaining sites, possessed four and five cluster characteristics respectively and were grouped with the lower safety sites. This suggests that the presence of a relatively small number of

characteristics is not sufficient to push a mine into a cycle of mistrust but that the development of mistrust involves a majority of cluster characteristics, although the strength of each characteristic at a site will also be important.

The tipping point hypothesis suggests that once characteristics are over this point, achieving safety improvements will be extremely difficult. This may lead to extreme responses on the part of corporate management. This was evidenced at one company that closed an existing, operating mine and re-opened it as a 'new' mine with a different access point. This provided the opportunity to make the old workforce redundant, and to start again with a 'clean slate'. Subsequently, management selected experienced workers from the 'old' mine who were considered to be more aligned with corporate management thinking (usually, those with weaker union ties) and also selectively recruited 'suitable' applicants from outside the old mine's workforce. One mine manager summarised the rationale as follows:

> Bad culture goes with old mines. It produces an 'us and them' approach, and mistrust of management. Lots of people say the only way to change is a forced closure – to put the mine in care and maintenance for a minimum of six months and a maximum of twelve, and then cherry-pick a new workforce – there'd be high agreement on who we should not reappoint.

This is a strategy that a number of companies have contemplated. For example, one manager (who was far from alone) suggested that the only solution to dealing with a pit with a particularly acrimonious history is to 'shut and rehire'. In their view:

> That should happen. You walk in and survey the whole place – identify the things going wrong – the one and a half hour cribs – that X goes home early on Friday and so on. So you stop all that and shut. But, you've got to get buy-in in

> the future from the workforce. And you've got to by-pass the unions. In future, the workers must talk directly to me. Unions can be there – but then you develop milestones and guidelines eg zero injuries – then you work development month by month – if they reach this milestone, this happens [a bonus] ... if not, there will be 50% redundancies – and so on.

The danger of this approach is that it may build mistrust. A far preferable solution would be to act in ways that avoid the build up of cluster characteristics and to ensure that the tipping point is never reached.

What wider implications do these findings have for safety beyond the mining industry? While the mining industry may be exceptional in its long and bitter history of industrial conflicts, and management-miner hostilities, in other ways it is not. Corporations in many industry sectors confront the problem of ensuring that their far-flung operations behave as corporate management would wish them to. Indeed, there is evidence that corporations may be mistaken in their belief that those who are encouraged or required to develop and implement safety plans, systems and other management-based strategies will necessarily improve their performance as a result (Gunningham *et al* 2003; Parker & Neilson 2006). On the contrary, it may well be (as this chapter suggests) that site level management commitment is far more important than management-based strategies, that management commitment may not exist at individual sites even if it exists at corporate management level, and that the reason for this may be the presence of mistrust.

Corporate policymakers generally may therefore learn much from the experience of the mining industry. While some of the cluster characteristics have particular resonance for the mining industry, the characteristics we identified can be found in other industry sectors. As such, lessons about how to avoid their formation have considerable merit,

particularly for corporations committed to improving safety but unsure how best to achieve it at site level. These lessons can be summarised as follows.

First, the role of corporate management in creating trust is very important (Hopkins 2002; Whitener *et al* 1998). It is they who set the priorities, establish the values, and provide the resources that substantially shape site management and workforce responses. Conversely, much hard work at site level can be quickly destroyed if corporate management is at odds with site management. However, it is in large part site management, not corporate management, with whom the workforce has direct contact, and it is the extent to which site management has the perceived competence, benevolence and integrity to safety values, that will have most influence in shaping workforce perceptions of management commitment. It will be impossible for site management to build trust unless they not only espouse the value of a safe workplace, but also demonstrate their commitment to that value by their actions. Unless management at all levels walks the talk, then worker cynicism about their motivations will remain high. This research suggests that there are a variety of ways management can overcome this suspicion, such as by being receptive to, and responding rapidly to, safety concerns raised by the workforce.

Second, even where site (and corporate) management have a demonstrable commitment to safety, there remains a substantial impediment if the levels of middle management below them do not 'buy into' the safety message. Here, mistrust is directed more at senior management's abilities than its intentions, although the latter is sometimes also present. Pitzer (MCA 1999), for example, found that middle management showed signs of disillusionment with corporate safety initiatives. The present study suggests that this sometimes morphs into resistance by site management towards efforts by corporate management to impose greater accountability and responsibility upon them, particularly where this involves substantive

reporting, auditing and management systems (these research findings have significant implications for safety culture and corporate safety management systems and warrant elaboration – these issues a dealt with in detail in Gunningham & Sinclair (*forthcoming* (b)). A related issue is the devolution of safety decision-making and the extent to which workers are empowered to deal with safety issues. Workers were far more likely to accept and implement safety initiatives if they had a high degree of ownership.

Third, overtly hierarchical relationships serve to constrain trust, as the organisational trust literature demonstrates. Those at the bottom often have a fear of exploitation and suspicion that they are being treated unfairly, while those at the top suspect that the individuals for whom they are responsible are shirking responsibility or engaging in acts that might endanger the organisation (Kramer 1996, 216). In the present research this occurred with line managers, many of whom reported a lack of support from senior management, with consequences for their trust in those above them. Workers also reported that flat structures and a lack of demarcation between jobs achieved real benefits, and many saw value in management not interfering in day-to-day issues.

Fourth, communication is an important factor in overcoming mistrust. A distinctive feature of high safety mines was the high level of communication between workers and management. No single, successful formula for communication could be identified (communication could be as informal as after-work barbeques or as formal as weekly safety committee meetings) and much depends on personal management style. This is consistent with the finding of Cox *et al* (2006, 1126) that "managers who are willing to share information signal to their employees that they can be trusted".

Fifth, and closely related, is management's willingness to listen and respond to workers' safety concerns. Workers appreciated managers who acted promptly when they expressed safety concerns, even when this was only to explain why they did not

propose to take any further action. What Reason (1997) terms a 'reporting' culture can only be established when those who report such incidents trust that they will not be punished, or in any way adversely treated, for doing so (a 'blame free' culture). This is a good indicator because workers take a risk in reporting incidents in which they may be at fault, and will only do so where they are confident that they will not be punished as a consequence. This is part of a broader issue, the perception of workers that they will be treated fairly or justly that, as Tyler *et al* (2007) have demonstrated, can serve to reinforce trust. A just culture has been described as 'comprising an atmosphere of trust in which people are encouraged, even rewarded, for providing essential information, but in which they are also clear about where the line must be drawn between acceptable and unacceptable behaviour' (Cox *et al* 2006, 1124). Accordingly, it is only in these circumstances that workers are likely to act in the collective good. This points to a sixth characteristic of 'high trust' organisations: an expectation that managers will act with 'consistency, integrity and concern', even during periods of conflict or crisis.

All of the above serve to illustrate that trust, and mistrust, are multi-faceted. At the very least, the aspects of trust identified here are mutually reinforcing, and some of them are so fundamental that it is difficult to conceive of trust developing in their absence. While these are necessary conditions for the creation of trust, they are insufficient in themselves. Without effective worker engagement trust between workers and managers clearly cannot be achieved. Accordingly, the other criteria described above are all important in the composite picture, albeit that trust might develop in the absence of a small number of them.

Chapter 5: The origins of safety culture in coal mining: 'Top-down' versus 'bottom-up'

This chapter is a reproduction of an article by Darren Sinclair published in the *Journal of Health, Safety and Environment* (Volume 26, Number 3, June, 2010, pages 249-258).

5.1 Introduction

Over the last fifteen years there has been an increasing focus on the role of safety culture in curbing work related injury and disease. Particularly influential was the IAEA 1988 report on this subject, prompted by the nuclear reactor accident at Chernobyl (IAEA 1988). Other reports too, gradually came to suggest that cultural factors (rather than just management systems, policies and procedures, or more technical aspects of safety) can play a major role in explaining the frequency and severity of injuries and disease within an organisation (Cullen 1990; IAEA 1991).

Subsequently, the term 'safety culture' entered mainstream policy discussion with bodies such as the United Kingdom's Health and Safety Executive employing it in their policies and reports, and defining it as follows: "The safety culture of an organisation is the product of individual and group values, attitudes, perceptions, competencies and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management" (Health and Safety Commission 1993, 23)

Semantic disagreements (in particular, whether it was appropriate to refer to safety culture or only to 'safety climate') now seem to be largely over (Gadd & Collins 2002). And some important substantive questions – what distinguishes a positive safety culture from a poor one; how might a 'good' safety culture be achieved – have also, in the main, been comprehensively addressed.

Reiman & Oedewald (2004) for example, were able to trawl the literature to generate a compilation of positive safety culture descriptors, including 'a safety policy', 'visible commitment of management to safety', 'clear definition of responsibilities and obligations', 'balance between safety and production', 'good training', 'fairness and trust', 'quality ... rules and regulations', 'reporting of events and accidents', 'flow of information between the different levels', 'continuous improvement', 'sufficient resources' and 'working relationships with authorities'.

And the seminal work of Reason (1997) has addressed the crucial question of how to build a positive safety culture. Not least, Reason describes the significance of generating a reporting culture, a just culture, a flexible culture and a learning culture. Weick & Sutcliffe (2001, v), in another influential work, emphasise the importance of a collective "mindfulness" of organisations, in particular through: "(1) preoccupation with failures rather than successes; (2) reluctance to simplify interpretations; (3) sensitivity to operations; (4) commitment to resilience; and (5) deference to expertise, as exhibited by encouragement of a fluid decision-making system". In this respect, a key requirement is for "a person to become a mindful observer and actor, a vigilant and attentive actor, rather than one dependent on mindless control systems".

Hale (2000) also identifies key aspects of a good safety culture, including the participation of workers at different levels of the management hierarchy, the active engagement and contribution of specialist safety staff, caring trust (looking out for each

other), open communication between workers and management, management belief in safety improvements, and the mainstreaming of safety within an organisation (for example, by including WHS in all decision making processes). Finally, Cooper (1998; 2000) has attempted to remove some of the uncertainty surrounding precisely what safety culture is, by describing its three main components as being psychological, situational and behavioural. According to Cooper, the psychological component includes peoples' norms, values, attitudes and perceptions of safety. The situational component involves the structure of the organisation (policies, working procedures and management systems). And the behavioural component addresses practices adopted by employees that can be observed.

However, one critical issue that, notwithstanding its centrality, has attracted relatively little investigation is: where does safety culture come from? A widely held view is that it is management, in particular corporate leadership, that plays the crucial role in shaping organisational and safety culture. For example, Peters and Waterman's view is that: "people way down the line know what they are supposed to do in most situations because the handful of guiding values is crystal clear" (Peters & Waterman 1982, 76). Similarly, according to Hopkins (2002, 7), "it is the leaders who determine how the organisation functions and it is their decision making which determines whether an organisation exhibits the practices which go to make up a culture of safety". Schein (1992) has also argued that it is corporate management that creates culture, with the emphasis on its leadership role – culture is determined by what management pays attention to, that is, the things management measures, controls and provides financial incentives for.

In much of the literature, however, there is little attempt to locate the origins of safety culture, and in particular, little or no attempt to understand the importance of cultural development in specific industries, nor to consider the possibility that some sectors

may have particular characteristics that do not conform to generic constructs. Nor does much of that literature give serious attention to the possibility that safety culture, contrary to the conventional wisdom, is not necessarily a 'top down' phenomenon. It is important to challenge both of the above - largely taken for granted - views because to the extent that they are wrong or overstated this may have important implications for how WHS is addressed and, ultimately, WHS performance and practice.

This chapter investigates the formation of safety culture in the context of one specific industry – the Australian coal-mining sector – and shows how sector-specific characteristics matter, and matter considerably. In doing so it challenges the conventional view that safety culture is predominantly a top-down phenomenon, with corporate/senior management the driving force. On the contrary, it provides empirical evidence that, in this industry at least, it is better understood as largely a 'bottom-up' creation of mine site management and workforces. This too has important implications for understanding safety culture and for the development of policies best able to improve that culture and with it, WHS outcomes.

5.2 Methods

The research was conducted with the cooperation of an Australian coal mining company, and five of its mine sites, and with the support of an Australian Research Council Grant. Consistent with the norms of social science research and the writer's ethical responsibilities, this chapter does not identify the company or any of the individuals who participated in the research. Five mines were studied: one open cut and four underground mines. Mine sites were selected in consultation with the participating company, with the intention of including a range of safety performance outcomes. Each mine site visit occurred over a two-day period in which a

representative sample of both staff and workers participated in semi-structured interviews (62 in total). A typical sample of twelve interviewees from each mine included the general or operation manager, mine manager, shift or process supervisors, under manager, safety officer, engineering (mechanical and/or electrical) managers, crew leaders (deputy under managers, team supervisors), and mine workers (the 'crew') and tradesmen (including local check inspectors/site safety representatives). In most cases the balance of managers to employees was split approximately evenly. Each interview lasted approximately 40-60 minutes.

Each interview was conducted in private, with interviewees informed in advance that all material arising out of the interviews would be treated confidentially, and used anonymously in any subsequent publications. In addition to the mine site interviews, representatives from corporate management, including chief executives, safety managers and operational managers, were interviewed. A total of six corporate interviews were conducted. Questions took the form of a series of prompts, with only those questions that elicited a substantive response, being explored in greater detail. This approach ensured that a diversity of perspectives was explored and that respondents were not constrained to address only particular preconceived issues. Qualitative material generated by the interviews was supplemented by reviews of both the domestic and international literature, including the organisational and safety culture literatures.

In addition to quantitative data, the mining company provided comprehensive and historical internal policy background and safety statistical and audit data used by the companies themselves to determine WHS performance at individual mine sites.

5.3 Results

Two key findings emerged from the research. First, the mine sites demonstrated very substantial differences between each other in their safety performance. Briefly, because this is dealt with in detail in a related article (Gunningham & Sinclair *forthcoming* (b)), internal safety statistics and audit data were aggregated and weighted to yield a single percentage score for each mine. This ranking produced a very wide range of safety performance indeed, with an approximate 100% difference between the best and worst performers (the spread of rankings, from best to worst, was as follows: mine 1 – 51%, mine 2 – 62%, mine 3 – 77%, mine 4 – 96% and mine 5 – 98%). This quantitative finding was largely consistent with qualitative rankings provided by interviewees.

Significantly, this variation in performance was registered despite the presence of a sophisticated, comprehensive and uniform corporate WHS strategy. In particular, corporate management has increasing sought to impose ambitious and uniform WHS management standards across all the company's mines, against which they are regularly and comprehensively audited. In order to comply with these standards, detailed and uniform safety management systems have been introduced at each mine. Mines must also conform to a further set of WHS standards issued by the international headquarters, including, again, regular audits, conducted by an international audit team. Monthly and quarterly meetings are held where individual mine managers are required to report on WHS processes and performance, including not only conventional safety statistics, but also positive WHS performance indicators (which are intended to anticipate future safety performance).

In addition, the company has a behavioural-based safety program across all mines under which senior and middle managers are required to conduct a minimum number of 'safety observations' per month. Finally, all WHS systems, reporting and actions at each mine are included on a single interactive database that is accessible across all mines and corporate management. Clearly, the company has gone to very considerable lengths to minimise differences in WHS systems and processes and it appears implausible that differences in management systems and processes are the primary source of variation in mine site safety performance. One may also discount the influence of different regulatory requirements, as all five mines exist within the same regulatory jurisdiction. Finally, there was no consistent relationship between mine site physical and/or technical factors and WHS performance.

A second, and related, finding was that the variations in WHS performance persisted, and were consistent, over time (in this respect, the safety statistics and audit data covered a five year period). This is significant because several of the mine sites in this study had experienced numerous mine manager (and senior mine management) changes, sometimes in quick succession, and yet this had no detectable impact on the trajectory of each mine site's WHS performance (as measured by the aggregated data). The mine sites were also subjected to successive waves of top-down cooperate management WHS overtures and initiatives over this same period. Again, this had no discernable impact on the relative difference in safety performance between the mines (although there was a steady and consistent improvement over the five year period across the mine sites as a whole, this was dwarfed by the persistence of differences in safety performance between the mines – if anything, the differences grew over time).

These findings strongly suggest that mine site bottom-up culture, including workers, but also middle and line management (as opposed to senior mine management and mine

managers), is not only resilient, but resistant to top-down corporate and senior mine-site management influences on WHS performance. As one worker noted:

> I wouldn't trust them [corporate management] as far as I could throw them. ... The safety stuff is just to cover their arses.

And such views were not restricted to workers. As the following quote demonstrates, middle management can also have strong misgivings about corporate WHS interventions:

> They have totally unrealistic expectations about our workloads. Every time somebody in corporate dreams up a new safety initiative, I shudder because it just makes my job more difficult ... and [it] doesn't change the reality – it just adds more paperwork.

The overriding finding, then, is that mine site culture is a primary determinant of WHS performance ranking amongst the five mines included in this study – a finding that is further supported by the fact that the five mines displayed distinctive cultural characteristics (again, this is explored in more detail in Gunningham & Sinclair *forthcoming* (b)). We explore below the reasons why and how bottom-up mine site safety culture can wield such clout in determining WHS performance outcomes, and the circumstances that give rise to this powerful culture in the first instance.

5.4 Discussion

Given these findings, what are the circumstances that may make coal mining particularly susceptible to a bottom-up formation of safety culture, and consequently,

allow divergent mine-site specific characteristics to emerge? Several features of the coal mining industry facilitate such an outcome, and these are examined below.

Organisational culture is often seen as being "the way we do things around here" (Schein 1992, 9). The 'around here' of coal mining is particularly localised and, both practically and figuratively, a long way indeed from corporate management. Mine-sites are geographically remote, making it difficult for corporate management to exercise direct control, and particularly difficult to conduct regular visits. The high degree of remoteness does not end there, however. Mine workers are also physically remote from localised mine-site management. In some mines, particularly underground mines, travel times can be up to half an hour from the surface to the 'coal-face'. Finally, there is a paucity of computer access at underground work sites. This means workers are effectively isolated from one of the principal means of communicating management decisions throughout the organisation. It is not surprising, then, that workers can and do spend virtually entire shifts without any senior or middle management contact, let alone direct supervision. Collectively, these circumstances conspire to create a very high degree of physical and communication remoteness of mine site workers from both corporate and senior mine site management.

Another relevant feature is the longevity and insularity of the workforce. The average age of workers in most of the mines visited was approaching 50, with many of the workers having spent their entire working lives at a single mine, or at a very small number of mines. Further, many of these workers have worked side-by-side with a common set of colleagues, often in small team environments, in very confined spaces, for the majority of their working lives. This interconnectedness extends beyond the mine site too, with many workers having grown up together and continuing to live in the same communities, often socialising together and even maintaining a tradition of allocating worker positions to the children of existing mine workers. This creates a rare

degree of worker cultural insularity. As one worker described it, this can entrench attitudes and behaviours:

> Here ... we've being doing it this way for thirty years, we're not going to change the way we do it. I've had many arguments ... that because they have done a job a certain way for 10 years, doesn't mean it's been done the right way for 10 years.

The longevity of the workers can be sharply contrasted with that of senior and middle mine management, which are relatively transient, with rotation between mines, and movement between companies, common across the industry. In addition, during the average lifespan of a worker, the actual mine ownership can change several times. It is not surprising, then, that many workers, witnessing a procession of different management over the years, view themselves as the true custodians of 'their' mine site. From their perspective, it is management that comes and goes, while they are 'in it for the long-term'. In the absence of stable management engagement, leadership inevitably flows to 'informal high status workers'. These are usually experienced workers, often with a union role, that exert a disproportionate influence over the attitudes and behaviour of other workers, especially younger, new recruits. In extreme cases, informal high status workers may even attempt to sabotage management WHS programs, for example, by submitting fictitious incident reports. Conversely, they may play a crucial role in facilitating management WHS initiatives – as when an extremely controversial a BBS program was successfully introduced because it gained the acceptance and support of the most influential worker sub-group.

The hierarchical nature of many coal mines facilitates these phenomena. Most mine sites operate on the basis of distinct work shifts, namely day, afternoon and night. The significance of this lies in their relative attractiveness from a lifestyle point of view. For

the vast majority of workers, for fairly obvious reasons, being placed on the day shift is the most desirable outcome, followed by the afternoon then, lastly, the night shift. This introduces a hierarchy within the workforce, with those on the day shift at the apex. The union often controls the allocation of workers' shifts on the basis of worker longevity. The net effect is that the vast majority of new recruits work the night shift.

In addition to the shift hierarchy, there is also a task hierarchy. Just as the older recruits are able to access the preferred shifts, so too are they able to secure the more desirable tasks on those shifts, for example operating key machinery. There are two important ramifications of this hierarchical distribution. First, as each worker progresses from the undesirable to the desirable shifts/tasks so too are they exposed to, and subsumed within, the more entrenched 'us-and-them' attitudes and sometimes *laissez faire* WHS practices often prevalent in the mining industry – it is very difficult for an individual to resist the views of numerically superior and more senior/experienced workers surrounding them. As one respondent noted:

> There are people here who walk on one side of the line and, I believe, really don't necessarily want to be on that side of the line, but they're there because of peer pressure. ... I think that's where culture lies, yeah.

The above quote highlights the role and power of mine site peer pressure, particularly by informal high status workers, can wield in generating, at best, ambivalence towards, and at worst, active resistance to, corporate WHS initiatives. This observation was also supported by middle managers at a number of mines sites. In particular, they reported that night shifts, with their more recent, younger recruits, have less entrenched and anti-management attitudes, and a greater willingness to adopt new management initiatives, including those directed at improved WHS outcomes. In fact, night shifts were very often credited with being the most productive and safest at many of the

mines (this was an interesting finding given that other studies suggesting that night shifts have more WHS problems, however, it was not possible to independently verify the claim, and it was also not possible to disaggregate company quantitative data on the basis of different shifts).

Closely related to hierarchy is the issue of union dominance. Indeed, coal mining is one of the most heavily unionised sectors in Australia. Not only has union membership been high, but the degree of control exerted by unions has been equally high, and only in recent times has this began to wane (although this has occurred to varying degrees across different mine sites and mining companies). Union solidarity amongst the workforce has to a large degree shaped attitudes and relationships between workers and management at mine sites. Thus workers have direct and deep exposure to an alternative 'world view' to that being promulgated by corporate and mine management, and in this respect, WHS issues often fall victim to a 'tug-of-war' between this two competing views. As one respondent explained:

> I don't think they're [management and workers] all that much closer than what they were when I first got here, because there's always a large suspicion between the two. 'Why is management doing this?' 'Oh, it's because they haven't got safety in mind, it's because they want to do this, it's all saving money, or whatever.' And I suppose management are saying, 'Well, why aren't the blokes doing it this way?' And they'll come up with a reason, whatever reason, but, you know... At times I feel that the management are trying to relay information, but whether it's past history, catching up with the blokes, past disagreements, that's still lodged in the minds of the men, there's still that suspicion.

In addition to informal high status individuals, and the role of unions, the other major driver of a bottom-up safety culture is line management (also called crew leaders) that lead teams of six to ten workers at the coalface. There was unanimous agreement across all five mine sites that line managers are uniquely placed to influence safety culture and WHS performance, particularly through establishing minimum standards and attitudes amongst the crew. For example:

> Front line supervisors have a critical role to play in raising safety awareness.

Equally, however, there was a widespread perception many fell well short of this ideal:

> The hardest job is getting the front line supervisor to do their safety job properly. You have got to set the expectation, help them to achieve it, hold them accountable, educate where necessary, and discipline also an option.

It was claimed this is because line managers were not given necessary support by management, and did not have the appropriate management/leadership skills.

Another related problem was line managers being 'sandwiched' between workers and management. This can lead to questions by both management and workers as to where their loyalty truly lies:

> The front line supervisor is the conduit between management and workers – is often seen by the workers as part of management, and seem by management as part of management, but are sometimes treated by managers as part of the workers. They run with the foxes and hunt with the hounds.

From the perspective of several line managers at middle and low ranked mines, management support for their role was often less than forthcoming. As one noted:

> We were told we were going to be made part of management and all the rest of the shit and we've always heard it that many time it ain't funny and we went close at one stage. Our enterprise agreement is with the staff now ... and we get paid staff superannuation what the staff get and a few things like that, but that's where it stops. They were going to integrate us into the management system and it just sort of fell over I think.

The above suggests that multiple factors contribute to the development of a bottom-up safety culture at mine sites, and that this in turn is likely to be resistant to corporate intervention, at least without serious engagement with site-specific issues.

5.5 Conclusion

In contrast to the prevailing top-down view of safety culture, this research revealed a range of mine-site characteristics that influenced the success or otherwise of corporate management's WHS initiatives. In particular, it was found that mine management, and in many cases, the workers themselves, were the principal players shaping the interpretation and implementation of management tools, with corporate management little more than a shady background presence. That is, safety culture was found to be a predominantly bottom-up phenomenon. This in turn had a tangible and persistent impact on mine site safety performance over time.

Of course it is possible that these findings are exceptional, and largely confined to the particular circumstances of the coal mining industry, but this is unlikely. There is

growing (albeit at this stage limited) evidence to suggest that the above findings and conclusions have much wider application. For example, the commercial shipping industry shares many traits with the coal mining industry: operational sites are very remote from corporate office, crews work in close proximity to one another for long periods unsupervised, WHS incidents have the potential for catastrophic consequences, and a single 'site-level leader' (the ship's master – equivalent to a mine manager) rather than corporate management has the most influence on crew behaviour (Wake 2005, 6). Accordingly, the shipping industry has begun to recognise the importance of fostering a positive safety culture on individual ships, rather than across the fleet as a whole (Wake 2004).

To the extent that the findings of this study into one Australian coal mining company resonate across other mining companies, and indeed other industry sectors, important policy implications follow. Not least, site-specific factors matter, and without engaging directly with the circumstances and sub-cultures that exist at individual sites, and that involve site level management and the workforce, progress in reducing work related injury and disease is likely to be seriously constrained. Only by focusing on a range of bottom-up, site-specific historical and cultural factors are corporate corporate-driven WHS interventions likely to realise their potential.

Chapter 6: Building trust: WHS management in the mining industry

This chapter is a reproduction of an article by Neil Gunningham and Darren Sinclair published in *Policy and Practice in Health and Safety* (Volume 1, Number 12, 2014, pages 25-41). The relative contributions were split 60/40 respectively between Sinclair and Gunningham. Sinclair contributed to the fieldwork, the processing of interview material, the background research and literature reviews, the preparation of initial drafts and the preparation and editing of the final draft.

6.1 Introduction

In recent years, there has been increasing interest in the role of trust in shaping WHS outcomes. Trust has been identified as important for improved WHS through a variety of means, including communication (Reason 1997), maintaining co-operation (Morgan & Hunt 1994), promoting the acceptance of decisions (Tyler 2003), improving knowledge sharing (Dirks & Ferrin 2002), supporting all aspects of organisational functioning (Bijlsma-Frankema & Koopman 2003) and enhancing safety performance (Barling & Hutchinson 2000). Concern about the role of trust (and the lack of it) has been particularly strong in the mining sector, where antagonism between workers and management is often deep seated and where building trust is a particularly challenging enterprise.

The importance of trust to WHS outcomes is emphasised in a series of reports in Australia's 'mining jurisdictions'. For example a 2005 New South Wales Mine Safety Review identified a "debilitating mistrust between the members of the tripartite process"

as a principal obstacle to improved WHS in the mining industry (Wran & McClelland 2005, 7), sentiment echoed in Western Australia in the Ritter Report (Ritter 2004) and by an internal review in Queensland which noted with regret "the antagonistic and confrontational climate that has developed [that] cannot be conducive to optimal safety and health outcomes" and which appears to be particularly pervasive in underground coal mining (ACiL 2005, 113).

Yet despite the potentially debilitating effects of mistrust on WHS performance only "a limited number of researchers have examined the concept within the realms of safety research" (Cox *et al* 2004), and "the exact nature of trust and its role in shaping organizational safety is poorly understood" (Conchie *et al* 2006, 1097). Perhaps unsurprisingly therefore, the current consensus is that "the formation of trust within workplace relationships is complex and elusive" (Zeffane & Connell 2003, 4).

In previous work, we examined the relationship between mistrust and WHS performance in the Australian mining industry, concluding that there was indeed a strong relationship between WHS performance and the degree of trust at mine site level (Gunningham & Sinclair 2011). We also examined the importance of an evolving WHS architecture based on structured risk management concepts and WHS management systems to which the impressive gains that the coal mining industry has achieved in its WHS performance, are widely attributed (Gunningham & Sinclair 2012). So too, has one of us also examined the role of trade unions and worker participation in general and of check inspectors in particular, in WHS (Gunningham 2007, Chapters 1 and 9).

In the present chapter, rather than elaborating on the adverse effects of mistrust, we focus on how it might best be overcome and on strategies best capable of nurturing trust, not only between management and workers, but also between corporate and

mine site management, and management and unions. This is important because although there is a growing body of literature on how to establish a safety climate more broadly, little is known about "how trust can be increased in organizations experiencing low or fragile levels of trust" (Cox *et al* 2006, 1136).

Drawing on the experience of mines that have been most successful in building trust and comparing them to those where mistrust is rife, we argue that there are a number of practical measures that corporate management, mine managers and other mine site personnel can take that serve to develop trust. Where available we also draw on the broader albeit limited literature on trust to build a composite picture of the architecture of trust in the mining sector. Many of the measures that seem necessary to build trust in this context appear to have application to other industries and other circumstances.

6.2 Methodology

The methodology entailed two stages. The first involved developing a safety ranking (no health ranking was developed, notwithstanding the importance of workplace health, because of a dearth of reliable information on which it could be based). Initially, 18 mine sites across the three companies (eight, six and four, respectively) were ranked according to their safety performance using a combination of internal audits,[20] LTIFRS

[20] There are some minor variations in the audit processes across the three companies, but in general internal audits include conventional quantitative safety statistics, namely LTIs and TRIs, as well as other quantitative measures, namely hazard identifications, reported incidents and near misses, as well as a range of measures of WHS management procedures, including the number of safety observations completed, feedback to workers reporting incidents or hazards, number of worker/management safety meetings, number of risk analysis completed, number of previous audit recommendations addressed, and number of outstanding safety actions. Audits also include qualitative components, including an assessment of safety recordkeeping, safety systems and safe work procedures. Internal audits are conducted by third party contractors, or

and where available, TRIFRs, and workers compensation data. This safety data was collated over a five-year period.[21] Annual information was then aggregated and weighted (with the highest weighting given to the most recent statistics/data[22]). This process yielded a single percentage score for each mine, with a lower score reflecting a better overall safety performance.

Critics are rightly suspicious of reliance upon LTIFRs as a measure of injury levels given the multiple incentives and opportunities for under-reporting (Ekevall *et al* 2008) although LTIFRs have become less vulnerable to manipulation since it was made a statutory requirement to also report injuries to the regulator.[23] In any event, for purposes of our analysis, LTIFRs are just one of the several measures that we used to 'triangulate' (validating our data through cross verification) and our results would have been much the same even if we had removed LTIFRs completely from our calculations.

Having ranked the 18 mines according to the aggregated and weighted available data, the 10 highest and lowest performing mines were then selected for further study (thereby excluding middle ranked mines). As can be seen in Table 5 below, there was

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specialised internal audit teams comprising corporate safety managers and senior managers from other mine sites. Audits occur periodically, most commonly on an annual basis.

[21] The five-year period was chosen because it corresponded to the period in which corporate management had imposed uniform WHS standards and systems across the five mine sites, and it also minimises the chance of annual aberrations in WHS performance outcomes.

[22] The most recent year's data was given a weighting of five, the next most recent data was given a weighting of four and so until the five-year old data was given a weighting of one. This was done to reflect the greater likelihood that more recent data would accurately reflect current circumstances, but at the same time attempting to smooth out results over a longer time frame so as to minimise annual anomalies.

[23] See, for example, the Coal Mine Health and Safety Act, NSW 2002, Coal Mine Health and Safety Regulation 2006, clause 202.

a dramatic difference (close to 100%) between safety outcomes in high and low ranking mines.[24]

Table 5: High and low WHS mine site rankings

	Company 1		Company 2		Company 3
High WHS ranking	98% (Mine A)	96% (Mine B)	93% (Mine C)	84% (Mine D)	87% (Mine E)
Low WHS ranking	62% (Mine F)	51% (Mine G)	49% (Mine H)	61% (Mine I)	54% (Mine J)

In addition, and subsequent to the quantitative identification process, corporate managers (12 in total) from across the three companies were asked (individually, confidentially and with no prior knowledge of the quantitative results) to rank the safety performance of the mines within their respective companies. This subjective ranking was employed as a final and independent validation of the mine selection process. Encouragingly, the qualitative rankings were consistent amongst corporate managers within each of the companies, and very similar to the quantitative rankings: there being no disagreement as to the polar extremes, and only some minor variations in the order of the middle ranking mines (which were excluded in any case).

Even though there were large differences in the aggregated and weighted safety performance of the high and low mine groupings respectively, there were few differences in their operational circumstances. In particular, seven of the ten coal mining sites were underground, longwall operations, two were predominantly longwall, and one (Mine B) was open cut. Further, all the mines were owner operated (that is, none were operated by a third party contractor) and all workers were employees. In

[24] The inclusion of only the polar extremes was intended to enhance the reliability of the methodology and to facilitate identification of broad groupings of the highest and lowest WHS performers (rather than the precise ranking order).

eight of the mines, this was a single owner operator, the other two being joint ventures where only one partner had operational responsibilities (Mines C and F). Finally, within each company, the 10 mine sites were subject to uniform corporate-wide WHS management standards and systems. None of the mines involved 'fly-in, fly-out' or 'drive-in, drive-out' workforces.

The second stage of the methodology involved conducting detailed qualitative research at each of the ten mines to explore whether they were successful in building trust and if so how. This involved semi-structured interviews with a representative sample of staff and workers at each mine (120 in total), typically involving the general or operation manager, mine manager, shift or process supervisors, under manager, safety officer, engineering (mechanical and/or electrical) managers, crew leaders (deputy under managers, team supervisors), and workers and tradesmen (including local check inspectors/site safety representatives), with an approximately even split between managers and employees. Each interview was conducted in private, with interviewees informed in advance that all material arising out of the interview would be treated confidentially, and used anonymously in any subsequent publications. Additionally, 12 representatives from corporate management, including chief executives, safety managers and operational managers, across the three coal mining companies included in the project, were also interviewed. All interviews were conducted between 2007 and 2009.

6.3 Mistrust in the mining industry: A context

Trust can be regarded as "an individual's belief or common belief among a group of individuals that another individual or group (a) makes good faith efforts to behave in accordance with any commitments both explicit or implicit, (b) is honest in whatever

negotiations preceded such commitments, and (c) does not take excessive advantage of the another even when the opportunity arises" (Cummings & Bromley 1996, 302). In the context of workplace safety, trust can be best understood as an individual's willingness to rely on another person based on expectations that he or she will act safely or intends to act safely. For example, management (which particularly in underground coal mines has limited capacity to monitor or control workers directly) might trust workers not to cut corners, or break safety rules or take unreasonable risks. Workers in turn may trust management to keep them safe (Risk Analysis 2006).

In Australia, the mining industry has been beset by rampant mistrust between the major stakeholders for many decades. Relations between trade unions and mining companies are often acrimonious, with managers regarding the entrenched attitudes and behaviours of unionised workers as being antithetical to modern management and safety practices. Many mine workers and union representatives have an equally deep mistrust of management, borne from a history of death, injury and disease for which employers were, historically, hardly blameless (Hargraves 1993; Shaw & Bruns 1947).

The following quotes are representative and elaborated on in our previous work (Gunningham & Sinclair 2011):

> I think it's an inherent thing ... that nobody will trust anybody. It's just ... we've been told things that many times and the opposite's just happened. That it's just the bigger the company gets the less they trust and I don't think you'll ever get rid of that out of the coal industry. I think it is just one of those things. It's more inherent in the coal industry I think than any other industry in Australia.

> I don't think they're [management and workers] all that much closer than what they were when I first got here, because there's always a large suspicion between the two. 'Why is management doing this?' 'Oh, it's because they haven't got safety in mind, it's because they want to do this, it's all saving money, or whatever.' And I suppose management are saying, 'Well, why aren't the blokes doing it this way?' And they'll come up with a reason, whatever reason, but, you know... At times I feel that the management are trying to relay information, but whether it's past history, catching up with the blokes, past disagreements, that's still lodged in the minds of the men, there's still that suspicion.

> I don't trust them. I don't trust management. Everyone. ... they know that you can do it, but the way you are going to do it is not the safe way, they'll turn their back. I think somewhere down the line at the higher levels, they've decided that they can't trust people at the mines to actually do that so we're going to give them these standards or we're going to audit them against these standards and that will force them to get into line. Tell them that this is what they have to do before the next audit or there'll be consequences and so on.

Corporate, senior mine site, and middle management interactions are also susceptible to mistrust and its corrosive impact on WHS outcomes. For example, uniform safety standards and systems imposed by corporate management, are frequently treated with suspicion and resentment by site management, being seen as intrusive and sometimes as casting doubt on their managerial competence.

Our empirical work led us to conclude not only that there is a strong association between low trust and low safety performance but that there are a *cluster of*

characteristics that are strongly associated with a heightened presence of mistrust at lower performing mines (for further detail, see Gunningham and Sinclair 2011). These findings (expressed as incident rates from the five high and five low WHS performing mines) are summarised in Table 6 below.

Table 6: Mistrust – a cluster of characteristics

Cluster characteristics	High performing mines	Low performing mines
1. A catalytic event (as for example where management 'cut coal' during a strike).	1/5	4/5
2. A divided workforce (with distinctive and antagonistic groups of workers).	0/5	3/5
3. Mixed messages, inconsistent actions (for example where management promotes a 'no-blame' culture, then criticises workers when reporting incidents).	1/5	4/5
4. A high turnover of senior mine management (in some cases mines have lost approximately 50% of senior management in a single year).	1/5	4/5
5. A closed management style (including a reclusive management team; a lack of communication and consultation, and issues of ownership of safety initiatives).	0/5	3/5
6. An under-utilised, isolated or ineffectual line management (in particular, crew leaders that are 'sandwiched' between workers and management).	2/5	5/5
7. Traditional organisational structures (in particular, fixed shifts and hierarchical shift management).	2/5	5/5
8. A resentment of corporate intervention (middle managers in particular are increasingly frustrated by additional safety-related paperwork and obligations flowing from corporate safety initiatives).	1/5	4/5

While different mines exhibited different combinations of these characteristics, and no one mine either expressed all or none of them, nevertheless, the overall conclusion was clear: the greater the number of these characteristics exhibited at any one mine, the greater the likelihood that mistrust will impact negatively on safety processes, practices and outcomes.

6.4 Nurturing trust: Corporate and mine-site strategies

Drawing on the experience of mines that have been most successful in building trust and comparing them with those where mistrust is rife, has enabled us to identify a number of practical steps that corporate management, mine managers and other mine site personnel can take to develop trust. This, combined with what is known from the broader albeit limited literature on trust, has enabled us to build a composite picture of the architecture of trust in this sector.

6.4.1 Corporate safety leadership

The role of senior management in creating trust is crucial (Hopkins 2005; Whitener *et al* 1998). Senior management sets the priorities, establishes the values, and provides the resources that substantially shape mine management and workforce responses. Messages conveyed by senior management, particularly as to whether and how much they value safety and the wellbeing of the workforce, form part of the picture that workers develop as to the company's motivations and behaviour. For example, at one mine in our study, efforts to establish a genuine reporting ('no blame') culture were undermined when a middle manager was criticised by corporate management, for an increase in reported incidents, which likely reflected the success of the reporting initiative rather than any genuine deterioration in safety performance.

We also found that a lack of corporate leadership can exacerbate mistrust at mine site level, with adverse consequences for WHS. Strikingly, the three lowest WHS ranked mines displayed the highest levels of mistrust towards corporate management. In one case, mine management viewed corporate WHS interventions as an unjustified intrusion into their internal affairs, while two others doubted the competence of corporate management to fulfil their stated WHS ambitions, and perceived their intervention as a vote of no confidence in their own safety management.

Overall, we concur with Conchie *et al* (2006, 1152) that: "a good organizational safety culture typically relies on good safety leadership [that] promotes shared values and commitment to an organization's safety policies". However, we also found that senior management commitment was a necessary but not a sufficient condition for the success of corporate WHS initiatives – their efforts were still likely to rendered ineffective if the workforce mistrusted corporate initiatives. Without trust workers treated almost all corporate initiatives with suspicion and refused to buy into them; safety observations were perfunctory, incident reporting was trivialised or ignored, systems were more honoured in the breach, and sophisticated electronic monitoring systems were side tracked.

6.4.2 Mine management leadership

Although the management literature emphasises the importance of corporate leadership, less recognised is the importance of leadership at facility (mine site) level. Not only must mine management espouse the value of a safe workplace, they must also demonstrate their commitment to that value by their actions – a failure to 'walk the talk' may foster worker cynicism.

Numerous workers and middle managers told us the level of safety that a mine achieves is in very large part the level that the 'boss' wants. And from their perspective, this is the mine manager (with whom they have regular contact), not a remote corporate management. Our findings suggest that an open and communicative style of management is particularly important in building trust. Managers at higher performing mines were more likely to create opportunities for both informal and formal engagement, such as taking advantage of shift changes to meet with the workforce, while those at low performing tended to "disappear into their offices", and that middle management were similarly characterised as reclusive.

At the best performing mines management found a variety of ways to overcome worker suspicion, such as by being receptive and responding rapidly to safety concerns raised by the workforce (described as an 'empathic style' by Hasle & Møller (2007). See also Hasle & Limborg (2006)). This has been strikingly lacking in the mining industry as a whole, the pervasive view being "that management does not 'value' employees" (Minerals Council of Australia 1999).

The most compelling demonstration of mine managers' commitment to safety was almost universally regarded as being their willingness to halt production if safety is seriously compromised. At high performing mines, managers appeared far more willing to 'bite the bullet' on this issue, notwithstanding the difficulties involved:

> We were well into the production panel – [when a problem arose] – I stopped for 24 hours to fix it. I refused to put machinery down the pit if the situation is not satisfactory and if it's a major issue – if it's unsafe, that's it. Full stop. We go down a framework approach. We have learnt to assess risks. If the risk is acceptable, we carry on. If you get the wrong answer (it's unsafe) then too bad – you just stop work. That's far better than spending the rest of your life walking

> down the street with someone pointing to you saying 'that bloke killed my old man'. (Manager)

In contrast, poor performing mines were the most reluctant to halt production:

> Coal mining is basically production orientated. ... What I'm saying is that the focus of almost everyone at the pit is basically production. They don't see safety as being a large part of their job, it is something that's incidental. (Worker)

And this reinforced cynicism and mistrust on the part of the workforce, serving to undermine almost all other management WHS initiatives. Intriguingly, at some of these mines, it was not just management that displayed a preference for production values over safety values: workers too adopted this attitude, saying they "just want to cut coal".

Finally, given the importance of the personal relationships, mines that have a high turnover of mine managers inevitably face serious problems in building trust. Yet some companies frequently rotate mine managers and other senior mine level positions between mines. This not only results in a loss of corporate memory at individual mines sites, but constrains the development of good working relationships between managers and workforce. This suggests the need to avoid repeated and rapid senior mine management rotations, except where relations between the manager and the workforce are beyond repair.

6.4.3 Overcoming middle management inertia

The behaviour and actions of middle managers also plays an important role in the formation and maintenance of trust (Cox & Flin 1998; Clark & Payne 1997) and their relations with senior management in particular, may be crucial. Middle management at a number of the worst performing mines, viewed corporate intentions with deep suspicion. A key concern was that corporate attempts to devolve responsibility in conjunction with greater accountability was just strategy to 'protect their own arses', with the result that middle management would get the blame in the event of an accident. Such resentment sometimes morphed into active resistance:

> We have a small core of managers who think [corporate WHS initiatives] are a load of crap and they've said so, and when you get to the mine level, because they think it's all bullshit, they don't do anything until the last minute and then your attempts at being professional come to nothing. (Senior manager)

A major concern of middle management at low performing mines was that corporate WHS initiatives imposed excessive administrative demands on their time without achieving substantive safety improvements. These findings are consistent with those of others that middle managers show 'disillusionment' with corporate safety initiatives (Gunningham & Sinclair 2012).

Crew leaders (front line supervisors) were especially mistrustful of senior management, with this problem being exacerbated by uncertainty as to whether they were 'really' part of management, and as to where their loyalty should truly lie:

> The front line supervisor is the conduit between management and workers – is often seen by the workers as part of management, and seem by management

as part of management, but are sometimes treated by managers as part of the workers. They run with the foxes and hunt with the hounds.

Irrespective of the precise source of middle/line management mistrust, the consequences can be highly detrimental to WHS. For example, middle managers at low performing mines openly admitted to not meeting their obligations to conduct safety observations, or conducting them in a perfunctory manner, to audit recommendations being 'left on the shelf', to not following or referring to safety management systems, to delivering safety briefings where they are simply 'going through the motions', and to ignoring specific directives to engage in 'safety actions'.

We found that at the high performing mines, a mix of mutually supporting approaches served to reinforce middle management engagement with safety issues, and some of these also helped develop trust.

In most high performing mines, high quality, regular training was a priority for middle management, with WHS a core feature. Moreover, in these mines, WHS was a central feature of middle management duties, functions and responsibilities, and was recognised as such by senior management – this ensured that it was not just as an 'add on' to their 'real' role. This provided a valuable avenue through which they achieved (and leveraged) a broad range of management objectives. Crucially, middle managers were supported in making WHS interventions even where this might result in a loss of production in the short term – a marked contrast to low performing mines, where a failure to support such decisions commonly reinforced middle management perceptions that senior management was 'not serious' about safety.

Significantly, although all middle managers were to some degree pressed for time and resources when it came to discharging WHS obligations, this phenomenon was more

acute at low performing mines. The key difference was that at high performing mines, time spent on addressing WHS tasks was not only viewed by senior management as legitimate, it was expected. Finally, at high performing mines, line managers were more integrated into the management structure. For example, a clear management role was provided for crew leaders and this in turn helped to build trust with both superiors and subordinates. In contrast, at low performing mines, middle management often received mixed messages as to their standing, 'officially' being part of management but in practice being treated as 'part of the crew'.

Where these, or at least a majority of these characteristics were present (as was found in high performing mines) than a commitment to safety was reinforced, and mistrust of senior management was less apparent. In contrast, at low performing mines it was common to find a 'tick the boxes' mentality to WHS duties, underpinned in large part by cynicism or mistrust about senior management intentions.

6.4.4 Flatter structures, devolved decision-making, rotating shifts

The choice of organisational structure can have important consequences for trust at a mine. A majority of the high WHS performing mines had adopted a flatter management structure that requires devolved decision-making. This arrangement had the effect of *removing* layers of middle management, bringing line management and workers closer to senior mine management. In particular, it led to the creation of 'coordinators' – line managers elevated to oversee key operations (such as production) for each shift, but maintaining strong links with the crews.

Where this structure had been introduced, there was widespread support for it amongst both management and workers: the less hierarchical structure had generated greater trust between crews, coordinators and senior management; the 'lines of

communication' were more open and efficient; and there was less interference by middle management in their day-to-day activities. Significantly, line managers had 'risen to the occasion', avoiding the usual uncertainty over their role: "I see myself as probably part of junior management .... The coordinator is basically running the whole show now". Workers, too, were enthusiastic supporters. From their perspective, "one of their own" has been put in charge of day-to-day operations. Senior managers also supported a flatter structure because "the more levels of demarcation and hierarchy, the more individual workers can hide and buck pass".

These findings are consistent with the organisational trust literature which emphasises how overtly hierarchical relationships constrain trust – those at the bottom of the hierarchy often have a "fear of exploitation and the nagging suspicion they are being treated unfairly", while those at the top suspect "that those individuals for whom they are responsible are shirking when performing their duties or engaging in acts that might endanger the organization's welfare" (Kramer 1996, 216). Similarly, a cultural survey of the Australian mining industry found that "mines that reported their preference for a 'Team Performance' mix of safety strategies were also the mines where more positive safety cultures were measured" (Minerals Council of Australia 1999). Certainly, in those mines that had *not* pursued flatter management structures, hostility and mistrust between management and workers was much more evident.

The type of shifts mines use can also have important implications for the presence or absence of trust. Under 'fixed shifts' unions have traditionally allocated 'seniority' to workers based upon their length of service, and those with the highest level of seniority are able to get first preference for their preferred shift. In contrast, under 'rotating shifts' all workers share the different shifts equally over time, irrespective of seniority. Further, all workers get equal exposure to management, making it easier for management to maintain open communication links with the entire workforce and to build a rapport with

new recruits. It is also possible to schedule safety training for all workers over a given shift cycle.

Together, these benefits work to build trust. We found that despite strong in-principal opposition from unions and workers, where the removal of shift seniority has occurred there is broad recognition within the workforce of its benefits for safety and productivity. It appears counter-intuitive to suggest that the removal of one of the most cherished conditions of the mining unions, namely, shift seniority, could lead to greater levels of trust and safety between workers and management. And yet there are convincing signs that that this has indeed been the case in the higher performing mines. Shift seniority encourages the clustering of the older and usually least flexible workers in a single shift, namely the dayshift, reinforcing the development of an insular worker culture predisposed to mistrust towards management and resistant to management safety. Seniority can also limit the capacity of management to create more productive work teams, and the integration of new recruits. In contrast, we found that the removal of seniority reduces the risks of insularity and parochialism.

The policy implications of these findings are clear. Notwithstanding potential resistance from trade unions during the transition period, management should consider the introduction of rotating shifts at more mines, in combination with flatter management structures. Having said this, it is unwise to rely on any single mechanism in isolation. While flatter management structures are likely to facilitate more effective feedback, this cannot be guaranteed and it will also be important to provide at least one other report-back path so that if one is blocked, workers have another option.[25]

[25] We are indebted to an anonymous referee for this insight.

6.4.5 Ownership

Workers were found to be far more likely to 'take on board' and implement WHS initiatives over which they had a high degree of ownership. At high performing WHS mines this was usually achieved by engaging workers in the creation of these initiatives or, in the case of corporate initiatives, in how they were implemented at individual mine sites:

> Fundamentally, the process is driven by the workforce – there is a high degree of ownership. We provide the resources but we want the workers to identify the safety improvements. They've got their own committee, with about two members from management, and the rest of the eight or so are workers. (Manager)

At another mine, the introduction of dedicated and relatively self-managed work teams in each shift had far reaching benefits for ownership and trust:

> They have changed the roster so that they have consistent teams – services, longwall and development – and they have become more specialised, with greater ownership. The teams get better at their jobs, develop more specialised skills, the workers have more input into the work program and have a vested interest in the crew's success.

In a third mine, the introduction of a behaviour based safety initiative – usually resisted by the workforce because it is seen as a 'blame the worker' approach – was adopted enthusiastically, primarily because a high status and influential group of miners were engaged at an early stage and came to feel that it was 'their' initiative.

And in perhaps the most striking example, a representative group of employees persuaded company management to re-open a recently closed mine. They did so under a new enterprise agreement that gave them no job security, but substantial incentives for increased production and greater autonomy. Under this agreement there were improvements in production, quality and industrial relations as well as in safety, notwithstanding the reluctance with which most workers had entered into the agreement.

In contrast, lower performing mines often ignored the benefits of worker ownership. For example, workers complained they were not consulted before the introduction of a new management safety initiative requiring them to complete a written JSA at the start of work. This undermined trust and effectively destroyed the credibility of the initiative: it was common practice for workers to take the JSA cards home and fill them *in advance of the actual jobs*, clearly defeating the purpose of the system. Others simply treated the cards as a 'tick and flick' exercise, with no thought about actual risks or safety mindfulness.

These findings are broadly consistent with those of Conchie *et al* (2006, 1101) who suggest that: "engaging employees in decision making not only increases trust in management ... but also promotes within employees the perceptions that they are trusted by management. In turn these perceptions increase the personal responsibility that employees take for safety and safe behaviour".

6.4.6 Communication

A distinctive factor of all mines with a strong safety performance was the high level of communication between workers and management on WHS issues. However, no single, successful formula for communication could be identified. Much, it would

appear, depends on personal management style. For example, effective communication might include 'start of shift' meetings with deputies, tool box talks, regular planning meetings with the management group and regular WHS committee meetings, as well as a simple 'open door' policy and informal dialogue with mine management, such as after-work barbeques. Perhaps the most common feature of successful initiatives was that they engaged workers in small groups, which in itself may well have facilitated greater communication.

In contrast, most of the low performing mines reported a lack of communication as a major reason why safety programs fail to engage the workforce and disappoint in their results. For example, some complained that new safety initiatives were accompanied by little or no prior consultation with the crew, whilst others were scathing about the unilateral imposition of mini-risk assessments for every shift. This is consistent with Cox *et al* (2006, 1126) who found "that managers who are willing to share information signal to their employees that they can be trusted" (see also Clarke 1999; Firth 2004, 56-61).

A key aspect of good communication at high performing mines was management's willingness to listen to and respond to workers' WHS concerns and to be engaged in a genuine dialogue about them. For example at one high performing mine workers reported that: "we are very happy with the mine manager, [he is] not a bully, is always available, and not reluctant to go underground, asking what problems are you having". Similarly, managers who responded promptly when they expressed safety concerns, scored highly in terms of communication, even if they simply explained *why* no further action would be taken. These findings resonate with Reason's arguments with regard to the importance of developing a 'blame free' culture that encourages workers to openly report errors (Reason 1997). Not coincidentally, such initiatives also served to build trust in management motives and commitment to WHS.

Feedback from management to workers, particularly in the context of reporting on WHS incidents, such as near misses, equipment damage, and hazard identification, was also found to be important to building trust. Interviewees suggested that workers can quickly become disenchanted with the reporting process when they believe that their concerns are not being taken seriously, and/or are ignored. And it is difficult for them to ascertain the extent to which this is occurring in the absence of regular feedback. Yet at some low performing mines responses to reports are simply posted on a notice board, without any face-to-face feedback, and at others feedback is either absent, or *ad hoc* and periodic.

6.5 Trade unions and trust

The evidence from our sample is suggestive of a greater degree of mistrust at heavily unionised mines than at mines where the union presence is subdued or non-existent (four versus three, respectively). But this tentative finding may reflect only the particular history and culture of the coal mining industry where deeply entrenched adversarialism militates against the development of trust between trade unions and management. Such adversarialism, moreover, has been exacerbated by a concerted assault on trade union influence in the industry (most apparent under the Howard government and under Work Choices in particular[26]) that has seriously eroded notions of consultation, negotiation and joint-decision making.

In other contexts and industries there is considerable evidence to suggest that trade unions have often made positive contributions to workplace relations. For example, Deery & Walsh (1999, 28) found that "team building, ad hoc committees, regular meetings between employers and management, joint consultative committees,

[26] See Workplace Relations Amendment Act 2005. We are indebted to an anonymous referee for emphasising this point.

suggestion schemes and grievance procedures [were] significantly more likely to be associated with workplaces that had stable or growing levels of unionization" (see also Deery *et al* 1999; Dedobbeleer *et al* 1990, 1102).

And even in the coal mining sector, our interviews suggested that maintaining a constructive dialogue between companies and unions concerning WHS was far from impossible:

> You can get the cultures to come together – the companies, the unions and the inspectorate – with astounding results. Take air-born dust control ... We got terrific cooperation on this at [the mine site] and solved the issue... We form a dust committee, measure the impact, get feedback from workers, post a notice of the outcomes of the committee, invite all parties to see the result – that process is never confrontational. (Manager)

> We have a pretty close relationship to the workforce, and we work closely with the union officials. .... The communication is a matter of routine. Every Wednesday we meet with union officials... Industrial relations and safety? We have no difficulty keeping them apart. The union does it, they push safety. (Manager)

Nevertheless, we were readily able to identify other mines where management has actively sought to marginalise the relevant trade union, seeking to engage directly with the workforce on safety issues.

The experience of two mines (within the same company), both higher WHS performing mines, illustrates the two divergent approaches. At the first mine, following a temporary closure, management selectively recruited from the prior workforce, excluding those

who were perceived to be 'union troublemakers' and 'hardliners', and also bringing in a substantial number of new workers. This provided an opportunity to create a new workplace culture, to communicate directly with the workforce and to sideline the relevant trade unions:

> We have taken safety away from the union .... If you give power to the workers, then unions become superfluous – it's hard for them to hit you on safety. It is a huge battle to win their hearts and minds ... (Manager)

The second mine also went through a similar process involving selective redundancies that served to undermine "the heavily unionised industrial culture of the past". Subsequently, however, mine management adopted an inclusive relationship with the unions and made a point of engaging them in consultation, notwithstanding that doing so risked invoking the ire of corporate management:

> We got into trouble with [corporate] at one point because they thought we were letting the unions 'manage the pits'. But it is not them running it – it is really just consulting with the unions. It is all about enforcing the EBA with their consultation. That way, they will respect your decisions.

Successful engagement with the trade unions over WHS however, remained a substantial challenge, given the entrenched animosities between the two sides of the industry. To succeed, it requires a substantial change in approach on the part of both protagonists:

> The company has to stop seeing the unions as the monster and attacking it at will, and we have to say, without the company, there are no jobs, no money. We

need to cross over but the ideologies of company executives and our executives to a degree need to be reshaped. (Union inspector)

There was also evidence to suggest that it requires the nurturing of relationships of trust between senior levels of the trade union movement and senior management. For "just as the CEO and senior management of a company are prime influencers in setting the tone of a company's commitment to safety, so union leadership must make very clear the expected approach to safety issues to be taken by union members and officials". This should be easier than it sounds. Leading companies are now committed to high standards of WHS and to going beyond compliance. And trade unions, in a period of particular weakness in which their capacity to demonstrate their relevance on a variety of traditional industrial relations issues is limited, might well see particular benefits in promoting WHS (Barry & Loudoun 2006).

Perhaps what is necessary above all, is for workers to believe that they are "are being treated as resources to be developed rather than commodities to be bought and sold" (Gaertner & Nollen 1989, 987). It will be particularly difficult for companies to convince workers that this is the case when they are being denied security of employment and traditional benefits. In such an environment, convincing workers that their employer is motivated by genuine concern and respect will be an uphill battle.

One further issue, particularly in relationships between trade unions and management, concerns the extent to which the distribution of power impacts on levels of trust between management and workers. Our methodology does not enable us to come to any definitive view on this issue. However, at the very least, it was apparent that in an adversarial industrial relations environment, particularly when the role of unions was under direct threat from the Howard government's 'Work Choices' legislation (which some mining companies had actively pushed for), trust will be particularly difficult to

develop.[27] More broadly, the self-evident imbalance of power in worker-management relations is likely to constrain trust in almost all worker-management interactions, unless worker health and safety can be effectively divorced from the "war-torn terrain of industrial relations" (Carson & Henenberg 1988, 3). Yet in practice it often becomes ensnared within it (Creighton & Gunningham, 1985).

6.6 Conclusion

There is growing evidence that mistrust between workers and management (and between different layers of management) has a corrosive effect on workplace safety initiatives. The findings of our broader research project certainly support this conclusion.

Such findings raise the further question: how might mistrust best be overcome? How, in particular, might trust be nurtured between workers and trade unions on the one hand and mine site and corporate management on the other, and indeed between different levels of management, in such a way as to improve safety outcomes?

The analysis above suggests that a variety of strategies are closely connected to the establishment of trust and in turn with improved safety performance, and that management ignores these strategies at their peril.

Our fieldwork suggested that mines that had achieved high safety outcomes had all or most of a cluster of characteristics that distinguished them from low performing mines and that these characteristics, which had benefits in their own right, were also closely

[27] The definitive work in this area is Fox (1974). We are indebted to an anonymous referee for raising the broader question of whether trust in the health and safety arena can be developed in the absence of contexts that are supportive of its establishment more generally.

associated with the presence of trust. These include corporate and mine site leadership, the capacity to overcome middle management inertia, flatter structures, devolved decision-making and rotating shifts, worker 'buy in' and effective communication, consultation and feedback.

Some factors appear to be so fundamental that it is difficult to conceive of trust developing in their absence. This is certainly the case with senior management and mine management commitment, and with getting middle management 'on board'. But while these may be necessary conditions for the creation of trust, they are insufficient in themselves. After all, as workers commonly pointed out: "managers come and go but we'll still be here". Without effective worker engagement, trust between workers and managers clearly cannot be achieved, and without trust, it seems that high safety performance will also be more difficult to achieve. Accordingly, the other criteria described above all form an important part of the composite picture, many components of which may be mutually reinforcing.

While the mining sector may well be at close to one pole of the trust-mistrust continuum, many of the findings may be capable of generalisation to other industries, particularly those confronting similar adversarial workplace relations.

Finally, it is important to point out that, as with many studies, our methodology enables us to illuminate some areas but in so doing, may inadvertently place others in the shade. It might be for example, that in focusing on issues of trust at mine site level, through the lens of worker and management perceptions, insufficient emphasis has been placed on the structural factors that might undermine trust. These might include the assault on trade union influence generally, and on consultation, negotiation and joint-decision making in particular under *Work Choices*, and the failure to engage workers seriously in developing and implementing WHS management systems,

notwithstanding that these are now a central pillar of the architecture of WHS at corporate and workplace level. Whether or to what extent this is the case will be for others to determine. What we can say with confidence is that trust demonstrably plays an important role in facilitating or (in the case of mistrust) constraining effective preventative safety initiatives and that the strategies identified above for nurturing trust, can and should contribute to improved WHS outcomes.

Chapter 7: Regulation and the role of trust: Reflections from the mining industry

This chapter is a reproduction of an article by Neil Gunningham and Darren Sinclair published in the *Journal of Law and Society* (Volume 36, Issue 2, June, 2009, pages 167-194). The relative contributions were split 50/50 between Sinclair and Gunningham. Sinclair contributed to the fieldwork, the processing of interview material, the background research and literature reviews, the preparation of initial drafts and the preparation and editing of the final draft.

7.1 Introduction

For over two decades, writers on regulation have acknowledged the importance of enforcement in achieving effective regulatory outcomes. Many have focused on the question of 'regulatory style', debating, for example, the relative benefits of an 'advise and persuade' approach that emphasises repair and results as compared to one concerned primarily with enforcement, sanctions and deterrence (Hawkins 1984; Hutter 1993; Kagan 2001) Others have sought to integrate these approaches through strategies such as 'responsive regulation' under which regulators start at the bottom of an enforcement pyramid with a cooperative strategy assuming virtue, but gradually escalate to more a more punitive approach if their expectations are disappointed (Ayres & Braithwaite 1992).

This debate is by now rather long in the tooth and one might reasonably conclude that there is not much more to add. But one issue that is demonstrably important but has

rarely been studied directly is the relationship between trust and effective regulation.[28] While trust may be of questionable importance where interactions between regulator and regulated are infrequent and no long-term relationship can credibly be built, it may play a critical role where interactions are frequent and ongoing. In the latter circumstances, regulatory outcomes usually emerge out of discussion, dialogue, and negotiation, rather than from the unilateral imposition of rules by one party on another. More commonly than not, they are the outcomes of regulatory conversations:

> .... the communicative interactions that occur between all involved in the regulatory 'space' [that] can be the basis of coordinated action [or] important sites of conflict and contestation (Black 2002, 163).

Unsurprisingly, a constructive relationship or conversation usually generates constructive outcomes, and vice versa and this in turn may be substantially influenced by the level of trust between the parties.

This chapter examines the role of trust with regard to WHS regulation in the mining industry in New South Wales, Australia. Hazardous industries such as mining have traditionally been subject to a high degree of regulation and large companies, at least, can expect a substantial number of inspections each year.[29] As we will see, such a high degree of regulatory scrutiny and ongoing interaction places trust at the centre of the relationship between regulator and regulated.

The New South Wales mining industry provides a particularly illuminating case study of the role of trust because it enables a comparison of two very different regulatory styles adopted by the same regulatory agency at different points in time, and the implications

[28] For research on this issue, see Braithwaite 2007; Job 2005; Tyler & Huo 2002.

[29] For example, most sizable mines get visited about every six weeks in New South Wales

of each for trust and regulatory outcomes. Gunningham first studied the behaviour of the New South Wales mining inspectorate in the 1980s, characterising it as 'negotiated non-compliance', a strategy located at the compliance extreme of the compliance-deterrence continuum, verging on regulatory capture (Gunningham 1987, 91). But the inspectorate's approach to enforcement changed dramatically following a mining disaster in 1996, making it possible to engage in a 'before and after' study of the relationship between the regulator and the mining industry, to track (through interviews with current and past stakeholders and documentary evidence), how this shift in enforcement style has impacted on trust, to explore the regulatory consequences of a breakdown of trust, and to examine how it might best be regained.

7.2 Methodology and definitions

The research reported in this chapter is part of a broader ongoing project that is concerned with identifying the causes of mistrust, understanding the ways in which the presence of mistrust may inhibit constructive interactions between stakeholders, and mapping the consequences in terms of WHS outcomes. The particular focus is on relationships between management and workers, between different levels of management, and between managers, workers, and the mines inspectorate. Only the last aspect is examined in this chapter.

Such issues of trust cannot be addressed primarily by surveys or via the use of quantitative data (although both may be valuable for purposes of triangulation). Only by engaging in face-to-face interviews with employers, employees, trade unions, regulators, and others can in-depth understanding be gained of relationships of trust (or mistrust) and their implications for WHS actions and outcomes. Accordingly, the principal data for this study was gained from semi-structured interviews conducted with

a representative sample of corporate and mine management, trade union officials, inspectors and departmental officers, and miners, conducted at 13 mine sites in three companies.

A predetermined range of topics was covered in individual interviews, but as far as possible, they became free-flowing conversations rather than formalised questions and answers since the former was more likely to yield both unexpected insights and candid revelations. It also allowed the interview to be more easily tailored to the circumstances and experiences of each interviewee. Generally, interviews lasted between 40 and 60 minutes. Each interview was conducted in private (for the most part, on site), with interviewees informed in advance that all material arising out of the interviews would be treated confidentially, and used anonymously in any subsequent publications.

A total of 151 mine site interviews have been conducted to date. Each mine site visit occurred over a two-day period in which a representative sample of both staff and workers participated. Typically, approximately twelve interviews were conducted at each mine, spanning senior management, middle management, line management, and workers. Although the precise composition varied from mine to mine, depending on availability, specific examples included the general or operation managers, mine managers, shift or process supervisors, under-mangers, safety officers, engineering managers (mechanical and/or electrical), crew leaders (deputies, team supervisors), and workers and tradesmen (including local check inspectors/site safety representatives). In most cases, the balance of managers to employees was split approximately equally. Representatives from corporate management (including chief executives, corporate safety managers, and operational managers) across the three participating coalmining companies were also interviewed. The format of the interviews was similar to that described above. A total of twelve corporate interviews were conducted.

Beyond mining companies themselves, a sample of 10 inspectors, including mines inspectors and electrical and mechanical engineering inspectors, were interviewed. Discussions were also held with a Chief Mines Inspector and another senior departmental officer. Finally, a sample of eight union officials (district check inspectors/industry safety representatives, industry check inspectors) were also interviewed, and discussions were held with a senior union official.

Qualitative material generated by the interviews was supplemented by reviews of both the domestic and international literature, including organisational trust, safety culture, mine safety, and WHS regulatory and prosecution policy literatures. The three mining companies involved in the project also provided internal policy background and safety statistical information and audit data (on a confidential basis). Consistent with the norms of social science research and of our ethics clearance, we do not identify the companies or any of the individuals who participated in the research.

The 'inspectoral style' of the Mines Inspectorate pre-Gretley was constructed from the evidence provided to a Parliamentary Inquiry on the asbestos mining industry and from secondary sources. The Parliamentary Inquiry (to which the first named author was WHS advisor) took extensive evidence from a wide range of stakeholders and obtained access to a range of confidential, sensitive, and revealing company documents (Commonwealth of Australia 1984). These included communications both internally and between the company and the inspectorate going back a considerable period and provided a graphic record of relationships between the company and the inspectorate. The findings (and an academic analysis) were published (Commonwealth of Australia 1984; Gunningham 1987) and need only be summarised for present purposes.

Efforts were made to triangulate and to use relevant statistical data, although only limited sources of information were available over the period necessary to make a

'before and after' comparison. Importantly, we were able to accurately measure the number of prosecutions both before and after the Gretley disaster, but the Mine Safety Performance Measures database was only developed in the aftermath of Gretley (Department of Primary Industries 2008), as was the Department of Primary Industry's (hereafter the Department) enforcement policy and accompanying measures. Prior to Gretley there was "no computer data bases system which records incidents and can produce sophisticated reports". In any event, in the opinion of one senior regulator, even if previous records had been available they would have been unreliable since "having to record information in the data base itself has changed behaviour and accountability" (R Morrison, personal communication, 11 August, 2008). The difficulties of making 'before and after' statistical comparisons were exacerbated by the fact that there was no specialist enforcement unit prior to Gretley, a lack of audit tools, and insufficient level of training (particularly investigation training) of mines inspectors (R Morrison, personal communication, 11 August, 2008). On the other hand, the fact that all these developments took place in the aftermath of Gretley, in itself, provides evidence of the impact of that disaster, and the comparison of the prosecutions conducted before and after Gretley also tells a stark story.

Before proceeding further, it is also important to clarify how 'trust' is defined for present purposes. Unfortunately, notwithstanding the importance of this issue to improving WHS performance, it has been the subject of a paucity of past research and only "a limited number of researchers have examined the concept within the realms of safety research" (Cox *et al* 2004; Risk Analysis 2006). Those who have examined it would readily concede that "the exact nature of trust and its role in shaping organizational safety is poorly understood" (Conchie *et al* 2006, 1097) and that "the formation of trust within workplace relationships is complex and elusive" (Zeffane & Cornell 2003, 4). Most definitions also recognise that in the WHS context, as elsewhere, trust is both complex and has multiple dimensions (Risk Analysis 2006).

For present purposes (and in the absence of any widely accepted definition) it is helpful to emphasise four aspects of the concept that have proved particularly valuable in organisational and inter-organisational contexts. First, we define trust in terms of good faith commitments, or more specifically "an expectancy held by an individual or group that the *word, promise, verbal or written statement of another individual or group can be relied upon*" (Rotter 1967, 651). This we emphasise because relationships between the inspectorate and regulated companies involve 'regulatory conversations' and negotiation, and constructive conversations and negotiations can only take place where there is trust with regard to promises and statements made.

Second, and, related to the above is that the person or organisation is "honest in whatever negotiations preceded such [good faith] commitments" (Cummings & Bromiley 1996, 302). This is perhaps the most conventional understanding of trust and is also central to the effectiveness of negotiations, particularly at industry level. More broadly, whether a party 'walks the talk' is crucial in shaping its perceptions of the bona fides of the other.

Third, and closely related to the first two definitions is the concept of *vulnerability*, or more precisely "a willingness to accept vulnerability based upon having positive expectations about other people's intentions and behaviours in situations which are interdependent and/or risky" (Clegg *et al* 2002).[30] Not only do relationships between the inspectorate and regulated companies involve interactions and interdependencies, but the companies are highly vulnerable if they disclose information (for example, about incidents, injuries or breaches of regulation), and are only likely to do so if they trust the

[30] Similarly, Mayer *et al* (1995, 709) have proposed that, in an organisational context, trust is "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor and control that other party".

inspectorate not to take advantage of that disclosure to take punitive action. Put differently, "trust enables people to take risks" (McAllister 1995, 25) – because they are confident that others will not take advantage of them.

Finally, as international evidence-based research has found, "people who feel they have been treated fairly will be more likely to trust that organization and be more inclined to accept its decisions and follow its directions" (Murphy 2004, 199). As we will see, a perceived lack of fairness lies at the heart of the industry's grievance that substantial penalties are now being imposed in the absence of fault. As we will see, when inspectors and industry respondents spoke in terms of mistrust, it was in terms of one (and usually, more) of the senses described above.

7.3 Regulatory style, prosecution and the Gretley disaster

In 1996 four miners at Gretley colliery punched into old and flooded mine workings. There was an inrush of water and they were drowned. An inquiry into the incident by former Justice James Staunton made recommendations concerning prosecution and charges were subsequently brought both against the two former operating companies and against a number of individuals (Hopkins 2006b). Commissioner Justice Patricia Staunton subsequently found that the corporate defendants had failed to ensure the health, safety and welfare of their employees, and two former mine general managers and a mine surveyor were "deemed to have committed the same offences as the corporations, having failed to satisfy the onus placed upon them" to exercise due diligence to protect workers (Latham & Locke 1991). Although the defendants argued that they were entitled to rely on old plans of the old workings supplied by the relevant government agency, Justice Staunton found that this:

> .... does not excuse the defendants from their independent statutory obligation .... to ensure a safe system of work. Nor does it relieve the defendants of their obligation to satisfy themselves by way of their own research as to the accuracy of .... [the Dept of Minerals and Resources plans which] [o]n any considered view .... were seriously deficient in purporting to depict old coal workings in a way that one could be confident of their accuracy" (Geller 2004, 806).

On appeal, the conviction against the two companies was affirmed, as was that against the mine manager and former mine manager. The conviction of the surveyor was overturned on the basis that he was not "concerned in the management" of either company (Sentis 2010).

The decision in the Gretley case and the subsequent ramifications of the disaster itself sent shock waves through the New South Wales mining industry. Not only were individuals as well as companies successfully prosecuted, but political pressure resulted in the inspectorate adopting a radically different approach to enforcement. To appreciate what a dramatic change of inspectoral policy was involved, it is necessary to summarise the inspectorate's relationship with the mining industry in previous decades, before contrasting it with the post-Gretley approach.

Before Gretley, the mines inspectorate's approach to the mining companies it was responsible for regulating had been conciliatory and cooperative and it had not engaged in prosecution to any significant extent. For example, in the seven years before that disaster, there had been 33 deaths in New South Wales coal mines without a single resulting prosecution (Dejoy 2005). And the very few prosecutions that had taken place in the mining industry in other circumstances (relating to metalliferous mines) had involved low penalties, were poorly publicised, and failed to send any

significant deterrent signal (Flin *et al* 2000).[31] This led to a general perception, particularly within the mining trade unions, that prosecution was a 'dead duck' (Falbruch & Wilpert 1999).

This seems an entirely reasonable conclusion, for the inspectorate had a history of resisting prosecution even in the most extreme circumstances and even when it was heavily criticised for its failures in this regard (Commonwealth of Australia 1984). For example, Gunningham's study of the inspectorate in the 1980s (focusing on the asbestos mine at Baryulgil, where multiple deaths resulted from asbestos-related disease) documented how it was not only loath to prosecute, even when faced with evidence of gross breaches of the asbestos regulations, but routinely warned mine management of prospective inspections, thereby enabling them to clean up and disguise many of the worst regulatory breaches. That analysis concluded that:

> What the Mines Inspectorate provided at Baryulgil .... fell far short of any .... optimum. Its approach might best be classified as . . . a complete withdrawal from enforcement activity, a toothless, passive and acquiescent approach which, however attractive to the regulatory agency and to the regulated industry, has tragic consequences for those whom the legislation is ostensibly intended to protect (Gunningham 1987, 91).

Under this extreme version of an "advise and persuade" approach, trust was apparently rarely at issue in relations between the inspectorate and mine management. There is nothing to suggest, either from official documents of this earlier era or from interviews with inspectors or mine management who worked in the industry during the 1990s, that trust was ever at risk. On the contrary, the inspectorate's exceptionally

[31] In the absence of any available statistics relating to this period, information was gleaned primarily from a former Chief Inspector responsible for prosecution decisions in those years.

conciliatory and consultative approach understandably met with considerable approval and support from the mining companies themselves. Relations between the inspectorate and the mining companies were commonly described as "close" and indeed some commentators had suggested that at times they were so close as to amount to regulatory capture (Gunningham 1987, 91).

But following the Inquiry into the Gretley disaster, the culture of advise and persuade was substantially broken. As indicated above, the Gretley Inquiry called for the 'timely prosecution' of mining companies and senior officials, and two mine managers, a surveyor, and a number of 'undermanagers' were subsequently prosecuted. Moreover, public sympathy for the miners coupled with political pressure (especially from the main mining union, the CFMEU)[32] on a receptive Labor government, prompted the establishment of an independent Investigations Unit comprised primarily of former police. This unit was much more inclined to treat breaches of regulation as criminal action warranting prosecution than previous in-house decision makers. And it was made clear to the inspectorate that it too was expected to become tough and prosecutorial and to adopt what is widely described as a 'muscular' approach to its regulatory role.

It soon became apparent to the mining industry that the Gretley prosecutions were not a 'one off' and that prosecution of individual statutory duty holders was to become commonplace, at least in the event of death or serious injury. Another mine manager was successfully prosecuted following a subsequent fatality at Awaba (*Morrison v Powercoal Pty Ltd* [2004] NSWIRComm 297) this case was followed by a number of

[32] The CFMEU, had close links with the state government and that some key CFMEU officials had both personal and political reasons for wanting the government to take a tough stance against not only the individual company involved in the Gretley disasters, and its managers, but also the New South Wales coal industry more generally.

others involving death or serious injury (and a handful that did not) (see, for example, *Morrison v Ross*; *Morrison v Glennies Creek Coal Management Pty Ltd* [2006] NSWIRComm 205). As at August 2008 there had been 33 successful prosecutions since the introduction of the DPI's Enforcement Policy in 1999 (Department of Primary Industries 2008), as compared to none in the seven years preceding Gretley and less than a handful in the decade before that.

That these prosecutions are the external manifestation of a new enforcement style is confirmed not only by the stark contrast between the numbers of pre and post-Gretley prosecutions, by the flurry of other measures put in place in the wake of Gretley (the new Investigations Unit, Enforcement Policy, incident recording system, investigation training, and audit tools), but also by our interviews with the inspectorate. Inspectors interviewed were unanimous that Gretley had generated pressures for increased prosecution both of companies and of mine managers. According to one:

> Gretley, and the subsequent inquiry, was the catalyst to get things moving in the Department. The changes that were occurring, increasing litigation, were speeded up. This led to more prosecutions.

Another inspector reported:

> .... there is now a recognition that you carry out investigations with a more formal, professional approach – although it varies from inspector to inspector, the end result seems to be the same .... we have gone down the road of prosecution.

Others also talked of an increasing pressure to take a tough stance on safety, and to demonstrate this through a greater willingness to stop production:

> .... decisions are made about whether we need to stop the operation. This is a very serious step, but we are now more willing to do it. It is a fairly regular event.

Crucially (from the perspective of the mining industry) prosecutions have taken place not just in circumstances where there was recklessness or intent, but also where there was no more than negligence to the civil standard - a standard that according to industry associations and some independent observers is now an exceptionally demanding one, divorced from reasonable expectations (Australian Chamber of Commerce and Industry 2005, 7).

A pivotal role in the post-Gretley world has been played by the Investigations Unit that was widely regarded, both by our inspectoral and mining company respondents, as having adopted a far more adversarial approach than its predecessor that had in itself soured its relationship with the mining companies. Some pointed out that the investigation unit was populated by former police officers, with a strong cultural preference for prosecution. Indeed one inspector was not alone in suggesting that there might be "political pressure for mine managers to be hung" and that it was the Investigations Unit's role to ensure that this objective was achieved.

Another pointed out that this "makes it very difficult to build a relationship with the mines following an investigation – it is a major source of mistrust" and "it is not the most comfortable relationship with the investigation unit – they are too ready to jump on individuals, and not look at systems".[33] The implications for trust of the post Gretley regulatory style are explored below.

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[33] Yet some inspectors highlighted that having a separate investigations unit can be useful to inspectors when mine sites do not respond to their urgings: "at one mine, there was a series of events of similar ilk. Despite my patience, there was reluctance by the company to address this. So I brought in the investigations unit – I didn't even do my own investigation".

7.4 Mistrust and its consequences

It is clear that Gretley was the catalyst for a dramatic shift in regulatory style away from the previous and long-favoured advise and persuade approach to a much more muscular and adversarial approach. This new approach to enforcement had a profound impact on the relationship between the inspectorate and the industry and exacerbated existing mistrust of the Department by senior corporate management and of corporate management by many inspectors. That mistrust is now so deep that the 2005 New South Wales Mine Safety Review, based on broad ranging stakeholder submissions and its own investigations, concluded it was a major contributor to the breakdown in cooperation between mining companies, unions, and the Mines Inspectorate in their collective attempts to improve WHS processes (Wran & McClelland 2005). A similar conclusion was reached by the New South Wales Minerals Council, which maintains that a lack of trust remains the most significant impediment to improving the safety climate within the mining industry (New South Wales Minerals Council 2005).

Things have not always been thus. Mine managers and those who have most direct contact with the inspectorate commonly indicate that relations had once been cordial and constructive but that now they are now strained and distant. Indeed, mine operators and industry associations widely report that trust between themselves and the mining inspectorate is at an all-time low (New South Wales Minerals Council 2005).

This dramatic change in relations between the inspectorate and the mining industry is attributed largely to a widespread perception within the industry that, subsequent to the Gretley disaster, not only has the inspectorate conducted itself in an adversarial fashion with an emphasis on prosecution but those prosecutions are taking place in circumstances where there is no genuine blameworthiness. That is, there is a

widespread and deeply held view within the mining industry that even managers whom are conscientious as to their WHS responsibilities are vulnerable to prosecution. As one manager, echoing the sentiments of many others, told us:

> The nature of accident investigation .... it's almost automatic that somebody's guilty, because management's in control of the system. And it's not a matter of just pure reckless, and deal with that, fair enough, but it's when very innocent, very hardworking and systematic people get caught out for whatever reason. So that breeds big mistrust.

The fact that current enforcement policy is viewed as unfair by mining industry employers, managers, and other principal duty holders has, in itself, resulted in a breakdown of trust between the inspectorate and industry. Here, mistrust is intimately connected to a sense of unfairness and injustice (coupled with an increased sense of vulnerability to prosecution). Irrespective of whether this perception of unfairness is an objectively reasonable one or a substantial over-reaction to the inspectorate's prosecution policy – and there are many, including not just trade unionists but also academics who would take the latter view (Foster 2006a; 2006b) – it is a sociological truism that what is perceived to be real is real in its consequences.

This perception of unfairness is closely connected with the fact that prosecutions for WHS offences, if not strict liability (as in some jurisdictions they are) can be undertaken at a relatively low point in the culpability hierarchy (a very low threshold of negligence). In New South Wales prior to Gretley, this was not an issue because prosecutions were so rare as to be virtually unheard of. But in jurisdictions where prosecutions have been more common, they have tended to attract only small penalties (and these usually against corporations not individuals). Such penalties are seen as appropriate in so far as they are "indicative of the inherent difficulty associated with assessing the

appropriate penalty .... where conviction is *not the result of individual criminal culpability in the normally understood sense*" (McCallum *et al* 2004, 10). That is, low penalties were the quid pro quo for imposing liability in circumstances where there was little evidence of culpability. However, such low penalties also send out the unfortunate signal that breaches of WHS law are 'not really criminal' and, for this reason, understandably aroused the ire of trade unions and some social reformers (Carson & Johnstone 1990). But they did not cause any particular angst to employers or managers, any more that did the effectively non-prosecution policy of the pre-Gretley period.

However, in New South Wales, as we have seen, political pressure for increased levels of prosecution and higher penalties, coupled with public sympathy for the Gretley miners and their families, has resulted in substantial penalties being imposed both on the operators and owners and on an individual manager, *but without insisting on a comparable degree of culpability*, and this lies at the heart of mining industries current grievances, and the sense of injustice and unfairness which, almost without exception we found amongst members of management we interviewed.

However, although the new prosecutions policy has been the principal contributor to mistrust between the inspectorate and the mining industry it is not the only such cause. Senior company representatives also pointed to the role of the Department within which the inspectorate is located, which they said had failed to honour commitments made in consultations over the implementation of new regulations. For example, companies believed that the Department gave assurances that the use of non-flame-proof diesel would be approved, only to be informed subsequently that was not the case. Further examples of such purportedly misleading behaviour, where the Department had reportedly agreed (albeit informally) to changes in the regulations, only for them to subsequently renege, include allowing the use of aluminium, and

changing the definition of the hazardous zone from 100m from the entrance to be much closer to the mine site, notwithstanding that New South Wales mines have low gas levels. Similarly, some of the regional inspectors were also perceived to have compromised their relationship with mining companies in a variety of ways, such as by circulating official letters including statements previously made to them by mine site managers in private conversations. Thus there is a perception that commitments have not been made in good faith and perhaps that negotiations preceding such commitments were not conducted honestly. Either or both of these perceptions can serve to threaten or destroy trust.

The mistrust of the inspectorate by senior corporate management is mirrored by the inspectorate's mistrust of senior management, who were particularly singled out by a number of our inspectoral respondents. According to one: "I wouldn't trust them as far as you could kick them. They have deliberately down-staffed mine sites" while another suggested that "some groups are making huge profits, and are covering up flaws". Most inspectors had little faith in corporate WHS initiatives and most expressed scepticism at the value and accuracy of corporate standards, particularly internal auditing. Some suggested that they not infrequently found basic breaches of the regulations at mines that have been recently been given a 'clean bill of health' by corporate audits. Further, several inspectors suggested that the audits themselves were designed to look better than the reality on the ground and one claimed that reported improvements are 'self-delusional'. Others suggested that that some companies were not sincere about their stated commitments, as evidenced by their failure to invest more resources in WHS. Here, mistrust is primarily a product of perceptions that senior management does not "walk the talk" and make commitments in good faith. However, not all of corporate management is seen in such a negative light, and some companies were acknowledged to "have fairly good attitudes, and try to do the right thing".

Finally, an inconsistency in enforcement style between different categories of inspectors (namely, electrical and mechanical engineering on the one hand, and mines inspectors on the other) has also served to exacerbate the current climate of mistrust. As a result of all these factors, the relationship between the inspectorate and the mining companies was described by one senior corporate officer as having reached 'rock bottom' – a view endorsed by many others (see, for example, Wran & McClelland 2005).

As to the consequences of mistrust in terms of regulatory effectiveness, there is unfortunately, no credible statistical evidence. Certainly there is no correlation between an increase in prosecution and improved WHS performance, but the new policy has been in place for only a limited period and it is plausible that there would be a time lag before any positive relationship became apparent (Galvin 2005). But in any event, as numerous commentators and reports have pointed out, neither LTIFR, nor the various workers compensation statistics, provide more than the crudest indication of actual injury rates and, even if they did, this might not be a helpful predictor of the likelihood of low-frequency high-consequence events (Hopkins 1995). And while the number of fatalities can be relied upon as a much more accurate figure, the numbers from year to year are too low to be relied upon in statistical terms, and for reasons indicated earlier, broader comparative data is not available.

Turning to soft data, however, the accounts of the various stakeholders are fairly consistent as to the adverse consequences of mistrust. Specifically, there is a consensus view amongst corporate managers, and a majority view at mine sites visited, and amongst inspectors interviewed for this study, that a breakdown of trust has resulted in a dysfunctional relationship between the inspectorate and the industry and that this is seriously compromising the achievement of better safety outcomes. Our respondents suggested that there are a variety of ways in which this appears to be

playing out. In the following account we attempt to connect our respondents' descriptions with what is known from the broader regulatory literature. We also note that our findings in this regard are entirely consistent with those of the New South Wales Mine Safety Review (Wran & McClelland 2005), although we have been able to go into substantially more depth than that review in exploring the consequences of mistrust.

An effective inspection and enforcement policy involves a constructive dialogue between duty holders and inspectors. The meaning of compliance is often ambiguous and there is no single accepted understanding of how regulatory requirements should be interpreted and applied. Such dialogue and negotiation is especially important at the bottom of the regulatory 'enforcement pyramid' where the regulator is appealing to the better nature of the regulated (Ayres & Braithwaite 1992). Trust will be particularly important to such negotiation and research suggests that compliance levels are likely to be higher where regulators treated the regulated with trust (Braithwaite & Makkai 1994).[34] But where relations between regulator and regulated have largely broken down and mistrust is rife, then the sort of constructive dialogue and repeated, reciprocal interactions that generate shared expectations about compliance and improved compliance outcomes, are no longer possible (Braithwaite 2002; May 2005). As Braithwaite (1993, 80) has argued:

> We have a greater chance of efficient and effective regulation if we have a regulatory culture where [regulators and regulated] actually listen to each other and respect the concerns of the other; we have a lesser chance of cost-effective regulation if these two constituencies see their mission as to destroy the other, taking it in turns to win battles without either side winning the war.

[34] Braithwaite & Makkai (1994) suggested that this was because if those who are being regulated are treated as worthy of trust they will repay that trust with voluntary compliance.

In the case of the mining industry, Braithwaite's assertion is amply supported in a variety of ways. First, the two-way flow of information that is so important to effective communication between the inspectorate and the industry has almost completely broken down. For example one corporate submission to 2005 Mine Safety Review asserted that:

> .... lessons learned from fatalities in NSW are delayed for in excess of 2 years due to protracted prosecution ..... The litigants remain 'tight-lipped' throughout the prosecution process so little information disseminates about causal factors and prevention (Xstrata 2005, 50).

Numerous industry respondents and inspectors made precisely the same point, contrasting the relatively open and honest exchanges that took place between inspectors and mine management pre-Gretley, in which information was freely exchanged, and documentation provided voluntarily, with the current reluctance of mine management to share information and unwillingness to consult regulators for fear that their disclosures will be used against them. For example, according to one inspector:

> It just makes your job harder you won't get to the true story. I say to them, just tell us the truth so we can fix it. Little bit, bit by bit, you can try to work it out, but it takes longer. And sometimes, you might not get the right outcomes because you don't get to the root cause. Years ago, they used to be much more open.

Similarly, another told us that:

> Earlier, mines were open and honest with information, responded to questions and provided documentation. Now, after prosecutions of individuals, they are

> guarded, and tentative to let go of information, even if the Investigation Unit is not involved .... Managers say they will not talk to you without a lawyer present. This happens 10-20 per cent of the time.

Crucially, both management and inspectors are in agreement that the willingness of mines to provide a free and frank flow of information to the inspectorate has been fundamentally undermined.

A second and related consequence was that fear of prosecution may also inhibit in-firm accident investigation, prevention and remedial action. Inspectors reported that this shift in approach has impacted substantially on their relationship with mine managers: "Mostly, managers are just guarded and frightened of where it is going to go. They don't trust us because that's where it could go with prosecutions". As one manager reluctantly noted "you are concerned about how much you do tell the Department . . . even though my attitude is a fairly open attitude . . . and I don't like keeping secrets". This attitude is reflected at the corporate level, where one corporate executive, voicing a common view, acknowledged "that the company is reluctant to engage in full disclosure". Managers had reportedly become "more cautious and defensive" and this in turn had diminished their willingness to cooperate and learn from past experience.

Third, for companies who perceive themselves as willing to comply voluntarily, or to go 'beyond compliance', the fear of 'unjust' prosecution may also have a number of other unintended consequences, for example, a reluctance to report incidents:

> In the past .... when someone was really seriously hurt, [they] .... would come in and they'd do a reasonably thorough review. Nowdays, they're actually investigating incidents that .... haven't had a serious outcome, which is negative in itself, because it may stop the free reporting of those [incidents].

This resonates with the point that has been made by Reason (1997, 195) that developing a 'reporting culture' (to gather the right kinds of data) is an important step in establishing a safety culture but the former relies heavily upon the willingness of the workforce and managers to report incidents and near-misses and on how the issues of blame and punishment are handled. When members of management fear that any reporting of incidents and near-misses may be punished, then this will have a chilling effect on accident and incident investigation and reporting, and a 'no-blame' culture will be seriously threatened.[35]

This is also consistent with evidence from other areas of regulation that suggests that where managers who are making good-faith attempts to comply fear that they may nevertheless be vulnerable to enforcement action, they become less cooperative with regulators (Shapiro & Rabinowitz 1997; Shapiro 1987). Lacking trust in the regulator's even-handedness, they refuse to do more than minimally comply, and relinquish all previous efforts to go beyond compliance. They may even, as Bardach & Kagan (1982) suggest, develop a 'culture of regulatory resistance' where more effort is made to challenge the regulator than it is to improve WHS. Indeed, Haines (1997, 219-220) argues that there is a risk of creating 'chronically mistrustful corporations' and that once this mistrust has become embedded in the corporate psyche as a result of the threat of prosecution it may become extremely difficult to rebuild trust. Like Haines, we found that such companies may redirect their effort to reducing their vulnerability to scrutiny and potential prosecution, giving priority to protecting themselves from the risk of possible prosecution rather than continuous improvement of WHS outcomes. Routinely

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[35] Compare for example the extremely poor performance of the criminal justice system as it functions in the United States of America, with the impressive success of airline safety regulation. As John Braithwaite has pointed out, the criminal justice institutions detract from prevention by focusing on punishment and deterrence while the air safety institutions seek to foster prevention through a 'no-blame philosophy which is committed to correcting mistakes as opposed to punishing failings' (Braithwaite 2005, 283-306; Wilf-Miron *et al* 2003, 35-9).

involving corporate lawyers from the very earliest stage of an accident investigation – a practice that had been highly unusual prior to Gretley – was the most obvious manifestation among our corporate respondents of this new defensive approach. Fourth, individual prosecutions against statutory office holders may make it difficult to attract well-qualified applicants to such positions and reduce the skills base of the industry. According to the Mine Managers Association of Australia:

> The approach taken by the Department to prosecution and the impossibly high standard set by the application of the duty of care is negatively impacting on safety in the coal industry. This is causing an exodus of the more experienced and capable coal mine manager, together with other supervisory personnel from statutory positions (see Wran & McClelland 2005, Appendix 6, 45).

Several corporate managers support this view in reporting increasing difficulty in recruiting staff to fill statutory positions. They were able to point to several specific instances where individuals had declined such appointments, including both new graduate recruits (scared off by a perceived vulnerability of statutory positions in the industry), and more seasoned staff, unwilling to 'put themselves in the firing line'.

Finally, the new prosecution policy has substantially changed the behavior of many inspectors who for the most part have now adopted a defensive, risk-averse strategy whereby they no longer provide advice for fear that this advice might be used as a defence by mining companies in future prosecutions. Thus many of the inspectors we interviewed were adamant that "they are not there to run the mines" and they are "not allowed to make recommendations" (a marked contrast to their former "advise and persuade" mode of operation). As one inspector pointed out: "you have to be very clear and concise about your instructions". Mine managers expressed similar views about the ability of inspectors to impart practical advice:

> You've only got to look these days mate at the way the inspector operates. They just basically take a hands-off approach now. They don't offer you any advice because they're fearful that you'll make a note and say yeah so and so told me to do this. So there's this huge dynamic there of mistrust right from the top and it filters all the way down.

The prosecutorial approach has also changed other inspectoral practices. For example, with the increasing likelihood of prosecution, any interaction between the inspectorate and a mine site might subsequently result in formal enforcement action with the result that documentation has became much more important and this also constraints interactions between the parties. Thus formal notices are now preferred because "a verbal instruction is only as good as the paper it is written on" but this in turn is hardly conducive to an open exploration of what might have gone wrong and why.

It may also be that a prosecution policy that is perceived to be fundamentally unfair is undermining the general belief in the legitimacy of regulatory requirements. Certainly there is evidence from other studies that if regulated enterprises mistrust the regulator and believe that regulations are being used strategically, with regard to purposes and values with which they fundamentally disagree, then they are far less motivated to comply with these requirements (Tyler 1990; Scholz & Lubell 1998).

As Hawkins & Hutter (1993, 204) point out, many companies comply with the law not for instrumental reasons but rather:

> .... because they feel they should comply as a matter of moral principle (thus it is morally right that you do not, say, jeopardise your employees' health and safety);

or they comply in recognition of the legitimacy of the law (it is not right to violate a law .... whether or not you agree with that law).

For such companies where regulation is perceived as unreasonable, or fundamentally unfair, then the law loses its legitimacy and regulated enterprises lose their moral commitment to compliance (Tyler & Degoey 1995, 53-92). This indeed can lead to a reciprocal adversarial legal posture on the part of the industry. In the New South Wales case, this appears to be already happening. At the time of writing, the industry is actively contemplating taking legal action against the inspectorate with regard to the use of non-flame-proof diesel in underground mines and has already launched an unsuccessful constitutional challenge to the criminal law jurisdiction of the New South Wales Industrial Commission (*Powercoal Pty Ltd v Industrial Relations Commission of NSW* (2005) 156 A Crim R 269).

7.5 Where next?

Given the important role of trust in nurturing compliance, and the damaging consequences of the sort of mistrust that currently characterises relationships between the regulator and regulated in New South Wales, what should be done? How in particular might it be possible to reduce levels of mistrust and so achieve more effective compliance? How might it be possible to shift from an atmosphere of fear to one of mutual respect and partnership?

The international evidence-based research suggests that "the key to creating trust is to act in ways that citizens will experience to be fair" (Murphy 2004, 189; see also Lind & Tyler 1988; Tyler & Degoey 1995) and as indicated earlier, those who perceive that they have been treated fairly are more likely not only to trust the regulator but also to

accept its decisions and comply with its requirements. To achieve a perception of fairness would require a much more nuanced prosecution policy. Currently, prosecution against those who neither intended harm nor were reckless in their behaviour (epitomised in the Gretley decision) is widely perceived to be unjust, and this has caused the law to lose its legitimacy in the eyes of duty-holders. It has also generated a defensiveness on their part that results in an unwillingness to examine the root causes of WHS incidents for fear of being prosecuted.

In the case of the mining industry, a more balanced approach requires that, rather than prosecuting routinely in the case of fatalities or serious injuries (irrespective of the level of culpability) prosecution only takes place against genuine 'bad apples' that are widely regarded as deserving of prosecution. This approach would enable the inspectorate to maintain a constructive dialogue with the majority of employers and achieve the large majority of their compliance goals without resort to prosecution and without alienating otherwise willing 'volunteers' and generating mistrust. Put differently, what is needed is to steer a middle path that neither rejects prosecution as an important deterrent at the top of the 'Braithwaitian' enforcement pyramid, nor uses it in circumstances where it is likely to do more harm than good. Achieving such a balanced approach will not be easy. On the one hand, the evidence suggests that the sort of extreme 'advise and persuade' policy that the New South Wales inspectorate adopted pre-Gretley will fail to send appropriate deterrent signals to the recalcitrant. On the other hand, the sort of zealous prosecution policy that New South Wales has subsequently applied to fatalities demonstrably will also fail in preventative terms.

Elsewhere, Gunningham (2007, Chapter 8) has proposed an alternative approach to prosecution that: (i) focuses on risk rather than consequences; (ii) takes previous track record seriously (and makes escalation up an enforcement pyramid credible); and (iii) emphasises that prosecution should not take place in the absence of culpability

(Gunningham 2007, Chapter 8). For these purposes, it has been argued that culpability should mean a substantial falling short of reasonable expectations (a form of negligence), recklessness or intent. The actual decision to prosecute, it has been suggested, should be based on a calculus that takes account of all three of the above factors. This approach would ensure that prosecution takes place even where no injury results (exposure to risk, irrespective of consequences, being at the heart of WHS regulation). It would also enable the inspectorate to target failures of risk management, and to focus on general patterns of failure to attend to risk despite warnings, while also reserving the right to take action in the absence of poor past history if there was high culpability (intent or recklessness) coupled with a high degree of risk/potential for extreme consequences. Such an approach would do much to restore legitimacy to the prosecution process, while ensuring that serious breaches of WHS legislation, and those who did not give serious attention to complying with WHS law, were firmly dealt with.

This approach does not imply a need for multiple prosecutions, because the literature suggests that a distinction must be made between the actual chances of detection and punishment, and the perceptions thereof. What is important is the belief that duty holders have of the likelihood and degree of punishment, even if, in actual fact, that belief is overstated (Simpson 2002). Even a handful of prosecutions in the course of a year can achieve this effect provided the 'right' cases are chosen. That handful of prosecutions will, however, play a crucially important role at the tip of an enforcement pyramid, for without them less coercive policies at the lower levels of the pyramid lose their credibility.

Yet despite the difficulties of achieving such a balanced approach, there is evidence that some inspectors (albeit a minority), relying far more on past experience and their own intuition than on regulatory theory, are already practicing a form of responsive

regulation that approximates what is recommended above. And they are doing so, notwithstanding the heavy-handed edicts of their department to take a tough enforcement stance. Moreover, in the minority of cases where we identified this approach there was evidence that is was working well and that levels of trust at mine site level (that is, between the inspector and mine management) were relatively high. Thus we found a minority of mines that were remarkably positive in their description of dealings with the inspectorate, and who reported high levels of trust and cooperation in circumstances where the inspectors rejected a heavy handed enforcement role while at the same time being tough when they needed to be:

> The inspectorate? I have had very good relations with them. Despite changing expectations on inspectors, the one we have is very good. They are experienced and capable people who want to coach and counsel, and really only pull out the big guns if you are recalcitrant.

Inspectors in this category were not enthusiastic about their new role as 'police', and resisted performing as such:

> I see myself as helping with the direction and networking information, to make sure that people comply, but in a very practical way. [I] have developed a clear understanding over a very long period.

Another told us:

> I'm probably more tolerant than other inspectors. I like to offer advice. I might support sites to get more resources by giving them [management] a rev-up.

A third described himself as still "80 per cent advisor and 20 per cent policeman". For inspectors in this minority group, the consensus view is that if mines are 'up front' with any transgressions, and are willing to work constructively with the inspectorate towards a solution, then they, as inspectors, are far less likely to resort to a punitive approach:

> My approach depends on how they respond. If they are cooperative, and want to move forward, I'll probably just issue an advice notice. If we have talked it through and agreed, we can fix it up and move on. If they can't or won't see the issues, then I will give them a directive. I generally get cooperation from senior mine management – not too many are blockers, but there are exceptions to the rule.

Some inspectors in this group took the view that the best way of overcoming mistrust is to be 'straight' with the mine sites, for example: "I flag it in advance if I'm looking at a serious breach". It is asserted that this approach is mostly likely to yield a reciprocal response although not all will do so".

In short, a minority of inspectors described conducting inspections in a manner not dissimilar to that advocated by responsive regulation (Ayers & Braithwaite 1992), where they began by advice and persuasion and only invoked prosecution when a softer approach proved unsuccessful. Although they acknowledged that many of their peers had a greater preference for prosecution, clearly this was not the case across the board. And the large majority of engineering inspectors in particular, seemed to have retained the trust of their counterparts in industry and to have maintained a constructive dialogue with them.[36] Indeed, it seemed that the greater the relational

[36] Engineering inspectors, by and large, do not have much to do with mine managers, and mainly interact with their engineering counterparts, electrical or mechanical, at the mine-site level. They have even less to do with corporate managers. As such, engineering inspectors,

distance between the parties, the greater the level of mistrust was likely to be. As we have seen, inspectors and senior management were extremely critical of each other, but it was not uncommon to find a more constructive relationship between mine managers and the inspector who were in regular and direct contact.

However, in New South Wales, as we have seen, political pressure for increased levels of prosecution and higher penalties has resulted in substantial penalties being imposed both on the operators and owners and on an individual manager, *but without insisting on a comparable degree of culpability*, and this lies at the heart of the mining industry's current grievances.

Finally, is there a better way to address the complex issue of the culpability than to prosecute even in cases of low culpability and either impose relatively trivial penalties or impose substantial penalties that are perceived to be grossly unfair? Arguably, a way around these difficulties is to provide for a special offence (for example, industrial manslaughter) in circumstances where there are "moral, symbolic and retributive [reasons for showing] society's intolerance for organisational behaviour causing workplace deaths" (Gunningham & Johnstone 1999, 212), or which can be justified in preventative terms as being so heinous that the full weight of the 'real' criminal law can be applied to them. But such an additional tier of liability for offences that are 'really

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particularly those with extensive experience, believe they have built up a good rapport with mine-site engineers over time. They also claim that dealing with mine-site engineers is easier: 'their role is to comply with regulations and to work safely. They are more willing to talk openly. They don't mind sharing their experiences. This exposes their vulnerabilities — they wouldn't do it if they didn't trust me'. Engineering inspectors also point out that they have been able to nurture trust through open meetings, usually quarterly, with representatives from each mine in the district. Not only is attendance high (reportedly, in the order of 95–100 per cent), but the meetings are described as being 'frank' and productive. It is made clear to participants that they are free to raise issues without fear of prosecution and for this reason no minutes are taken at these meetings.

criminal' would imply a requisite mental element of intent or recklessness coupled with serious consequences: severe injury or death. A number of jurisdictions have been exploring this general approach in recent years, particularly with regard to the introduction of a new offence of 'industrial manslaughter' (Hall *et al* 2004; Foster 2006, 79).

Consistent with this general approach, New South Wales enacted the Occupational Health and Safety Amendment (Workplace Deaths) Act 2005. This legislation amended the WHS Act 2000 (NSW), the Occupational Health and Safety Regulation 2001 (NSW), and the Criminal Appeal Act 1912 to include a new offence with a maximum penalty of $1.6 million for corporations and $165,000 and/or imprisonment of 5 years for individuals, where a breach of safety legislation results in death at a workplace. According to the Minister, this targets the small minority of employers (so called 'rogue employers') who demonstrate little or no regard for the safety of their workers and are reckless or intentional in their behaviour (Foster 2006, 107-110). The introduction of this legislation however, does not (at least in principle) diminish the role of prosecution under the WHS Act with regard to reckless conduct in the absence of death (or injury).

7.6 The political dimension

While adopting the much more modulated and balanced prosecution policy advocated above would be a considerable step forward, it will solve only part of the problem. Much of the blame for the current conflict between the inspectorate and the industry lies not with the inspectorate but with trade union and employer groups who have sought to reshape government enforcement policies.

Trade unions and mining communities – especially following a fatality or serious injury have argued strongly in favour of prosecution, even against those whose culpability is low. After the Gretley disaster, it was the trade unions that held sway, and the subsequent prosecutions of individual managers owed much to trade union demands for retribution. And the mining unions have continued to argue for "a vigorous system of enforcement aimed at industry compliance with the current legislation" (Benmedjdoub & Kotevski 2004).

This in turn has generated a strong reaction from mining companies, managers, and other statutory position holders who suggest that prosecution should be reserved for a small minority of 'rogues' which they equate with the reckless and wilful. This political campaign to weaken the existing legal provisions and to overturn the current prosecution policy, has been gaining considerable momentum. A number of employer groups have launched strong attacks on WHS laws and their enforcement. In 2007 the then Prime Minister, John Howard, wrote to State Premiers on the matter (WHS News 2007; Australian Financial Review 2007) and the New South Wales government has set up an inquiry to examine contemplated changes to the WHS Act 2000 which would dilute the employers' duty of care and the obligations of company officers. In response the CFMEU has asserted that such changes would generate a 'race to the bottom' and accused Howard of pushing for 'lowest common denominator' standards (WHS News 2007).

Against this backdrop of a swinging political pendulum and acrimonious adversarialism, what options are available? It has been argued that responsive regulation has considerable virtues in nurturing trust and encouraging voluntary compliance on the part of the majority, while maintaining the law's punitive capacity at the tip of the enforcement pyramid in order to deter the recalcitrant minority. But steering a middle path between the competing objectives of trade unions and mining companies to

achieve this result is a substantial challenge, and regulators frequently find themselves between a rock and a hard place. Crucially, in seeking a viable way forward, regulators confront what has been appositely termed the "compliance trap" (Parker 2006). This comes about as follows.

In the case of contemporary WHS law, the most credible penalty is the prosecution of individual managers. While fines against corporations may be insufficient to influence their behaviour (a few hundred thousand dollars at most, to a multi-national corporation, hardly breaks the bank), the prosecution of individuals is a far more serious matter. Even if the fine is unlikely to reach six figures, it is a traumatising and stigmatising matter for a manager to be hauled before a criminal tribunal or court. In terms of responsive regulation, managers can be viewed as 'soft targets' who can be motivated by lesser penalties (coupled with personal stigma and shaming) than 'hard targets' (such as corporations) which are far more difficult to motivate (Braithwaite 2002).

But it is the prosecution of individuals (particularly in the Gretley case) that has provoked such a massive reaction from the mining industry, which views such penalties as grossly unfair and as sending an unacceptable message about the moral seriousness of the offence and the 'criminality' of individual managers. And it has also promoted a political reaction: there have been demands for the dilution of WHS laws, especially the duty of care imposed on employers and provisions relating to the culpability of managers, and for a winding back of enforcement.

Parker (2006) would argue that this is precisely what one would expect, and that what has just been described is a classic example of the 'compliance trap'. For her:

> .... where fulsome political and moral support for the enforcement regime is lacking, then the compliance trap is set. Responsive regulators find themselves in a dilemma: [ensure effective deterrence] by making morally tough demands that may not only undermine business commitment to compliance in the longer term (because they lack political legitimacy), but also undermine their own political support (because business will respond by lobbying government to emasculate the regulatory enforcement agency). Or avoid conflict with businesses by not making any difference at all .... It is a compliance trap because it occurs only when regulators are actively seeking to improve business compliance and commitment to compliance through their enforcement activity .... It is a trap because, in the absence of external political support, there is nothing the regulator can do to escape. The regulator must either choose weakness (no compliance impact) or have weakness thrust upon it (lack of legitimacy leading to emasculation) .... The compliance trap can only be resolved politically, external to any particular enforcement encounter. (Parker 2006, 593)

However, while Parker identifies an important dynamic and a difficult dilemma for any enforcement agency, is her overall conclusion too bleak? In contrast to some other contexts (including Parker's own case study of the Australian Competition and Consumer Commission) the mining industry and their industry associations are not the only means of external political support for the regulator. At times, and particularly following mining disasters during the tenure of state Labor governments, the trade unions rather than the mining companies have had the ear of government ministers at least to the extent of influencing enforcement prosecution policy (as in the Gretley case itself).

But to rely on trade unions as a counter to undue pressure from the industry would be a mistake. During the course of coal mining history in Australia, the pendulum of bargaining power has swung between management and workers largely in accordance with the rise and fall of coal markets. And each side has taken full advantage of its temporary ascendancy to impose unpalatable conditions upon the other. The cyclical nature of this phenomenon and the 'tit for tat' industrial relationship this has generated has itself exacerbated distrust between management and workers, and is likely to do so again in the future.

Another, more constructive possibility, is to seek some middle ground in terms of prosecution policy along the lines above. Doing so would avoid the trap of signalling that breaches of workplace safety legislation are 'not really criminal' because the penalties imposed are trivial (Carson 1970), while at the same time avoiding prosecuting those whose culpability is so low as to be perceived by the industry to be unjust. Since many large and influential corporations have already committed themselves to substantial improvements in WHS and are striving to go beyond compliance, such a policy need not be politically unacceptable to the industry.

It may well, however, be politically unacceptable to key trade unions. This takes us to the tension between prevention and retribution.[37] While the unions demand retribution against middle-level managers guilty, at most, of sins of omission in circumstances where there is evidence that their peers, in similar circumstances, would have taken the same decision, then little progress seems possible. The way out of this dilemma

[37] The goal for those who seek retribution is not an instrumental concern to improve future WHS performance, but rather to satisfy feelings of revenge and to achieve 'justice' in the victim's (or their family's) terms (Dobbs 1989, 844).

may be to pursue not retribution but restorative justice,[38] in all but the most egregious cases (as regards which industrial manslaughter prosecutions or their equivalent can be appropriate in both retributive and deterrence terms) (in this regard, Braithwaite argues with considerable empirical support that approaches to regulation that seek to identify important problems and fix them work better than those which focus on imposing the right punishment or 'just deserts').

Although this point has not yet been reached, there are both principled and pragmatic reasons why the trade unions should embrace the middle ground. In terms of the former, prevention should have a higher priority than retribution,[39] and restorative justice coupled with prevention will have a substantially greater benefit to their members than retribution. In terms of the latter, trade union power is in decline, and for some time ahead at least, employer groups are far more likely to have the ear of

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[38] Braithwaite (1993) argues with considerable empirical support that approaches to regulation that seek to identify important problems and fix them work better than those which focus on imposing the right punishment or 'just deserts'. For example, beyond a very limited range of circumstances, retribution does not 'work well', both because it is widely perceived to be unfair and because it has counter-productive consequences for prevention. Yet, at the same time, if prevention trumps prosecution and retribution is rejected, then the legitimate concerns of victims and their families for justice may be ignored. Braithwaite recognises this, and suggests that there is a need for others to 'listen to the stories of our hurts' before we can move on to solve the problem. In this view, restorative justice, 'a process whereby all the parties with a stake in a particular offence come together to resolve collectively how to deal with the aftermath of the offence and its implications for the future', shows us the practical paths for moving from healing to problem solving (Tony Marshall, quoted in Braithwaite (1993, 11)).

[39] The value position of this chapter is that the primary purpose of prosecution is preventative: to reduce the level of work-related injury and disease. Although it does not reject retribution in its entirety, it suggests that, to the extent that the two principles are in conflict, prevention should be given precedence. Those who believe that the principal role of the criminal law is retribution will likely disagree with the analysis made in the chapter. Its virtue, however, is to identify principles which, if followed, will send a set of signals that deter 'bad actors' from wrongdoing without inhibiting 'good actors' – or even those capable of becoming good actors under the right circumstances – from pursuing strategies conducive to improved workplace safety and health, and of building trust in ways that are supportive of improved workplace safety.

government. If the trade unions prefer the swinging pendulum to finding the middle ground, it may swing in a direction that they will find particularly unpalatable.

Reaching this middle ground is crucial to preventative safety. As Parker (2006) points out, for pyramidal enforcement to 'work', the law must not only be just but recognised as just (or morally appropriate and democratically supported) in order for the pyramid of responsive regulation to promote compliance rather than conflict. In her view: "This rider should be printed in capital letters on every page of every scholarly or policy-oriented discussion of responsive business regulation" (Parker 2006, 617).

7.7 Conclusion

The role of prosecution in achieving compliance with social regulation is a highly contentious issue. Nowhere is this more so than with regard to work-related injury and death in the New South Wales mining industry. Following the Gretley disaster, the Department abandoned its previous advise and persuade approach in 1998 in favour of a new muscular prosecution policy, particularly following fatalities. It has, moreover, chosen to prosecute not just companies but also individual mine managers and other statutory duty holders.

Our fieldwork, consistent with other evidence, suggests that while a traditional advise and persuade approach can lead to a regulatory capture and a failure of enforcement, a muscular prosecution policy, particularly if it includes individuals with a low degree of culpability, can be almost equally counterproductive. Where relationships between inspectors and the regulated industry are frequent and ongoing, then trust is central to constructive relations between them, and effective inspection and enforcement depends far more on a dialogue between these stakeholders (and ideally with workers

too) than it does upon the unilateral imposition of rules by the regulator on the regulated. When that relationship breaks down (as it may under an inappropriate prosecution policy) then communication ceases, information is withheld rather than shared, in-firm accident investigation, prevention and remedial action are inhibited, and both sides retreat into a form of adversarialism that seriously impedes productive outcomes. Ultimately, the sort of responsive and pyramidal enforcement strategy that has been widely advocated becomes untenable. Thus, how law is enforced can be as important in damaging trust as it can be in nurturing it. Today, according to the New South Wales Mine Safety Review, a "debilitating mistrust between the members of the tripartite process" is a principal obstacle to improved WHS in the mining industry (Wran & McClelland 2005, 7).

Trust is much easier to break down than it is to rebuild, but such rebuilding is nevertheless possible, but only with the adoption of a much more nuanced and balanced enforcement policy. Such an approach would ensure that prosecution takes place even where no injury results, it would enable the inspectorate to target failures of risk management, and it would ensure that serious breaches of WHS legislation were firmly dealt with. But, crucially, it would also emphasise that prosecution should not take place in the absence of culpability and, in doing so, it would do much to restore legitimacy to the prosecution process.

But such a policy can only succeed with the acquiescence and ideally the active endorsement of key stakeholders on both sides of the industrial relations divide. Such agreement will not be easy to achieve, given the decades of bitterness and animosity that have characterised relations in the mining industry. Yet, if this middle ground is not achieved, the mines inspectorates face only two alternatives. Either they can continue to prosecute in circumstances that the industry perceives as unjust – and risk political emasculation. Or they can do as many regulators have done in the past, and engage in

little more than tokenistic enforcement, bordering on regulatory capture (sometimes referred to as 'enforcement by wet lettuce' – as contrasted with the use of the traditional big stick). This strategy will cause no offence to powerful employer groups, but nor will it succeed in protecting workers from work-related injury, disease or death.

Chapter 8: Organisational trust and the limits of management-based regulation

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8.1 Introduction

For more than a decade, private enterprise and governments in North America, Western Europe, and Australasia have been experimenting with an innovative approach to standard-setting variously termed process-based, systems-based, or management-based regulation (Coglianese & Lazar 2003; Gunningham & Johnstone 1999, Chapter 2). In contrast to traditional prescriptive standards (which tell duty holders precisely what measures to take) or performance standards (which specify outcomes or the desired level of performance), this approach involves firms developing their own process and management system standards, and developing internal planning and management practices designed to achieve regulatory or corporate goals. Such standards, whether they are imposed by the firm on its various operations (internal regulation), or by governments on firms or industry associations on their members (external regulation), have the considerable attractions of providing flexibility to enterprises to devise their own least-cost solutions to social challenges, of facilitating their going beyond compliance with minimum legal standards, and of being applicable

to a broad range of circumstances and to heterogeneous enterprises. For present purposes, such initiatives are termed management-based regulation.

In part, this new approach was made possible by the development of management tools designed to assist firms to focus on systemic problems rather than individual deficiencies. Such tools involve the assessment and control of risks and the creation of an in-built system of maintenance and review. As such management tools have been formalised (for example, through the International Organization for Standardization's ISO 14001 environmental management systems standard), many companies have seen this as an opportunity to ensure higher consistency across the organisation and higher standards within their various operations. Regulators too (and a small number of industry associations) have seen an opportunity to harness such standards in the development of a new form of regulation: requiring regulated entities to achieve public goals through planning, systems of work, or other process-based management techniques rather than through remedying individual deficiencies or by achieving particular outcomes. Management-based regulation is now to be found in a diversity of policy domains including environment protection, food safety, WHS, rail regulation, sustainable forestry, toxic chemical reduction, and trades practices (Coglianese & Lazar 2003; Coglianese & Nash 2006).

Taken one step further, management-based regulation can become a form of 'meta-regulation' or 'meta-risk management' in which government (or corporations seeking to regulate their multiple facilities), rather than regulating directly, can risk-manage the risk management of individual enterprises or facilities. Under such an approach, the role of regulation ceases to be primarily about inspectors or auditors checking compliance with rules and becomes more about encouraging the industry or facility to put in place processes and management systems that are then scrutinized by regulators or corporate auditors. Rather than regulating prescriptively, meta-regulation

seeks to stimulate modes of self-organisation within the firm in such a way as to encourage internal self-critical reflection about its performance (Parker 2002).

From the above it will be apparent that management-based regulation (and meta-regulation) can take a variety of forms. Following Coglianese & Nash (2006, 14), these can be classified in terms of: (i) government initiatives where management-based strategies are either mandated (as with the Hazard Analysis Critical Control Points food safety certification program) or encouraged (as with regulatory flexibility and negotiated agreements); and (ii) nongovernmental approaches, which are either mandated (as in the chemical industry's Responsible Care program, or when an enterprise requires its various operations/sites to adhere to this approach) or encouraged (when individual operations within the enterprise are left some discretion as to how to achieve corporate goals). The evidence suggests that mandatory management-based regulation "appears to have the clearest and strongest effects" (Coglianese & Nash 2006, 251). However, given the paucity of empirical evidence, studies of both mandatory and discretionary forms must be referred to for the purpose of mapping out what is known about the general area.

So how effective are management-based and meta-regulation? Are government regulators or corporate decision makers wise to put so many of their eggs into this basket? To the extent that this form of regulation falls short of expectations, is this inevitable or can its shortcomings be overcome? And what is the relationship between management-based regulation and organisational trust? Is it the case, as some have claimed, that 'culture eats systems for breakfast'? These and related questions are addressed below.

The chapter proceeds as follows. The second section summarises what is known about how management-based regulation works in practice and the obstacles to its

effective implementation. In particular it describes the potential for an absence of organisational trust to thwart even the most sophisticated forms of management-based regulation. The empirical contribution of the chapter is contained in the third section, which describes two case studies of management-based regulation in practice, within two separate multisite Australian mining enterprises. The fourth section discusses the implications of the findings and suggests that the degree of trust between workers and management (and sometimes between other groups) may have a particularly powerful impact on the outcomes of such regulation and that particular workplace subcultures play a critical role in supporting or undermining management-based regulation. The final section concludes.

8.2 Management-based regulation: What the literature tells us

At their best, management-based initiatives have the capacity to influence the internal self-regulation and norms of organisations and make them more responsive (rather than merely reactive) to social concerns. In theory, they will encourage enterprises to 'build in' regulatory considerations at every stage of the production process, to improve their social performance, and to achieve behavioral change (Coglianese & Nash 2006, 250; Bennear 2006).

However, to what extent these theoretical benefits will be realised in practice is a matter for empirical inquiry. Early evaluations have relied primarily on surveys of a wide range of secondary sources and tend to be cautiously positive (Bluff 2003; Coglianese & Lazar 2003, 724). Others have used small qualitative studies to examine the impact of management-based regulation developed by industry associations, such as the chemical industry's Responsible Care program, finding at best mixed results (Howard *et al* 1999). There have also been a small number of large N studies primarily

examining the impact of environmental management systems on environmental outcomes (Bennear 2007; Andrews *et al* 2003; Andrews *et al* 2006; Potoski & Prakash 2005). While some of these studies have found a positive relationship between the introduction of management systems and environmental outcomes, others have not (Tyteca *et al* 2002; Hertin *et al* 2008). Small wonder that an edited collection concerned to understand how management-based initiatives have worked to date acknowledges that "we know little about the conditions in which [management-based initiatives] work" (Coglianese & Nash 2006, 20).

There could be a variety of reasons for these mixed results, including the possibility that some companies have adopted such systems (which in environmental protection are usually voluntary) for cosmetic reasons – eg, to maintain public legitimacy – rather than to improve performance. If so, then the principal problem is not with the system itself, but with the motivations of those who adopt it. Indeed it may be that management systems, like other process-based tools, are just that – tools – and can only be effective when implemented with genuine commitment on the part of management and with ownership on the part of the workforce. This is broadly the conclusion of recent work in the area of environmental regulation. For example, Gunningham and colleagues have found that management style and motivation are more important in shaping environmental performance than the system itself, although they do not explore in any detail why a particular management style emerges in a particular corporation (Gunningham *et al* 2003, Chapter 5). Nevertheless, this and a number of studies in the broader management literature (Sharma & Vredenburg 1998; Sharma 2000; Egri & Herman 2000), suggest that management matters far more than management systems or management-based strategies more broadly.

And even where positive management motivation is present, it may be that lack of workforce commitment/ownership still thwarts management intentions. Quite how

workers might best be persuaded to comply with corporate edicts has been a matter of intense debate spanning literatures across the social sciences. Many of these literatures borrow concepts that were developed in broader explorations of legal compliance. Thus psychologist Tom Tyler's seminal work concerning why people obey the law has been expanded to take account of the related question of how corporations shape the behavior of their employees. In both areas, Tyler (2008, 804) argues that "people are more likely to obey rules if those rules accord with two important values: legitimacy and morality", and that both these values relate closely to procedural fairness. Further, he finds compliance is more likely when people perceive the process by which such rules are made and applied as being (amongst other things) fair and honest, if they are treated with dignity and respect, and if they have the opportunity to participate (Tyler 1990; Tyler & Lind 1992). Note that where such values are present, rule compliance is likely to be voluntary because people feel a moral obligation to comply. The best way to motivate rule compliance then, is by nurturing legitimacy and morality.

This approach can be juxtaposed to the traditional rational choice deterrence model, which rests on the notion that people are 'amoral calculators' whose behavior can be best shaped by the fear of imminent legal penalties that exceed the cost of compliance. Threat and punishment are asserted to be the best way of deterring people from engaging in criminal behavior (Kahan 1999). Translated to an organisational context, this model – commonly referred to as 'hierarchical' or 'command and control' – assumes that employees, as rational actors, will behave instrumentally, weighing costs and benefits before deciding whether to adhere to company policies and rules. Accordingly the organisation must ensure that the latter outweighs the former, which it will strive to do via such techniques as surveillance, auditing, and other performance tracking mechanisms, coupled with incentives and sanctions. Because employees will only comply for extrinsic reasons, there is no possibility (in contrast to a values-based

approach) of relying upon intrinsic motivations and self-regulation (Malloy 2003; Tyler 2008, 856).

But both Tyler's approach and rational choice analyses are located at the level of the individual, with a focus on mechanisms that might influence individual persons to obey rules, regulations, or corporate edicts. Yet much behavior is group behavior, and in the context of the corporation, it is arguably more fruitful to explore compliance with rules (whether corporate- or state-based) at the collective rather than at the individual level. In this context, one factor that can have a particularly powerful impact on group behavior in general and on rule compliance in particular is organisational culture (defined as 'the way we do things around here', or in more formal terms, as involving "shared values (what is important) and beliefs (how things work) that interact with an organization's structures and control systems to produce behavioural norms" (Uttal 1983, cited in Reason 1997, 192). Morgan (1986, 131), for example, argues not only that organisations must be understood as cultural phenomena, but also that we "must root our understanding of organization in the processes that produce systems of shared meaning".

But in large complex organisations with multiple facilities, such shared meaning cannot be taken for granted, even where senior management wishes to cultivate it. If indeed organisations are "in essence socially constructed realities that rest as much in the heads and minds of their members as they do in concrete sets of rules and relations" (Morgan 1986, 131) then scholars may need to know much more about how those social constructions evolve and what their consequences may be. It may be for example, that attitudes of workers to rules and corporate edicts are rooted in a past history of industrial relations conflict and create a counterculture, or that an organisation, far from being made up of a single homogeneous culture, comprises a number of interdependent subcultures based on such factors as professional affiliation,

geographical location, and position in the management hierarchy (Sinclair 1991). How these various subcultures interpret rules, their levels of compliance, and thus the extent of the gap between 'the rules in books and the rules in action' may vary substantially.

Management-based regulation does not ignore the challenges of engaging with group behavior. Indeed, its proponents assert that the capacity to achieve cultural change is one of its attributes (Welford 1997). But whether, to what extent, or in what circumstances this is the case remains a matter of conjecture. Certainly, changing cultures is no easy matter, and it may well be far more difficult for senior management to manipulate than many organisational theorists assume (Morgan 1986, 139). Yet without cultural commitment on the part of those who are expected to implement the system, edicts from regulators or (in the case of internal regulation) from senior management may be met with creative compliance (McBarnet & Whelan 1999), resistance, 'ritualism' (Merton 1968; Braithwaite 2008, 140-56), or various other forms of tokenism.

One aspect of culture that is often of great significance, particularly in areas of social regulation such as environment or WHS, is trust. According to the literature, for example, effective worker participation is crucial to improved WHS, but such participation is unlikely to be effective in the absence of constructive dialogue between the two sides of industry (Gallagher 1997, 6.1; Hale & Hovden 1998, 147-8). And that constructive dialogue, in turn, is unlikely to take place in the absence of trust. Indeed, trust is often referred to as the lubricant for open and frequent safety communication (Reason 1997) and as enhancing cooperation (Morgan & Hunt 1994), promoting the acceptance of decisions (Tyler 2003), improving knowledge-sharing (Dirks & Ferrin 2002), supporting all aspects of organisational functioning (Bijlsma-Frankema & Koopman 2003), and resulting in enhanced safety performance (Barling & Hutchinson 2000, 77).

In practice the lack of trust may be a (and sometimes the) key impediment to improved WHS. This is particularly the case where the regulated entity has considerable discretion in how it discharges its regulatory obligations. It is one thing to impose a prescriptive standard requiring, for example, guardrails to be of a specified height, and this can be readily measured and policed irrespective of whether the regulated entity is trustworthy or not. It is quite another to police elements of a safety management system that can legitimately be subject to multiple interpretations and necessarily involves considerable discretion in its implementation.

Thus trust can become a central issue for social regulation in areas such as WHS. Unfortunately, notwithstanding the crucial importance of this issue to improving WHS performance, "[t]he exact nature of trust and its role in shaping organisational safety is poorly understood" (Conchie *et al* 2006, 1097), and "the formation of trust within workplace relationships is complex and elusive" (Zeffane & Connell 2003, 4).

For present purposes (and in the absence of any widely accepted definition) we define 'trust' in terms of four interconnected elements that have proved particularly valuable in organizational and inter-organisational contexts. First, there is good faith commitment, or more specifically "an expectancy held by an individual or group that the word, promise, verbal or written statement of another individual or group can be relied upon" (Rotter 1967, 651). Second, a person or organisation is "honest in whatever negotiations preceded such [good faith] commitments" (Cummings & Bromiley 1996, 302). Third is the concept of vulnerability, or more precisely "a willingness to accept vulnerability based upon having positive expectations about other people's intentions and behaviours in situations which are interdependent and/or risky" (Clegg *et al* 2002, 409). Finally – returning to the themes of values and procedural fairness – international research has found that "people who feel they have been treated fairly will be more likely to trust that organization and be more inclined to accept its decisions and follow

its directions" (Murphy 2004, 199; Tyler 2003).

The above literatures raise issues that go to the heart of these questions: To what extent can management-based regulation achieve business or regulatory goals? Are policymakers, trade associations, and individual corporations mistaken in their belief that those who are encouraged or required to develop and implement plans, systems, and other management-based strategies will as a result improve their performance? Is reliance on monitoring, measuring, accountability, and extrinsic motivation misplaced? Might it be that management commitment or culture (or specific culture-related issues such as trust) are far more important than management-based initiatives in and of themselves? Going further, it may be that management commitment and/or culture must itself be broken down and researched at different levels. Management commitment, for example, might exist at the corporate management level but not at the level of the corporation's individual facilities. And the related issue of culture (and subculture) too is something that might best be understood at individual sites, again with the possibility that different facilities, or even different groups within them, have different subcultures and that overcoming cultural differences (or particular issues such as mistrust that is prevalent in certain subcultures) is far more important than simply imposing a unitary management-based strategy at facility level.

Of those limited evaluations of management-based regulation that have taken place, none has focused on two closely related and potentially critical aspects of their implementation:

1. the gap between the intentions of enterprises or regulators to achieve social goals through management-based initiatives, and their implementation at site level (and, as a corollary, the gap between [management-based] regulation in theory and in practice); and

2. the extent to which management-based initiatives successfully engage with or overcome particular cultural impediments such as mistrust, especially at site level.

These implementation issues are crucially important because management-based regulation (whether internal or external) is designed for large rather than small organisations, and most large organisations operate at a number of different sites, often in different jurisdictions. While those who study management-based initiatives would claim to be going inside the 'black box' of the corporation, they have so far only done so to a limited extent, and they have rarely recognised that management-based initiatives must gain the commitment not only of corporate management, but also of a firm's often far-flung facilities.

This chapter's overarching thesis is that the efficacy of management-based regulation may be undermined by the absence of organisational trust, and that without identifying and addressing the underlying workplace characteristics that give rise to this mistrust, companies are likely to confront a substantial gap between the theory and practice of such internal regulation. In order to test this thesis, we take one area of public policy where management-based regulation has been heavily relied upon, in terms of both external and internal regulation – mining WHS – and examines the reasons for what appears to be substantial and widespread implementation failure in two mining company case studies. It examines this failure at two related levels: in terms of a 'disconnect' between corporate management initiatives and site-level behavior, and in terms of the failure of those initiatives to engage successfully with issues of trust and mistrust, worker and management commitment, divided loyalties, and related issues at site level.

There are of course limits to a case study approach and dangers in seeking to generalise from specific cases drawn from particular contexts. But such studies may

provide substantial insights and address questions that quantitative studies are ill-equipped to answer. In any event, at the present time there are no large N studies addressing the two questions that are the central concerns of this chapter. Accordingly, there is considerable virtue in conducting individual case studies and studies of a small number of firms or facilities. Both can provide in-depth qualitative analysis of firm or facility-level behavior, of corporate and managerial motivations, and of the connection between motivations and management-based strategies. There may be particular value in studying behavior at different facilities within the same company, as this approach enables one to hold constant a number of variables (as where the company seeks to impose the same form of management-based regulation on all its facilities) while enabling variation in others (such as differences in levels of trust at site level) to form the focus of study. The following sections report the results of one such study.

8.3 Mine safety in Australia: Management-based regulation and its consequences

Mining is one of Australia's most dangerous industries, with a fatality rate more than twice the national average (Australian Safety and Compensation Council 2005), albeit substantially lower than that of comparable countries such as the United States (Ural & Dermirkol 2008). Mining faces many WHS problems. Both high consequence/low frequency events (explosions, water incursion) and low consequence/high frequency events (slips, strains, and falls) contribute to the industry's high rate of injuries and fatalities.

Although the mining industry confronts a number of serious WHS challenges, since the 1990s, statistics (including fatality statistics that are unlikely to be vulnerable to manipulation) suggest that the Australian mining sector has achieved substantial

improvements in safety (Galvin 2005). This has coincided with an increased corporate focus on management-based initiatives as the central means of improving WHS, with a heavy emphasis on sophisticated systems, auditing, and other process-based mechanisms. Indeed, such systems are now a regulatory requirement in two of the three Australian mining jurisdictions (Gunningham 2007, Chapter 2).

Senior management in many of the largest companies now regards excellent WHS performance as a priority, for which, in managerial jargon, there is a compelling 'business case' (Health and Safety Executive 2005b). Mining injuries can cause serious disruption of the production process, escalate already punitively high workers compensation costs, increase staff absences, increase reputation risk, and threaten the company's social license to operate. Those with poor reputations may be refused access to new mining areas and made subject to increasingly intrusive and costly environmental controls on their operations.

In the following sections we consider the experiences of two mining companies that, for various reasons, have relied substantially upon management-based regulation to achieve improvements in their WHS performance or to meet regulatory requirements. Before doing so, however, we describe our methodology.

The research was conducted with the full cooperation of the companies in question. Consistent with the norms of social science research and of our ethics clearance, we do not identify the companies or any of the individuals who participated in the research. The 13 mines we studied included both open cut and underground, although the latter were the dominant grouping. Mine sites were selected in consultation with the participating companies, with the intention of including both leading and laggard mine sites to provide a broad range of experiences. Each mine site visit occurred over a two-day period in which a representative sample of both staff and workers participated in

semi-structured interviews (151 in total). A typical sample of 12 interviewees from each mine included the general or operation manager, mine manager, shift or process supervisors, under-manager, safety officer, engineering (mechanical and/or electrical) managers, crew leaders (deputy under-managers, team supervisors), mine workers (the 'crew', including local check inspectors/ site safety representatives), and trades-people. In most cases, the balance of managers to employees was split approximately evenly.

Each interview was conducted in private, with interviewees informed in advance that all material arising out of the interviews would be treated confidentially and used anonymously in any subsequent publications. In addition to the mine site interviewees, 12 representatives from corporate management, including chief executives, safety managers, and operational managers, were interviewed.

Questions took the form of a series of prompts, with only those questions that elicited a substantive response being explored in greater detail. This approach ensured that a diversity of perspectives was explored and that respondents were not constrained to address only particular preconceived issues. Qualitative material generated by the interviews was supplemented by reviews of both the domestic and international literature, including the organisational trust and culture, mine safety, and WHS and broader regulatory literatures. The two mining companies involved in the project also provided internal policy background and safety statistical information and audit data (on a confidential basis).

8.4 Minerals Inc: Corporate interventionists

Minerals Inc is a multinational mining company that has grown substantially over the

last 15 years, largely by acquiring existing mine sites. The company prides itself on its 'lean' corporate management structure and devolves much decision-making to the mine sites. However, approximately seven years ago, in the face of disappointing WHS outcomes, corporate management put in place an ambitious WHS management strategy, the cornerstone of which is a comprehensive set of corporate WHS standards. These standards are achieved substantially through the mechanism of a WHS management system implemented at each mine site and underpinned by corporate-wide audit and reporting programs, an interactive WHS electronic database, and a BBS observation program.

Minerals Inc perceives itself to be well 'beyond compliance' with external regulatory standards and is more concerned to protect its social license to operate (Gunningham *et al* 2003) than to meet regulatory requirements. As one senior manager, repeating a common refrain, put it: "We don't worry too much about legislation. Our internal processes are far more rigorous, including meeting community expectations." This approach has also received strong support from Minerals Inc's international board of directors. Management appears to be convinced that "it's good for business to go beyond compliance" (senior corporate manager).

The evidence to date suggests that this corporate management standards and systems approach has had some significant success. Minerals Inc has improved its safety record to the extent that it is now seen as an industry leader, with particular mine sites winning industry WHS awards, and it has had steady reductions in recordable incidents. However, this success has not been achieved across the board. Based on a quantitative ranking of internal audit results and safety statistics from a sample of five mine sites, we found a wide spread of WHS performance (based on the full range of available statistics, only some of which are vulnerable to manipulation). The lowest-performing mine, for example, was found to perform twice as badly as the highest-

performing mine.[40] This was a remarkable finding given the presence of uniform corporate-wide WHS standards and audits.[41] Clearly, some explanation for this divergence is required. Qualitative fieldwork revealed three factors, in particular, that substantially limited the effectiveness of management-based regulation at the lower performing mine sites: workforce resistance and the absence of trust, the reluctance and/ or inability of deputies to take responsibility for WHS management system implementation, and a lack of WHS commitment and inertia on the part of middle management.

8.4.1 The presence of mistrust

The issue that had the greatest impact in derailing internal management-based regulation at Minerals Inc – as it did at mines we studied at another company – was mistrust between management and workers, both collectively and individually. The three low-WHS-ranked mines (in marked contrast to the two high-ranking mines) all had very high levels of worker mistrust directed at both the motives and abilities of mine management.

The link between mistrust and poor WHS performance is perhaps unsurprising given the negative impact that mistrust can have on the operation of even the most sophisticated management-based regulation and safety management systems. For example, workers were less likely to report incidents for fear that they might "get nailed

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[40] In order to calculate this ranking, the authors were provided with internal safety statistics, namely LTIs and TRIs, and numerical corporate-wide audit data, over a five-year period. These data were weighted (1 to 5) to give the most recent years' results greater priority and were then aggregated to give a single numerical score to each mine.

[41] This quantitative ranking was supported by both informal rankings on the part of senior management and a subsequent comprehensive audit program conducted by Minerals Inc's international headquarters.

for something" (crew member), and they might resist the use of intrusive behavior-based programs such as safety observations when they felt threatened or did not trust management motivations behind them. Or workers might choose not to follow WHS procedures because they resented management telling them how to do their job, because they had little trust in management's ability to develop appropriate procedures, or because they believed such procedures were really there to "protect management more than workers" (crew member). Finally, mistrustful workers were much more reluctant to engage with managers to discuss safety matters.

In part, the origins of this mistrust lie in the bloody history of the Australian mining industry. For many decades, each side has ruthlessly pursued its economic interests at the expense of the other, and that history is littered with strikes, lockouts, and mine disasters involving multiple fatalities for which employers were, historically, hardly blameless (Hargraves 1993). In consequence, relations between the relevant trade unions and mining companies have often been acrimonious, and they deteriorated even further as a result of industrial relations 'reforms' introduced in the last decade that have substantially de-collectivized workplaces (Gunningham 2008). Not coincidentally, trade unions have been seriously weakened, particularly in previously union-dominated sectors such as mining. Enterprises such as Minerals Inc have exploited this situation to replace collective agreements with individual contracts of employment that serve to further marginalise the trade unions (Gunningham 2008).

Of course, all mines (including those in our sample with good WHS records) bore the scars of this brutal industrial relations history, but some have managed to largely heal past wounds, to overcome mistrust, and to build a fresh and more constructive relationship. We return to the question of how they did so in the fourth section of this chapter. In the present section, we emphasise that although the industrial relations history of the mining industry is one salient factor, a variety of other mine-specific

factors have also played important roles in nurturing mistrust.

Past incidents at individual mines, in particular, have often taken on an almost mythical quality, so that as they are passed on from one generation of miners to the next, they come to encapsulate the inherent untrustworthiness of management. Such incidents thus serve as a negative prism through which all subsequent management actions are interpreted. This made it much more likely that workers at these mines would spurn management safety initiatives as a matter of course, irrespective of whether such initiatives were genuine and in the best interests of workers themselves.

This culture of mistrust is exacerbated at those mine sites that are geographically isolated (as are the local communities from which they draw their workforce) and where many miners spend their entire working lives at a single mine, generating a particularly parochial, inward-looking culture. At such mines cultural myths are easily perpetuated and reinforced, and a militant older workforce entrenched in its view that 'all managers are shit' (a phrase used by numerous crew members in interviews) can readily instill a similar view into younger miners without fear of challenge. For example, one of the worst Minerals Inc WHS performers was described by its manager as follows:

> [It] has a very sheltered culture and workforce. You have to look at the "you're full of shit" barrier, which is an attitude many workers take towards management. They have had an impact on 70 percent of the workforce, and there is still a hard core of resistance. Culture and attitude is the key [to safety].

These problems were compounded by the fact that mines where management/workforce relationships were particularly poor were also the mines with the highest management turnover (perhaps because these were so difficult to manage and managers suffered a high degree of verbal abuse from the workforce, or because

each new manager failed to turn the situation around and so was replaced by another who might do better).

8.4.2 Deputy under-manager reluctance/inability

A second obstacle to the effective implementation of management-based regulation (at least in underground mines) was the necessarily heavy reliance on the lowest level of management, deputy under-managers (hereafter 'deputies'), who for various reasons felt unwilling or unable to discharge such responsibilities. A distinctive characteristic of underground mining is that miners work largely independently of direct management supervision. This degree of isolation is compounded by the presence of multiple shifts, with the result that only day shift workers are likely to encounter any but the rarest visits from senior/mine managers. Consequently, "it's hard for the mine manager to know what is really going on in the mine" (deputy), and the 'eyes and ears' of management are, by default, effectively transferred to the deputies.

Deputies not only have prime management responsibility for the safety of crews in terms of day-to-day operations, but they also act as 'gatekeepers' between management's WHS systems and their effective implementation on the ground – without the active support of deputies it is virtually impossible for management-based regulation to operate effectively.

The position of deputy is problematic in a number of ways. Deputies in most mines experience considerable ambiguity about their roles, feeling unsure about whether they are really workers or management. Deputies are drawn from the ranks of workers, and when they are promoted to this position they are anxious about severing their previous ties of 'mateship' with the crews. Moreover, deputies spend virtually their entire working day in the presence of their crews, largely detached from the rest of the management.

As a result they experience pressure to be 'one of the crew', to get their hands dirty, and to work side by side with the team. As one mine manager, reflecting a widely held view, pointed out, overcoming these cultural tensions and ambiguities is no easy task:

> It is the front line, the deputies, and their relationship to under-managers and supervisors, that is the most difficult relationship to manage. Both groups are right at the front end of installing corporate policies. Everything has to be geared to driving that relationship. The deputies are the weakest link in the management chain.

Although all the mines from Minerals Inc experienced difficulties with deputies, these problems were particularly pronounced at the lower-ranked mines. Senior management at one such mine, for example, forcefully and repeatedly expressed the view that "better deputy leadership was essential" and that this required better training and recruitment. Our fieldwork provided further evidence of the cultural factors inhibiting deputies from fulfilling their managerial WHS responsibilities. As one mine engineer put it:

> Deputies – these are the front line guys. They have the greatest potential conflict, and it's potent .... They struggle with divided loyalties to be part of the crew and part of management. They need a very high degree of moral courage to do the right thing especially given they come from the ranks. They have to have the courage to back their own decisions against peer pressure. If they don't have that courage, then they won't do their job properly, they will be hung out to dry.

As if these tensions were not enough, deputies are also commonly afforded little support or backup from their immediate supervisors when they do make decisions for safety reasons, especially where those decisions adversely impact on production.

Several reported the deep humiliation they felt having been 'dressed down' by a supervisor for making just such a decision: "I had the rug pulled form under me on one occasion – I can tell you I won't let that happen again".

These various tensions and ambiguities impinged substantially on the willingness of deputies to implement safety management systems. Aware that if they took responsibility for implementing such systems they might be criticised, either from above or from below, a safer course of action was not to engage with them at all, or to engage at most, in token implementation. This attitude was reinforced by the fact that most deputies could see little benefit in systems that in any event added additional time-consuming obligations. One mine manager, reflecting a common view, acknowledged:

> We have not achieved a 100 percent acceptance of our preferred safety culture .... There are always some who can't be bothered – when no one is watching, they will still cut corners. There is definite lack of maturity in the underground deputies. They don't see the benefit of safety systems. (emphasis added)

Although those mines ranked higher in safety performance also encountered problems with their deputies, they had made a far more concerted effort to change cultural attitudes and behavior, to better train deputies, and to give them more responsibility and managerial support.

8.4.3 Middle management inertia

Middle managers (including shift or process supervisors, engineers, and under-managers) also had the potential to block the effective implementation of WHS management systems. At this level our interviews suggested that middle management inertia (and occasionally resistance) were significant problems at the lowest- ranking

mines. For example, workers reported that WHS initiatives "are not being pushed, and are not taken seriously" by middle management. As a result, workers claimed that lower levels of management simply did not follow them.

Understandably, several safety managers spoke of their frustration in failing to convince middle managers of the value of safety management systems and of how middle management often obstructed implementation through their unwillingness to change the way they allocated work orders, updated SWPs, conducted safety audits, and followed up on accident and incident reports. The fundamental failure in their view was usually the inability to get middle management commitment, without which:

> You don't get good leadership and systems. This requires a holistic management approach. Basically, safety should be integrated with the rest of the business. (Safety manager)

But this begs the question: Why were such commitment and ownership lacking? Our interviews suggested that while there was no single explanation, a number of circumstances often combined to generate either inertia or resistance.

Some middle managers simply did not see the value of management systems, and several saw them as just 'paper shuffling' that had limited relevance to the coalface – they were "forced to do things, without seeing the benefits", one mine manager complained. Similarly, some only had limited commitment to BBS, again because they did not understand their purpose. The additional workload imposed in implementing management-based regulation was another reason why many middle managers resented them. As one told us:

> Historically, corporate has been seen as being interfering and setting too high

> expectations. The building and putting in place of so many new systems created a lot of work.

Overall, they did not view the implementation of safety systems as part of their core management responsibilities, which in their view related principally to production.

Finally, some middle managers did not take the issuing of safety actions (a crucial part of the 'doing/checking' part of a systems approach) seriously, with overdue actions in many cases accumulating to very high levels. Here there was active resistance, with some middle managers refusing to report safety actions because they perceived them not just as an added form of accountability but also (as one under-manager put it) as "a malicious attempt by management to control their behavior". Equally, they objected to substantive reporting requirements, exhaustive auditing commitments, and growing middle management accountability that not only increased their workload but also threatened their traditional autonomy. Some middle managers actively resisted corporate and/or mine management directives as a means of retaining their power within the organisational structure. As one mine manager described it:

> Middle management [are] acting as a blocking point. There is not a lot of information getting through to the under-managers. Not a lot of information getting through this layer – they soak the stuff up, and it goes no further .... Why? They think that having that knowledge is having power.

In short, at Minerals Inc at least, there was a strong correlation between a strong management commitment (or 'buy in') in particular among middle managers, and the rankings of high and low WHS performance at mine site level. Commitment, it would appear, is a 'motivational posture' (Braithwaite, V 2008) that has a crucial influence on WHS outcomes.

8.5 Coal Company: Reluctant converts

Over the last decade, Coal Company has expanded rapidly through a series of acquisitions. Until very recently, however, no attempt was made to impose a 'one size fits all' approach to WHS management. On the contrary, and consistent with the general philosophy of the company, there was a strong preference for a 'hands off' approach, intended to maximise site autonomy and flexibility in WHS as in many other matters. One senior corporate manager described this approach as follows:

> The [Coal Company] 'way' is to have less bureaucracy, greater autonomy of individual mine sites which are expected to act as autonomous business units that have to stand on their own two feet. This gives an open door, democratic style.

Not surprisingly, this approach has resulted in substantial variation in WHS management style at different sites. A common refrain from managers and workers at mines that Coal Company has bought was 'how little things had changed' under the new corporate ownership, with none of the manifestations of corporate oversight and control (corporate-wide WHS standards, systems, and audits) that are to be found in the structures of most of its competitors.

In recent years, however, Coal Company experienced a number of pressures to take a more interventionist stance to WHS management. First, Coal Company's rapid expansion had reached the point where the 'small company' corporate management style was no longer viable. Treating more than a dozen individual mine sites as individual fiefdoms did not allow for economies of scale or the degree of consistency and cooperation between the mine sites necessary to facilitate effective or efficient

management. Second, a process of institutional isomorphism (Powell & DiMaggio 1991) saw a convergence in WHS management practices across companies, placing considerable peer pressure on Coal Company to 'keep up' with industry trends. And third, the advent of new government regulations with their emphasis on internal WHS management systems and hazard controls (coupled with a recent trend to prosecute individual managers) made Coal Company's reliance on individual and *ad hoc* approaches to WHS management across its sites increasingly untenable.

As a result of these various pressures, corporate management has somewhat reluctantly assumed greater responsibility for site-level WHS and has taken steps to ensure greater uniformity in WHS management across all its operations. The most tangible manifestation of this new approach is that while individual sites will still be able to develop their own WHS management systems, these will be required to conform to new overarching corporate-wide WHS standards. Other developments include the creation of 'positive performance indicators' and a corporate-wide commitment to BBS programs (that focus on monitoring of and feedback as mechanisms to change worker behavior). These initiatives have been coupled with the introduction of regular, whole-of-mine site third-party WHS audits, which will eventually be aligned with the new corporate WHS standards.

This initiative is still in its early stages, and the level of corporate commitment remains unclear, particularly to the many mine managers who, during interviews, expressed doubts as to whether corporate management possessed the necessary skills, expertise, and commitment to achieve corporate-wide WHS management or to 'change its spots'. Our interviews at corporate management suggested that there was some substance in these concerns. For example, one corporate leader admitted that he lacked the commitment and perhaps the capacity to engage with systems in any depth. In his words:

> I do not have a head for safety management systems, and I quickly lose interest when reading through systems charts.

Many mine managers bemoaned the lack of direction and support they had received from corporate management and the unnecessary duplication this had caused, and corporate management's lack of expertise, resources, and capacity to engage with WHS management systems. Several mine managers were scathing in their assessment of corporate management's ability to deliver on the promised corporate-wide WHS standards:

> I have no faith in their ability whatsoever. It has been a complete cock-up. These guys are on a different planet. They have no idea what we are doing. We have to respond to the new regulations. We are just going to press ahead and do what we have to do. The corporate standards won't have any impact on what we do at this mine.

In summary, the disconnect between corporate and mine management at Coal Company was of a very different kind than that experienced at Minerals Inc. At Coal Company, it was corporate management (not mine site management and workers) that was viewed as a serious impediment to the effective implementation of WHS management strategies and systems.

The suspicion that corporate management were reluctant converts rather than true believers impacted negatively on the ability of mine sites to implement safety management systems across Coal Company, irrespective of the merits or otherwise of the systems in question. At some mines, management viewed themselves as largely separate from – and more professional and proficient than – either other mines in Coal Company or corporate management itself. Management at these mines lacked faith in

corporate management's capabilities and not only took a dim view of the safety performance of other mines in the company but also feared being dragged down to their level. At other mines a lack of confidence in corporate management manifested itself in resistance to corporate intervention and a preference for maintaining their own safety initiatives, which they believed to be far superior. A third group of mines, whilst welcoming in principle the prospect of corporate systems and standards, also had serious concerns about how corporate proposed to implement such initiatives.

Turning to the WHS performance of individual mine sites within Coal Company, there was a striking divergence of WHS outcomes between mine sites. As with Minerals Inc, we conducted a WHS ranking exercise of the eight Coal Company mine sites –this revealed a very similar spread of WHS outcomes. In particular, the best-performing mine was ranked approximately twice as highly as the worst-performing mine. Overall, there were bands of three clear WHS leaders, two laggards, and three middle-ranking mines. Senior managers' subjective ranking generated broad agreement as to who were the best and worst performers, but there was much less consistency with regard to the middle rankings.

There were other similarities with Minerals Inc. Deputies at Coal Company felt ambivalent as to whether they were part of 'management' or really just workers with supervisory responsibilities. Deputies at lower-ranked mines were especially wary of too closely aligning themselves with management for fear of being ostracised, ridiculed, or even victimised by crews, suggesting that peer group pressures were more powerful influences on behavior than senior management edicts.

The presence of mistrust between management and workers was also a feature of most, if not all, lower-ranked mines. This was often the consequence of a catalytic event, creating a simmering and lingering mistrust that persisted for many years and

made it very difficult for management to introduce new safety initiatives. For example, a rich vein of mistrust was generated at one mine by an attempted (and subsequently abandoned) downsizing. The workers involved engaged in a deliberate policy of isolating those managers perceived to be responsible for the downsizing in the hope of forcing their eventual removal. At another mine, a disastrous decision to realign a longwall led workers to doubt the competency of management decision-making processes.

Middle management inertia was also a common theme at lower-ranked mines. At these mines there were reports of middle managers not being familiar with systems, not issuing SWPs as part of work orders, and of safety systems 'gathering dust' on the shelf. Many middle managers considered that safety management systems had little impact on day-to-day management decisions, and (at one mine) that such systems were really about 'covering people's arses'. In short, it was not the systems themselves that were the problem, but lack of commitment to their implementation.

In addition to these points of commonality, however, in several areas the experiences of the lower-performing mines at Coal Company diverged from their lowly ranked equivalents at Minerals Inc. For example, at Coal Company low performers were distinctive in the extent to which they emphasised production at the expense of safety, notwithstanding an ostensible corporate commitment to 'safety first'. The most commonly cited example of such behavior involved management exhorting workers to 'put safety first', while placing greater pressure on them to achieve production targets (these two goals commonly being in tension). For example at one mine, workers were required to complete a written job safety analysis card at the start of each shift and when starting a new job. However, many workers told us that management had not provided adequate training nor allocated time to complete the cards. Instead, they reported that if they actually took the time out to complete a card each time they

engaged in a new work procedure, they would incur the wrath of management for wasting time. In short, there was a strong 'production comes first' message undermining the value of the program: "You can't have it both ways. They are always at you to improve production, but expect you to fill out the forms" (crew member).

Finally, a defining characteristic of the lower-ranked Coal Company mines was the presence of serious and destructive divisions between and within key groups (in addition to the conventional worker and management 'us and them' divide permeating most mine sites). One striking example of this was the division between middle management and senior management. At one mine, several middle managers felt that they had 'been left out on a limb' or were 'taking the flak' for incidents for which senior management were responsible, with an adverse effect on morale. At another lowly ranked mine, there was a serious breakdown in the relationship between middle management and the mine manager as a result of "poor attitudes, poor communication, poor consultation", the relationship being described as "somewhere between abysmal and non-existent" (middle manager). This produced unusual loyalties, with workers and middle managers united against senior management and a dysfunctional relationship with senior management that made the implementation of safety management all but impossible.

A different example of internal division occurred at a newly created longwall mine, which failed to meet initial high performance expectations. A key factor here was the division within the workforce itself, which was split into two distinct camps, on the basis of previous management hiring policies that had offered positions to one group first before belatedly hiring workers from the other group. This led to a profound, bitter, and lasting division in the workforce, with workers refusing to talk to workers from the other group: "It just split the workforce instantly, mate and mate never talked to each other" (crew member). It is not difficult to imagine the impact of such a destructive cultural

divide on the implementation of safety management systems. At another mine, a spill of worker positions led to a schism between those workers who were ostensibly rehired and those who were rejected. As it transpired, the latter were also subsequently retained and therefore had to work together in the same workplace as the former. The two groups rapidly became polarised, forming two distinct camps: those who were not offered a position, and those who were. This created a very difficult work environment, with different groups refusing to work, acknowledge, or speak to each other.

It is difficult to operate a mine when one group of workers will not speak to another group and communication, about WHS as with other matters, becomes a major challenge. Overall, such divisions generated a corrosive mistrust and adversarial relationships between different groups of workers. In some circumstances, effective communication, a vital component of any successful WHS system, was almost impossible, either because one group became closed to the views of others or, in extreme cases, because they refused to interact with them.

8.6 Discussion

Although the two case studies concern different companies with different histories and management philosophies, there are a number of similarities in how they sought to address WHS and in the outcomes they achieved. Because they were driven either by corporate concerns to improve WHS (Minerals Inc) or by a combination of growing pains, peer pressure, and government regulation (Coal Company), they relied heavily on a range of management tools to achieve their objectives. In the language of this chapter, they relied substantially upon either internally or externally driven management-based regulation with a particular emphasis on WHS management systems, standards, and audits. Yet notwithstanding the virtues of this approach, in

practice they both struggled, often unsuccessfully, to implement management-based regulation, and through it, to improve WHS outcomes.

A lack of organisational trust was certainly one of the most important problems, for without trust, our evidence shows that the effectiveness of management-based regulation may be severely and sometimes fatally compromised. The most striking lack of trust at Minerals Inc was between workers and management. At their worst-performing mines, such mistrust was deep-seated and long-standing, for reasons that often related indirectly to the adversarial and bitter history of the mining industry and directly to site-specific past incidents in which workers felt betrayed by management. Geographic isolation, parochialism, and high management turnover sometimes exacerbated these problems. But as the Coal Company study reveals, a lack of trust between other groups was sometimes equally if not more important. We described the corrosive effects of mistrust variously between corporate and mine site management, between workers and middle management on the one hand and senior mine management on the other, between one group of workers and another, and between middle management and the mine manager. We also found that even corporate management can have its own distinctive culture. Locked into past practices and beliefs, and seemingly incapable of adjusting to the needs of managing an increasingly complex organisation, it was corporate management at Coal Company who had lost the trust of mine management.

All this suggests that trust – one important manifestation of workplace culture – needs to be understood not at company level, and often not even at mine site level (although in some respects different mines do have distinctive cultures), but rather at the level of subcultures (and sometimes countercultures) that manifest themselves within different groupings within individual mines. It is these that are likely to contain the most deep-seated values and norms, that are most likely to shape behavior in general and the

effectiveness of management-based regulation in particular.

These findings challenge the conventional wisdom that "creating a unitary cohesive culture around core moral values" at corporate level is the solution, and they are consistent with the views of those who argue "that organizations are nothing more than shifting coalitions of sub-cultures" (Sinclair 1993, 63) and that those subcultures may hold values that are substantially different from those that corporate management seeks to nurture and disseminate across the corporation as a whole.

While most of those subcultures were found to exist within individual mine sites, the Coal Company case reminds us that corporate management too can have its own distinctive culture, quite distinct from those of individual mines. While mine site management members were acutely aware of the need for a more centralised approach and for management-based regulation, they lacked faith in the commitment and capacity of corporate management to provide it. And corporate management, having failed to come to terms with the needs of managing what was now a much larger and more complex organisation, lacked both the vision and the skills necessary to bring about effective management-based regulation. This was a marked contrast to Minerals Inc, where a corporate management committed to a systems-based approach had great difficulty persuading some mines to incorporate it effectively into their operations.

At both companies, organisational trust was generated not just by local factors (such as how workers were treated by mine management) but also by broader factors (such as the adversarial history of mining). These factors commonly interacted, generating perceptions that often amplified mistrust and shaped behavior. For example, where there was a history of mistrust, all management action on WHS (however genuine) was likely to be dismissed by the workforce as insincere, resulting in a lack of commitment

to management WHS initiatives: a classic illustration of American sociologist William Thomas's dictum that what is perceived to be real is real in its consequences.

An overlapping but distinctive theme was the conflict of loyalties experienced by different levels of management within the mine site hierarchy. This was most graphically illustrated by the experience of deputies, who in both companies felt torn between their obligations as members of management and their loyalties to their crew 'mates'. But to a lesser extent other levels of management sometimes experienced the same tension, as for example where middle management sided with the workforce against the mine manager, or where mine managers, while conscious of their obligations to corporate management, nevertheless felt acutely the needs of their own mine and of their own management team and workforce. This too had a negative influence on the effectiveness of management-based regulation.

A further theme was that a failure to obtain commitment from and engagement of middle management and the workforce was detrimental to the implementation of management-based initiatives. This too was related to trust, though more so with workers than with middle managers. Our interviews suggested that lack of engagement was a particular problem with regard to the latter, who, already burdened with a range of duties and demands on their time, commonly viewed the additional requirements of applying management-based regulation as yet one more imposition for which they could not see the need, or for which there were ulterior motives, and which they resented complying with. For some, there was an additional layer of resentment, and resistance, since these requirements were viewed as imposing an additional layer of accountability and as a threat to their autonomy. Historically, mine site crews have operated with often-minimal direct supervision, certainly from middle and senior management, and minimal administrative and/or reporting obligations.

Many middle managers, required to apply the WHS management systems and to document what they had done, and subject to subsequent internal and external audits, felt both vulnerable and resentful. Yet without middle management commitment, management-based regulation could not be effectively implemented. As Jackall (1998, 20-21) pointed out two decades ago:

> [t]he pushing down of details creates great pressure on middle managers not only to transmit good news but, precisely because they know the details, to act to protect their corporations, their bosses, and themselves in the process. They become .... the potential 'fall guys' when things go wrong.

Finally, and closely related to the previous themes, there was the issue of unequal power. Workers, no longer effectively supported by trade unions capable of acting as a countervailing force, and increasingly pressured into individual contracts of employment, often felt vulnerable and threatened by management initiatives. Middle managers too feared that management-based regulation might be a means of placing them under greater senior management scrutiny and control. Deputies, whose allegiance often remained with the crew from which they had come, and who were at the lowest level of the management hierarchy, felt uncertain whether any safety initiatives they undertook would be supported by higher management or whether they would be 'hung out to dry'. In an industry with such an acrimonious history, such issues were never far from the surface and, as we discuss further, were particularly prone to arise in the situations where the tension between 'safety and profit' was most stark: deciding whether to halt production on safety grounds.

Although qualitative research methods do not lend themselves to precise statements about the relative importance of the above themes, our interviews indicated a particularly strong link between mistrust at mine site level and poor WHS outcomes, as

too was lack of middle management commitment (which was often closely related to trust). Conflict of loyalties was a major issue in relation to deputies at all mines that performed poorly in WHS terms, but conflict of loyalties at other levels often varied substantially even within the subgroup of poorly performing mines. Power imbalances, as indicated above, often lurked under the surface but only manifested themselves when particular circumstances arose, and their impact was less predictable than the other factors identified above.

Other themes were also occasionally manifested, but none substantially shaped behavior or outcomes. For example, Tyler has emphasised the importance of moral values in general and of procedural justice in particular, and of legitimacy, in organisational settings (Tyler 1990, 2008). Certainly, we found circumstances where procedural justice took on occasional importance, as where mine managers gained esteem by taking worker complaints seriously and investigating them, even if they ultimately took no action (see further below). Conversely, we found that managers lost credibility by failing to consult workers over costly matters such as which way to cut the coal seam. But our respondents provided no other examples that fell readily into this category. Again, it might be argued that the corporations in our study lacked legitimacy in the eyes of the workforce, in large part as a consequence of a bitter history of industrial acrimony. But this was insufficient to explain why some mines in our sample nevertheless manifested high trust and good WHS outcomes, and why more important were factors that shaped behavior at individual mines. And as will be evident from our previous discussion, even incidents that might broadly be viewed as involving issues of procedural justice or legitimacy could be better explained in terms of a breakdown of organisational trust. We do not believe our findings to be unrepresentative in this regard. Reason, in his seminal work on safety culture, identifies a 'just culture' as one of the key variables, but rather than explaining this in terms of procedural justice he describes it as constituting an atmosphere of trust (Reason 1997).

The most common response to mistrust, divided loyalties, and/ or lack of commitment (the three characteristics often being related), and a perception of powerlessness was ritualism – going the through the motions without any conviction that this would achieve anything of substance. This was the predominant response of both workers and middle management. For example at one mine, miners are required to complete a written JSA card at the start of each shift and when starting a new job. In practice, miners readily admitted that it was common to take a week's worth of the cards home and fill them in advance of the actual jobs – a practice that clearly defeats the entire purpose of having the cards. Mistrustful workers similarly took little interest in reporting near misses, engaging in BBS programs, or participating in sophisticated electronic monitoring systems. We also found many examples of ritualistic responses on the part of middle management. However, this sometimes morphed into active resistance to management-based regulation, particularly where middle management felt that this was being used as a means to scrutinize their behavior and make them more accountable. Both of these responses served to stymie the effectiveness of management-based regulation.

Indeed, the behavior of workers and sometimes middle management in the above circumstances suggests that the gap between corporate rules in 'the books' and 'in action' was often a chasm. As Tyler (2000, 824) points out, managers in organisations 'typically have considerable discretion in the manner they implement decision-making procedures', but this is especially so in the case of management-based regulation. Unlike prescriptive standards (eg, the guardrail must be a precise height) or performance-based standards (eg, no more than two millimeters of dust per cubic centimeter per time-weighed eight-hour day), management-based regulation is necessarily vague, as in implementing the classic 'plan, do, check, act' approach, or in requiring certain risk-based procedures to be undertaken before a job commences. Put differently, a WHS management system is a social system and heavily dependent for

its effectiveness upon the willingness of employees to commit to and engage with it. And this, in turn, so our findings demonstrate, depends on culture (or more usually subculture) in general and trust in particular. Crucially, we found that that where mistrust was not overcome, workers treated almost all management safety initiatives with suspicion and refused to commit to them. For example, BBS programs were perfunctory (particularly those based on supervisor/subordinate observations), incident reporting was trivialised or ignored, systems were more honored in the breach, and sophisticated electronic monitoring systems were sidetracked, safety observations fell short of stated requirements, action tasks were allowed to accumulate, and audit recommendations were not followed up on.

It will be apparent that ritualism and resistance are unlikely to be overcome – or management-based regulation to succeed – in the absence of engagement with the culture, or more accurately, the various subcultures identified above. Such engagement implies not just achieving improved levels of organisational trust but also mitigating divided loyalties and achieving greater middle management and worker engagement, commitment, and ownership. And these latter in turn cannot be achieved without devolving if not power, at least a degree of ownership of safety initiatives to workers and their immediate supervisors (see further below).

But cultural change is never easy to achieve. Indeed, some organisational theorists have argued that an organisation may be incapable of shaping its own culture (Schein 1983), while others argue that that "you only meddle with organisational culture if you've got little choice, lots of resources and lots of time" (Sinclair 1993, 68). However, we disagree with these pessimistic conclusions. In our case studies, the top-WHS-ranking mine sites of both enterprises shared a cluster of characteristics – largely as a result of strategic management intervention. While not all these characteristics were present at all these mines, the more of these characteristics were present, the more

likely a mine was to have minimised mistrust, overcome divided loyalties and a lack of buy, and achieved a high WHS performance. Accordingly, our findings are consistent with the general approach of Reason, who suggests not only that safety culture is actually a product of various interdependent subcultures, but also that these, to a significant extent, can be socially engineered (Reason 1997).

The clusters we identified included a high level of communication and consultation between workers and management on WHS, a willingness by mine management to respond promptly to complaints and suggestions (even where no action was taken), devolving WHS decision-making power down the management hierarchy, emphasising much greater worker ownership of WHS management, and leadership (in terms of demonstrated commitment and 'walking the talk') especially by the mine manager. Additional characteristics were flexible and/or rotating shifts, flatter management structures, and the provision of appropriate resources and adequate training as to how to discharge WHS responsibilities. And of course many of these characteristics are connected. For example, deputies, who in low-trust, low-performing mines commonly experienced a lack of support from more senior management and considerable ambivalence about their position, tended to respond better in mines where there was a flatter management structure, where they were given the appropriate skills, were empowered to take the initiative on safety issues, and were backed up by the next layers of management. While space precludes a full discussion (see further Gunningham & Sinclair 2011), four issues merit further elaboration.

First, there was strong evidence that organisational trust was greatly influenced by the extent to which the mine manager (the visible manifestation of 'the corporation' at site level) was genuinely committed to WHS improvement. This seemed to be a particularly important indicator of managerial leadership. At one high-ranking mine, for example, workers and middle managers spoke highly of the mine manager's leadership role,

especially his engagement with the workforce, the fact that he did "lots of things to be seen around the workforce – and chases up all the complaints" (crew member), and crucially, that he was willing to place WHS ahead of production, to the extent of shutting down the mine (at great expense) to address a safety issue. By contrast, at low-performance, low-trust mines, there were widespread complaints concerning management's willingness to cut corners and sacrifice safety to maximise production. As one crew member told us, in heated terms:

> I don't trust management. Everyone. The whole lot of them .... say you are going to do [a job] the safe way, so you need this, and you need that. They snap .... but if the way you are going to do it is not the safe way, they'll turn their back.

Second, a common refrain, which resonates with Tyler's (2003) work on the importance of procedural fairness, was the preference that workers had for a mine manager who "gives it to us straight" (as one crew member put it). As long as workers' complaints had been heard and investigated, and they had received feedback (even when being told that no further action would be taken), then their level of acceptance and trust was high. Workers (and deputies) at many lower-performing mines, however, expressed their frustration with what they perceived as conflicting messages and the inconsistent responses and attitudes of different managers.

Third, workers seemed far more likely to 'take on board' and implement WHS initiatives if they had a high degree of ownership of them. This was achieved by managers engaging them in the creation of these initiatives, or in the case of corporate initiatives, by involving them in how these policies were interpreted and adopted at individual mine sites. Perhaps the best illustration concerned an attempt by management to introduce BBS observations – usually resisted by the workforce because such programs are seen as a 'blame the worker' approach. Yet such an initiative was enthusiastically

adopted at one mine, primarily be- cause a high-status and influential group of miners was engaged at an early stage and came to feel that it was 'their' initiative.

Finally, it is striking that the strategies that corporate management relied upon under management-based regulation (namely an emphasis on accountability mechanisms that made it difficult for managers to avoid their WHS responsibility, coupled with surveillance, various performance tracking devices, and auditing to ensure transparency) were antithetical to measures that our findings suggested had a positive impact on WHS. The former approach was encapsulated in the attitude of one senior and influential senior manager at Minerals Inc who told us:

> You can't always change attitudes at first, you need to focus on behaviors .... You have got to set the expectation, help them to achieve it, hold them accountable, educate where necessary, and discipline.

But as we discussed earlier, in imposing stringent oversight and control, accountability, and disciplining, corporate management risks a number of counterproductive consequences. For example, the use of surveillance systems "has deleterious effects on the social climate of groups. The use of surveillance implies distrust which decreases people's ability to feel positive about themselves, their groups and the system itself" (Tyler 2008, 810). This in turn lowers motivation, creates an adversarial relationship, and encourages the sort of resistance and ritualism described earlier. Indeed, as Power has argued, rather than solving the problem of mistrust, 'models of accountability' merely displace it – over-reliance upon such procedures and upon 'rituals of audit' serve, in his view, only to generate mistrust (Power 1997).

Those who are subjected to this approach may respond to it with ritualism or resistance, with the result that systems and audits become 'rituals of comfort' that fail

to engage with the fundamental problem of mistrust, and may even serve to foster and increase it (Power 1997). This indeed was precisely the response of many middle managers who resented and felt threatened by mechanisms that they perceived as intended to limit their autonomy, or to be little more than senior management buck-passing.

What made a difference, in the best WHS performing mines in our sample, were various mechanisms that provided workers and site management with more rather than less autonomy and discretion. These served to gain worker or middle management commitment and trust through greater ownership of and participation in WHS initiatives, better communication and feedback, and more training, mentoring and managerial support (*albeit* not control) for deputies and middle management. The key is to ensure that informal systems "support the formal system by enhancing cohesion, initiative and morale" (Selznick 1992, 235). Only in this manner may the gap between formal regulation and informal and local norms be successfully bridged.

These findings suggest that management-based regulation may have its limits. As Bardach & Kagan (1982, 321) pointed out many years ago[42]:

> The risk of [pushing] accountability requirements into the farthest reaches and deeper recesses of social life is that, in the long run, everyone will be accountable for everything, but no one will take responsibility for anything. Thus the social responsibility of regulators, in the end, must be not simply to impose controls, but to activate and draw upon the conscience and the talents of those they seek to regulate.

[42] Bardach & Kagan (1982) were referring to government regulation, but the point is equally applicable to internal regulation within companies.

Indeed, if socio-legal research has taught scholars anything, it is that coercion (whether by the state or by the corporation) is expensive and difficult. Neither government nor corporate regulation can hope to be meaningful and effective without the cooperation, indeed the normative accord, of the vast majority of populations it hopes to control. What this means is that the day-to-day effectiveness of rules depends substantially on the motivation of the corporate employees. For socio-legal scholars, therefore, the key theoretical and empirical issues have come to involve the relationships between regulatory norms and organisational behavior. What factors, legal and non-legal, influence the incidence of compliance and noncompliance?

In answering these questions we have argued that trust and a number of related factors are vital in obtaining the consent and support of managers and workers and in winning their 'intrinsic motivation'. Once these groups accept and take ownership of the rules, regard them as reasonable and their purpose laudable, then compliance becomes a matter of voluntary cooperation. People follow not just the letter, but also the spirit of management-based regulation, and external monitoring costs become low. Workers and managers become "active participants in creating and maintaining conditions of social order" (Tyler 2008, 873) largely irrespective of surveillance and other external controls. In Reason's terminology, it becomes possible to build in a culture of 'mindfulness' (Reason 1997). This is not to imply that management-based regulation has no value. It remains an important technology of governance, but one that can only work effectively in tandem with a supportive workplace culture built around trust, engagement, and commitment.

Finally, we must briefly address two alternative explanations of the findings described earlier. First, it might be argued that management-based regulation is failing not because of any inherent limitations but simply because it is being badly implemented. If so, then these case studies tell relatively little of interest as regards the strengths or

limitations of this particular form of regulation. However, while it is true that at Coal Company a lack of capability and commitment at corporate level was partly responsible for the failure of management-based regulation, this was demonstrably not the case at Minerals Inc, where considerable resources had been invested by a proficient corporate management in the development of a sophisticated form of management-based regulation. Yet this latter system, while successful in improving WHS at some mine sites (those with positive WHS cultures), was manifestly unsuccessful at others (where trust was low and WHS culture poor). This, not managerial incompetence at corporate level, is the puzzle that needs to be addressed.

Second, it might be suggested that the findings reveal nothing more than that decentralised approaches (including management-based regulation) have an inherent weakness, namely, that they necessarily provide considerable discretion in implementation, and in doing so they enable poorly run mines to engage in resistance or ritualism. If so, then the solution is to revert to a centralised, hierarchical (and by implication rule-based and bureaucratic) approach that substantially curbs such discretion.[43] But as organisational and other management theory has long recognised, centralised hierarchical control has severe limitations – the capacity to deal with complex organisations through detailed rules alone is extremely limited (Teubner 1983, 239), which is why proponents of meta-regulation argue for responsive regulation that devolves responsibility to those who have the specialised skills and knowledge to self-regulate (in this case mine sites themselves), subject to external oversight (Parker 2002, 283). This is especially the case when it is difficult to measure performance and the target group is made up of heterogeneous facilities facing heterogeneous conditions (Coglianese & Lazar 2003). In short, whatever the shortcomings of management-based regulation, it is far better suited to engaging with the WHS

[43] We are grateful to an anonymous reviewer for raising this issue.

challenges of diverse individual mine sites than to a centralised, rule-based approach. In substantial part it is for these reasons that management-based regulation has proliferated so rapidly over the last decade.

8.7 Conclusion

Many regulators and corporations have concluded that management-based regulation has considerable promise in encouraging enterprises to take greater responsibility for developing their own systemic approaches to regulatory or business challenges and their own best means of identifying and managing risks. Nevertheless, to what extent or in what circumstances this promise will be realised in practice, particularly when it comes to applying management-based regulation to the multiple facilities of large corporations, remains largely an open question.

Our case studies suggest that, in the mining industry at least, this approach was vulnerable to failure for a variety of often-interrelated reasons. At Minerals Inc, a form of management-based regulation was applied across the corporate portfolio but proved far more effective at mines where levels of trust between workers and management were higher. Moreover, this approach was sometimes unable to overcome a combination of mine management resistance, middle management inertia, and the unwillingness of deputies to take managerial responsibility and implement management systems at the mine site. At Coal Company, the attempt to shift from a flexible discretionary approach to uniform mandatory management standards applied across the board failed not only because some mine managers remained unconvinced of corporate management's commitment or capability and due to an absence of mine site ownership, but also because of a lack of understanding of what was required to make management-based regulation work at corporate level, coupled with a

organisational history and management philosophy in which a belief in the virtues of decentralisation was deeply embedded. This was added to high levels of mistrust between workers and management at some mines.

On the basis of this study at least, it would appear that corporate systems and other tools of management-based regulation only work well when WHS is institutionalised and when it gets into the 'bloodstream' of the organisation at site level. Only when the formal systems (audits, reporting, monitoring, etc.) are supported by informal systems (trust, commitment, engagement, means of overcoming conflicting loyalties, etc.) will they be fully effective.

These findings have important implications for regulatory theory and suggest that the claim that management-based regulation – or meta-regulation more broadly – can overcome many of the traditional challenges of regulating complex organisations is overstated. On the contrary, this study suggests that management-based regulation (or indeed meta-regulation) confronts much of the same challenges as other forms of regulation (albeit on a different scale), with the result that management-based (or meta-regulation) may simply relocate the problems (from outside to inside the firm), rather than solving them. Whether the mining industry, with its distinctive history of conflict and polarisation, is unrepresentative in this respect, we have insufficient evidence to say. But in this industry at least, management-based regulation is substantially constrained by low organisational trust, minimal mine site commitment, and divided loyalties.

Chapter 9: Regulation by stealth: Codes of practice under harmonised work health and safety legislation

This chapter is a reproduction of an article by Neil Gunningham and Darren Sinclair published in a forthcoming volume of the *Australian Journal of Labour Law*. The relative contributions were split 50/50 between Sinclair and Gunningham. Sinclair contributed to the fieldwork, the processing of interview material, the background research and literature reviews, the preparation of initial drafts and the preparation and editing of the final draft.

9.1 Introduction

The process to reform general WHS regulatory regimes across all nine Australian jurisdictions has now been substantially advanced.[44] This was orchestrated by the Council of Australian Governments, under the auspices of the Inter-Governmental Agreement for Regulatory and Operational Reform in Occupational Health and Safety. It sought to achieve harmonisation through the adoption by the jurisdictions of a model WHS Bill, regulations and *codes of practice* (hereafter 'codes'), developed following an extensive National Review into the structure and content of WHS laws. The aim:

> ... is to provide equitable standards for protecting Australian workers, reduce the regulatory burden for businesses and undertakings operating in more than one jurisdiction, and create efficiencies for governments in regulating WHS. A further objective is to achieve significant and continual reductions in work-related deaths, injuries and disease, although these reductions will not necessarily

[44] For a more detailed description and analysis of the harmonisation process and the obstacles it confronts see Bluff & Gunningham (2012).

follow from harmonisation since they depend upon the provisions of WHS Acts, regulations and codes, and their implementation in workplaces, rather than on harmonisation in and of itself (Bluff & Gunningham 2012, 2).

Codes of practice are central to preventative WHS legislation as it has evolved in Australia, and it is timely to consider how they fared under the harmonisation process. It is important to note, however, that this process is far from complete. At the time of writing Victoria and Western Australia have yet to sign onto the model WHS Bill and enact legislation and regulations to bring it into effect. A number of generic model codes have also been formally approved, as have various industry specific codes. In the case of the mining industry, 'core' codes are intended to apply to mining in all the participating jurisdictions, while more specialist 'non-core' codes are still being developed exclusively for the 'mining states' (Safe Work Australia 2011, 4; Access Economics 2011).

To understand why codes are a fundamentally important part of the WHS regulatory regime a brief description of the harmonised legislation is necessary. The model WHS Bill involves three tiers:

(i) a set of *general dutie*s of care (for example, to do what is "reasonably practicable" to ensure health and safety);

(ii) more detailed standards laid down in *regulations*; and

(iii) *codes of practice* which set out one way of achieving and demonstrating compliance with relevant provisions of the Act and regulations but are not mandatory.[45]

[45] The legal source of these three tiers is: general duties laid down in Acts, regulations made under delegate authority but still amounting to 'law', and 'codes' approved by Ministers under s 274 of the Model Act but not formal 'law'.

It is the third tier that does much of the 'heavy lifting' under the WHS regulatory regime. This is because the number of circumstances lending themselves to 'second tier' solutions through regulation is limited[46], and the 'first tier' general duties are so broadly based that they provide little practical guidance as to what is required in particular circumstances. In consequence, codes have a critically important role in providing authoritative guidance to duty holders as to ways in which the general duties and regulations could be discharged.

While the principal focus of this chapter is on codes it is important to recognise that one of the functions of regulators under the WHS Bill is to provide advice and information on WHS that they may do through guidelines, guides, fact sheets, hazard alerts and other forms of guidance materials. Since codes and 'advice and information' are closely connected (particularly in New South Wales, where Mine Design Guidelines (MDGs) play an important role), explicit reference will be made to the interconnections between the two types of instruments.

The chapter considers the merits of a sector specific approach through an empirical analysis of the coal-mining industry in the two 'mining states' of New South Wales and Queensland, where WHS has a high profile and where there have been considerable advances in WHS outcomes over the last two decades (Gunningham & Sinclair 2012). In this regard, the disinclination of the inspectorate to follow the intent of the legislation is also considered. In so doing, multiple industry stakeholders were interviewed[47] to ascertain their experience not just regarding the strengths and weaknesses of codes in principle, but equally, in terms of how they are interpreted, implemented and enforced

[46] These may be confined to minimising significant risks, especially those that can be life threatening or cause serious disability, and where there are recognised solutions that are known to control the risk effectively (such as particular technologies). See Bluff & Gunningham (2012).

[47] Snowball sampling was the principle means of selection while ensuring that all stakeholder groups were adequately represented.

in the real world. In total 64 interviews were conducted, encompassing mining company executives (at both site and corporate levels), trade union officials, and the mines inspectorates both at head office and field officer levels in the two 'coal mining states', as well as with Commonwealth and State officials responsible for the development of codes. This enabled us to explore in depth, the experience of New South Wales with mining specific codes of practice and of Queensland with the comparable instrument of recognised standards (Coal Mining Safety and Health Act 1999 (Qld); Coal Mining Safety and Health Regulation 2001 (Qld)). Since data collection was confined to these two states we have make no direct comment on whether or to what extent similar patterns are to be found in other states such as Victoria, where Part 5.3 of the OHS Regulations 2007 applies to mines and the regulator is a generalist WHS regulator.48

The chapter is structured as follows. Section 9.2 describes the scope, characteristics and legal status of codes under the new WHS regime, their role in achieving compliance, and their relationship with standards and guidance material. Section 9.3 examines potential flaws in code development and review, their consequences and how they might best be overcome. Section 9.4 describes the various types of standards that codes might incorporate, including circumstances that impact on code effectiveness. Section 9.5 examines how codes are implemented, including, in the case of coal mining, possible gaps between theory and practice, and possible remedies. Section 9.6 concludes.

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48 Part 5.3 has been the subject of detailed consideration in the public inquiry into the Hazelwood Coal Mine Fire which burnt for 5 weeks from 9/2/14. While the inquiry had not reported at the time of publication, media releases suggest that not all of this chapter's findings are necessarily applicable in Victoria. See generally hazelwoodinquiry.vic.gov.au/ accessed 3 August 2014.

9.2 Approved codes of practice under the new regime

9.2.1 Scope, characteristics and legal status of codes of practice

The *National Review Into Model Occupational Health and Safety Laws* (hereafter 'Review Panel') recognised that codes play an important role in assisting duty holders to meet the required standard of WHS practices at work, and that it was important that they be provided with a legal status that would maximise that role (Commonwealth of Australia 2009, 48.1). So what should that role be, in what circumstances should they appropriately be used, and what precisely should be their legal status?

In addressing the first and second of these questions, the Review Panel quoted with approval the views of Bluff & Gunningham (2008, 3) who had argued that:

> In the continuum of quasi-legal and purely advisory instruments, we suggest the principal basis for selecting a quasi-legal instrument over a purely advisory one is the need for unequivocal, authoritative advice. An 'approved' code of practice is a more appropriate choice when it is important to provide clarity and certainty about an acceptable way(s) to comply with the OHS statute or regulations, and it needs to be clear and unambiguous that the instrument has legal status and/or can be used as evidence in proceedings. A statutory guideline is appropriate if there is a need to provide definitive interpretation of a particular provision of an OHS statute or regulation. In other circumstances, where the principal aim is to provide practical advice and solutions, guidance materials (in various forms) are appropriate.

This position, according to the extensive evidence provided in the above report, was also representative of regulatory 'best practice'. The Review Panel concluded that codes play an important role in explaining the requirements of the Act and regulations and setting out practical ways to meet the required standard of WHS practices at work.

As to the third question, the Review Panel noted that in the past, the legal status of codes, compliance codes and comparable instruments had varied substantially between jurisdictions. For example, there were approved codes with a rebuttable presumption of non-compliance, approved codes that were 'deemed to comply' and approved codes that were evidentiary but had no 'rebuttable presumption' or deemed to comply status (Commonwealth of Australia 2009, Table 76). There were also 'recognised standards' in Queensland that looked remarkably like codes by another name.[49]

In determining their legal status, the Review Panel emphasised that, while approved codes are documents of legislative character, which legislation provides can be used in court proceedings, nevertheless:

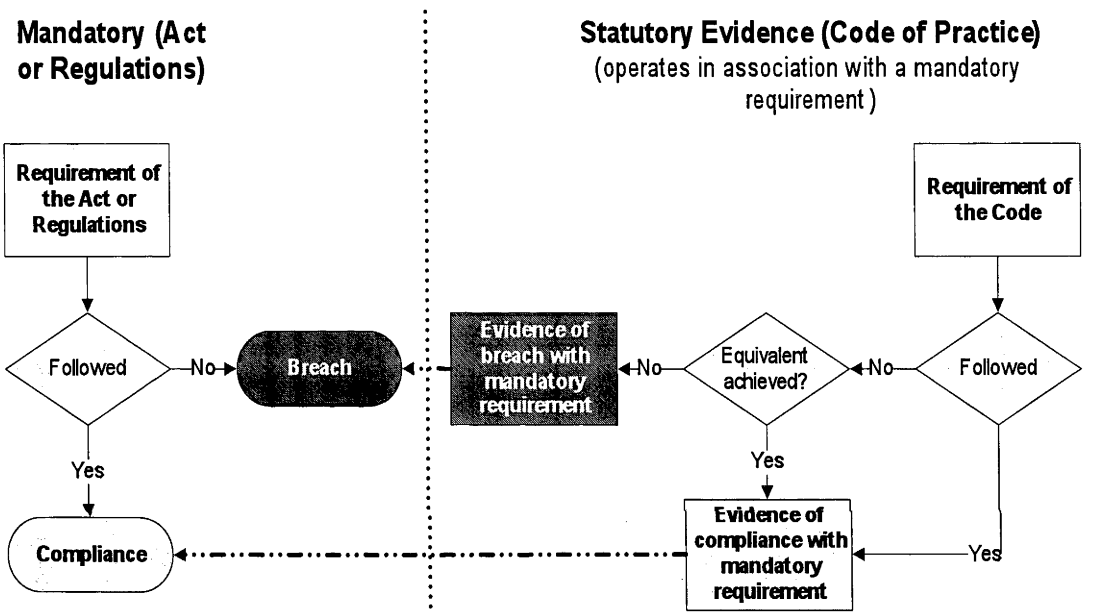
> There is no requirement that codes of practice be complied with. They are meant to guide duty holders in how to meet their obligations. It is not appropriate that they have a binding or prescriptive character. They may not be directly applicable to each business or workplace. If a person can otherwise show compliance with the duties under the Act, then compliance with a code of practice is not normally expected or required. Codes of practice do, however, represent evidence of knowledge of risk and risk control. They are evidence of

[49] Although there was no obligation to follow the methods contained in recognised standards, if they were not followed, the onus was on the operator to demonstrate that they adopted an alternative method that managed risk equally well or better than the way suggested under the standard or guideline. See *Coal Mining Safety and Health Act 1999* (Qld) s 37(3).

what would be reasonably practicable in the circumstances (Commonwealth of Australia 2009, 48.26).

The Review Panel illustrated their view of how codes should apply (Commonwealth of Australia 2009, 48.28) (see Figure 1).

Figure 1: Application of codes



Accordingly, the Review Panel recommended that:

- The model WHS Bill provide that a code is to be taken by a court to represent what is known about specific hazards, risks and risk controls. That evidence, along with other evidence, may assist the court in determining what was reasonably practicable in the circumstances (Commonwealth of Australia 2009, recommendation 230).
- The model WHS Bill should make clear that a duty holder may achieve and demonstrate compliance with relevant provisions and regulations by ways other than the ways set out by an approved code of practice recommendation 231).

Consistent with these recommendations Section 275 of the model WHS Bill 2009 provides:

(1) This section applies in a proceeding for an offence against this Act.

(2) An approved code of practice is admissible in the proceeding as evidence of whether or not a duty or obligation under this Act has been complied with.

(3) The court may:

(a) have on regard to the code as evidence of what is known about a hazard or risk, risk assessment or risk control to which the code relates; and

(b) rely on the code in determining what is reasonably practicable in the circumstances to which the code relates.

The 'evidentiary' status of Approved Codes of Practice (ACOPs) under this provision (meaning that they can used as evidence in proceedings) is particularly important. For example, in New South Wales, this overcomes obstacles that would otherwise be presented by the *Evidence Act 1995* (NSW) and the rules of evidence, which would otherwise prevent the use of documents as evidence unless backed by an independent expert witness.

Importantly, s 275 does not give ACOPs 'deemed to comply' status. Rather, there still needs to be an assessment that the code covers what needs to be dealt with to achieve what is 'reasonably practicable'. That is, while for the most part, following an ACOP would achieve compliance with the health and safety duties in the WHS Act, it must be remembered that "codes of practice deal with particular issues and do not cover all hazards or risks which may arise. The health and safety duties require duty holders to consider all risks associated with work, not only those for which regulations

and codes of practice exist" (Safe Work Australia 2012). This is appropriate given that many codes under the new WHS regime are of a generic nature.[50]

9.2.2 The roles of ACOPs in achieving compliance

Inspectors may use a variety of different strategies to achieve compliance with WHS legislation, ranging from facilitating voluntary action through advice and persuasion, through direction via improvement and prohibition notices, to prosecution and other enforcement action (Gunningham 2007, Chapters 6-7). ACOPs have greatest influence in terms of the first two of these strategies and as we will see, far less with regard to the third.

First, ACOPs are commonly used by inspectors as part of a co-operative advise and persuade approach to provide practical guidance to duty holders. This is a legitimate means of drawing attention to improved WHS practices and is consistent with their statutory purpose.

Second, although failure to implement an ACOP is not in itself an offence, a failure to comply with an ACOP may be used as evidence of failure to discharge a general duty or to comply with a regulation. Codes do therefore have enforcement implications and it is not uncommon for inspectors to cite them in an Improvement Notice or Prohibition Notice.[51] This is legitimate provided it is not implied that the duty holder *must* comply

[50] For a general discussion of the role of codes of practice under the harmonised WHS regime see Johnstone, Bluff & Clayton (2012, Chapter 6). See also, Johnstone & Tooma (2012, 26-27 and 35-36).

[51] In principle, such a notice would need to cite mandatory requirements of the relevant WHS Act or regulations, since ACOPs are not mandatory instruments. However, it would be entirely

with the ACOP in order to discharge their legal responsibility. On the other hand, if the duty holder neither complies with the relevant ACOP, nor develops an alternative approach at least as good, then they will have failed to comply with the relevant notice. We return to the problem of inspectors treating ACOPs as *de facto* mandatory at Section 9.5 below.

Finally, ACOPs might be used in evidence in prosecutions for breaches of WHS statutes or regulations. Yet in practice, codes seem to be referred to only exceptionally in judicial proceedings and relevant judicial commentary is scant. A search for cases involving codes of practice through LexisNexis revealed little more than a handful of cases in which ACOPs were referred to, and mostly only in passing. Nonetheless, it is clear that in principle, ACOPs may be used in evidence in a prosecution. As such, they have greater legal standing than standards and guidance material (see further Section 9.2.3 below), as has been confirmed in *WorkCover Authority of New South Wales (Inspector Mulder) v Arbor Products International (Australia) Pty Ltd* [2001] NSWIRComm 50; (2001) 105 IR 81. Having said this, it appears that in some jurisdictions the courts also seem prepared to take account of the latter (including Australian Standards) in determining whether risks are foreseeable, and whether mitigation is reasonably practicable (Bluff & Gunningham 2008).[52]

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legitimate for a notice to refer to a code of practice (or indeed to guidance material) to draw attention to relevant provisions and to provide information about one way of complying.

[52] Note also the provision with regard to due diligence in clause 27 (1) of the model WHS Bill, which is designed to ensure that officers take proactive steps to eliminate or reduce hazards or risks within the workplace that a person in control of a business or undertaking is responsible for. It would appear that if a particular code becomes outdated (as will not be uncommon) and ceases to incorporate what is understood to be contemporary good/best practice then the due diligence requirement would not have been satisfied.

9.2.3 Relationship between codes, standards and guidance material

The model WHS Bill provides that ACOPs can expressly apply, adopt or incorporate other documents, in whole or in part. Specifically, section 274 (3) provides that "a code of practice may apply, adopt or incorporate any matter contained in a document formulated, issued or published by a person or body whether:(a) with or without modification; or (b) as in force at a particular time or from time to time".

In the coal mining industry, technical standards are provided for by a number of standards setting bodies. Of particular note is the International Labour Organisation code on safety and health in underground mining. Similarly, a code might adopt 'exposure standards' with regard to hazardous chemicals or standards developed by national and international standards bodies, including Standards Australia.[53] Notable government developed standards are the MDGs compiled by the Mine Safety Operations Branch of Industry & Investment, New South Wales.

An attraction of standards such as the above is that these can be incorporated 'as amended from time to time' in ACOPs to enable the most updated and current version of the standard to be applicable (although this does serve to bypass tripartite scrutiny of any such revisions) (Johnstone *et al* 2012, 6.155). Such an approach has been taken with regard to the model Regulations (see regulation 13). Should the drafters of ACOPs adopt a similar approach it will have the advantage of helping to keep them up to date (to the extent that they rely on a standard), given that it may not be practicable to revisit and revise the code in its entirety for some considerable time ahead.

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[53] Standards Australia is recognised by the Australian Government as the peak non-government Standards body in Australia. See: <http://www.standards.org.au/Pages/default.aspx>.

While this approach has merit, it does not guarantee that ACOPs will reflect the contemporary state of knowledge about particular hazards or risks, nor the available and suitable ways to eliminate or minimise them. For example, standards themselves become outdated. This is certainly the case with Australian Standards, particularly given limited funding for regular revision. The result is that while some standards may reflect contemporary knowledge, others do not.

9.3 Flaws in code development and review

The harmonisation process has put great pressure on members of the tripartite process who are charged with developing new instruments within a very short period. There was almost unanimous agreement amongst our respondents that in the case of ACOPs, the development process has been extremely rushed, with insufficient resources – the ambition to get 'new codes out of the door' resulted in short cuts being taken, to the detriment of code quality. This was compounded by the fact that the Review Panel itself did not devote sufficient attention to the details of how ACOPs (or guidance material) should be developed and deployed. In a number of respects, then, code development has been seriously deficient.

First, insufficient attention has been paid to priority setting, with decisions to develop a particular ACOP based on *ad hoc* criteria, rather than on strategic considerations[54]. This can lead to inconsistency and a misuse of scarce resources. Some respondents likened this to a 'shotgun approach', where officials reactively responded, particularly when there is 'blood on the floor'. As such, WHS regulators (in consultation with industry and unions) should develop a set of criteria for ACOP development to prioritise

[54] While no systematic study has been conducted, a number of respondents involved in the development of ACOPs asserted that they were commonly a response to a particular incident rather than part of a coherent process of reform.

the greatest hazards, including the capacity to evolve in response to changing technologies (soft and hard) as well as incidents 'on-the-ground'.

Second, ACOPs must be developed efficiently to be less resource intensive and time consuming. Industry stakeholders, in particular, complain that they cannot participate meaningfully under the current approach, given the volume of material involved. An efficient and systematic approach to code development is desirable,[55] emphasising the importance of clear objectives, engaging with relevant industry stakeholders, identifying a range of possible solutions and testing these out with interested parties, *before* proceeding to the drafting stage.

Third, effective consultation in code development is essential to the legitimacy of the tripartite process and to the quality of new codes. The model WHS Bill provides for a tripartite process of code development but does not specify what this should involve or how, if at all, appropriate expertise should be harnessed. An apparent failure to engage sufficiently with either of these concerns indicates the need for early involvement of stakeholders including technical experts, and, where appropriate, designers and manufacturers of plant or equipment.

Fourth, the model WHS Bill is imprecise as to when and how any review of ACOPs should take place. This is unfortunate since they can become outdated and potentially counterproductive or redundant (some MDG's in New South Wales, for example, have not been updated since the mid 1990s). It is important that procedures are developed for updating existing codes (and guides), recognising that those with prescriptive components may need more regular review. Such reviews should ask: does the code provide an unambiguous guide to one way of complying for specific activities? Is the

[55] The draft Protocols for Developing Codes etc, developed under the NMSF may be a helpful step in this direction.

code up to date and does it properly reflect changes in technology? Is the code presented in the most appropriate way for the intended audience? Does the code refer to current technical standards?[56]

Finally, there is the question of whether ACOPs (and guides) should be generic or sector specific. Since few hazards lend themselves to one or two control measures that can be effectively adopted in every workplace, many generic codes are too broad to be of practical help, as numerous respondents pointed out. While generic codes are appropriate in a limited range of circumstances (for example appropriate consultation procedures between management and workers), for the most part, sector specific codes have greater value for their intended audience.

9.4 Code design: How best to influence corporate behaviour

ACOPs may incorporate a number of different types of standards. This section argues: (i) that which types of codes are invoked will be fundamentally important to code effectiveness and WHS outcomes; and (ii) that their design should take account of the characteristics of their target audience and of how best to influence their behaviour.

9.4.1 Standards and their application

To address these issues it is first important to identify the different standards types. Consistent with Bluff & Gunningham's (2004) typology, ACOPs may contain:

(i) *principle-based* standards that set a general objective or standard without specifying the means of achieving that standard;

(ii) *prescriptive* provisions (also known as specification standards[57]) that specify the

[56] This list is drawn from Löfstedt (2011, 56).

particular measures that may be taken by duty holders (but are not mandatory);

(iii) *process-based* standards which set out a course of action (consultation, processes to manage risks, management systems);

(iv) *performance-based* standards which describe an outcome but leave it to the duty holder to determine the concrete measures to achieve that outcome; or

(v) *documentation* provisions such as records of action taken.

There are examples of each of these types of standard amongst the currently released national model codes (or in jurisdiction-specific codes that remain in force under the transitional provisions applying to the new WHS regime). Further, many codes contain elements of more than one of these types of standard.

Principles-based standards are epitomised by the general duties stated in the WHS Bill but are rare in codes, which aim to elaborate on such principles rather than replicate them. An exception is the prohibition on energised electrical work (Safe Work Australia 2012).[58]

There are a number of examples of ACOPs that contain *prescriptive* requirements, though *entirely* prescriptive codes are rare. For example, *How to Safely Remove Asbestos* (Safe Work Australia 2011b) specifies that the 'wet method' must be used to

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[57] The term 'prescriptive' in the above context is unfortunate since all standards (including thoses which are performance and process based) are prescriptive insofar as they direct duty holder to behave in some particular way. The term specification standard should be preferred. See Gunningham & Bluff (2012). However, since all respondents and the industry more generally, refer to prescriptive standards in the above context, that language is maintained for the purposes of this chapter.

[58] This provision specifies that energised electrical work must not be carried out unless the safety risk to those persons directly affected by a supply interruption is higher than the risk to the licensed or registered electrical workers proposed to carry out the energised electrical work.

removal asbestos where reasonably practicable, but in most other respects is risk-based. Greater prescription can, however, be found in some of the jurisdiction specific codes, each of which will remain in force until a comparable replacement model ACOP is approved. For example, in Queensland some recognised standards involve numerous highly detailed and prescriptive provisions,[59] exemplified by Recognised Standard 5 (on stonedusting) (Department of Natural Resources and Mines 2003), as too do many MDGs in New South Wales.[60]

A substantial number of other ACOPs, in contrast, are primarily *process-based. How To Manage Work Health And Safety Risks* (Safe Work Australia 2011c) is a typical in that it emphasises the importance of risk management and how this can be achieved through the four steps elaborated in the code: identify hazards; assess risks if necessary; control risks; and review control measures to ensure they are working as planned. In terms of mining the draft *Work Health and Safety Management Systems in Mining* code (Safe Work Australia 2011d) is also essentially process-based, involving: an effective WHS management system; the identification and control of risks; the identification of all principal mining hazards; and the preparation of management control plans.

The quintessential example of a performance-based ACOP is *Managing Noise And Preventing Hearing Loss At Work* (Safe Work Australia 2011e) that provides for the maintenance of workplace noise at decibel levels that are safe for human ears (while also utilising process standards). *How to Safely Remove Asbestos* (Safe Work Australia 2011b) also contains performance-based elements, providing that what action a licensed asbestos removalist should take will depend on the 'respirable fibre level',

[59] See generally the listing at Department of Natural Resources and Mines (2013).

[60] For the most part, MDGs do not have any formal legal status. The exception is those MDGs in New South Wales that have been gazetted and which have the same legal status as codes.

and, in terms of mining, the draft *Ventilation of Underground Mines* code states: "the mine ventilation system must provide air at sufficient volume and velocity to all places where people travel or work to maintain a safe level of Oxygen, between 19.5% and 23.5% by volume" (Safe Work Australia 2011f, 2.1).

Finally there are some examples within the ACOP of 'documentation standards', the most obvious being *Labelling of Workplace Hazardous Chemicals* (Safe Work Australia 2011g). The related approved code on *Preparation of Safety Data Sheets for Hazardous Chemicals* (Safe Work Australia 2011h) also falls within this category. In the case of mining, the draft *Mine Record Code of Practice* (Safe Work Australia 2011i) also falls within this category.

9.4.2 How appropriate is the current mix?

No guidelines have been developed for which type of standard might be desirable, in which particular circumstances, or whether a combination of standards (and if so which particular combination) might best promote WHS. This is unfortunate and can result in incoherence in ACOP development, with the risk that some codes, at least, are not well suited to achieving their WHS objectives or are counter-productive.

So how *should* ACOPs be designed? More particularly, which of the above type of standards or indeed combination of standards is best suited to achieving WHS effectively and efficiently? To address this question we first distil the findings of the literature[61] and respondent views before seeking to elaborate some principles for code design.

[61] See in particular Gunningham & Johnstone (1999, Chapter 2); Bluff & Gunningham (2012).

While the literature recognises that *principles-based* standards can play an important role – especially given their all-encompassing character – such attributes are rarely desirable in codes. The very essence of most codes is to provide practical guidance and to flesh out the principles-based general duties contained on WHS law. With very few exceptions, restating such duties or making other statements of a general nature would serve no useful purpose. Perhaps for this reason, respondents had very little to say about such standards.

The literature suggests that *performance-based* standards, while valuable, can only be applied in few circumstances. For example, while in some circumstances it may be possible to state a maximum permissible level of exposure to noise, or to a hazardous substance, often there is insufficient scientific evidence to justify such an approach, or no plausible performance-based measure is identifiable. This was consistent with respondent views, who saw value in such standards but only in the particular circumstances where there was clear scientific evidence to support the setting of a specified limit. A similar view was expressed about *documentation-based* standards: while evoking no criticism, they were seen as playing a very modest role.

Similarly, there was little support, either in the literature, or from respondents, for the use of *prescription-based* standards; and many industry respondents were highly critical of them. According to the literature, such 'bright line' standards do have the virtue of clearly identifying what preventive measures must be implemented by the duty holder and thereby enable duty holders and inspectors to readily ascertain compliance. However, they do not facilitate least cost solutions and accordingly are unlikely to be cost-effective in the majority of circumstances (Bluff & Gunningham 2012). As such, a common industry respondent view was that prescription inhibits innovation and does not encourage best practice:

> You have to achieve a balance that allows the industry to evolve, and still maintain best practice. If you make it prescriptive you constrain the evolution of best practice ... The problem is – how do you prove your way is better and who is going to go to the effort of proving it, and risk getting an inspector offside. We want continuous improvement whereas a prescriptive standard says – if you do it this way, that's enough.

Further, where enterprises and WHS challenges are not homogeneous then prescription is often inappropriate and counterproductive because 'one size does not fit all'. A mining executive encapsulated this view as follows:

> With prescription it's difficult with things that vary from mine to mine – for example the ventilation system. It's different at every mine site and there are different levels of gas and different conditions.

Similarly with 'strata failure', it was claimed that:

> You can't prescribe by regulation. But you can say, you must have appropriate roof support. [performance] but you can't say have these cables, those bolts and this mesh – because there are many different permutations and it's all circumstantial, so you can guide but you can't prescribe.

Others were particularly fearful that prescriptive codes would proliferate in the future and be applied in circumstances where they were manifestly inappropriate:

> It's all over prescribed. In Queensland the CFMEU want 30 recognised standards to be put into codes. But that doesn't consider the uniqueness of risks at individual sites.

Finally, since to be effective they must be detailed, prescription-based standards tend to result in a mass of law that is difficult to comprehend and keep up to date (Bluff & Gunningham 2012, 18-19).

On the other hand, several respondents, principally those with 'hands on' WHS responsibilities (including engineers), saw some attraction in prescriptive codes because they provided practical advice and solutions to achieve compliance. The virtue of such an approach, it was claimed, "is it gives the SSE [Senior Site Executive] the confidence that if I do it this way my arse is protected". Many inspectors and the Construction, Forestry, Mining and Energy Union (CFMEU) also support this approach, largely because it enables them to be more confident in identifying breaches. Some industry respondents attributed other motives to the latter, suggesting for example, that: "in Queensland, if the CFMEU can't get prescriptive legislation they try to get the same result through a recognised standard [the equivalent of a code]. They want prescription so they can catch people out".

Turning to *process-based* standards, the literature suggests that these are valuable in encouraging enterprises to take greater responsibility for developing systemic approaches to regulatory requirements, including identifying and managing risks. Indeed, advances in mining industry safety are widely attributed to the development of structured risk management and WHS management systems. Regulators, in turn, have tried to harness this in the form of management-based regulation (Coglianese & Lazer 2003). Whether or to what extent they have been successful is however a matter of ongoing debate (Gunningham & Sinclair 2012).

Respondent views on this issue were largely a mirror image of their opinions on prescriptive standards. Most senior mining executives extolled the virtues of process-based standards, while recognising that there were considerable challenges in making

this approach work in practice. A common view was that: "if you have got the right systems, the general risk management approach is the way to go". Many, for example, saw the virtue of "giving the end user the ability to understand the process and where the risk lies and to show them how to mitigate it". However, some also identified considerable difficulties in making a risk-based approach work internally, across mine sites. Extending such an approach to contractors was a particular challenge: "[I] don't find the existing guidelines [to a risk based approach] very useful – we can't even agree amongst ourselves about how it should be done".

For these reasons, some saw a particular place for explanations and/or training of hazard/risk management principles, suggesting a need for clearer risk management guidance within codes and guides. Were such codes to be developed, then, as the CFMEU pointed out, they should indicate a series of specific processes and checks that need to be completed, as well as involving the workforce directly in the risk management process. Some in industry suggested that the inspectorate itself should provide assistance in hazard identification and risk assessment, whilst bemoaning their reluctance to do so.

Other stakeholders were much more critical of process-based standards, although their reasons varied according to their position. For example, some industry respondents expressed reservations about relying on a risk-based approach because "some people will push the envelope", and, when they do, such standards will be harder for the inspectorate to enforce than bright line prescriptions. Managers at the 'front line' also opposed them because it is harder to demonstrate compliance. As one industry respondent stated:

> Some engineers like to sleep easy – they have a compliance mentality that waits for the inspectors to tell them what to do. They are not interested in managing

> risk – the whole thing is an arse covering exercise. But the intent of OHS is to provide a safe system of work. This can be difficult for some engineering managers to accept.

Several inspectors, as indicated above, also expressed a preference for prescription because it makes their job easier in enforcing compliance. The CFMEU was also strongly supportive, arguing that the mining industry is not sufficiently mature for risk-based regulation to be a credible option.

To summarise, both the international literature and many respondents suggest that different types of standards or different combinations of standards are appropriate in different types of circumstances. While there was little support for principles-based codes, most saw benefits in performance and documentation-based standards but recognised that these would only be suited to a very limited range of circumstances.

Opinion was much more divided with regard to the role of prescriptive and process-based standards. Senior executives within industry, who could perhaps afford to take a more dispassionate view than their 'hands on' colleagues, were generally in favour of process-based (and especially a risk-based) standards. In contrast, those 'in the firing line' in terms of demonstrating that they had discharged obligations under WHS legislation, wanted the security of prescription. Since prescription and process are often antithetical, this suggests an ambivalence concerning what sort of codes they really want – one mining executive encapsulated this as follows:

> The reason some things are prescriptive is because the SSEs [Senior Site Executives] want it. With a high consequence event they want to be able to say risk based is great but just tell me what to do and I'll do it- especially if they think there is a risk of going to jail. With every recognised standard in Queensland it's

> because they have asked for it. We are half pregnant. Either we want risk based or we don't. We talk about risk and managing it but it's having a code that gives you security.

Mining engineers were often less ambivalent, expressing a strong preference for detailed prescriptive standards, especially in relation to the design and manufacture of mining equipment by external suppliers.

Field officers (as distinct from senior inspectors at HQ), and the trade union, were also supportive of prescription over process, largely because it provided for certainty and ease of enforcement. Engineering inspectors in particular, were seen as likely to be "quite rigid with their approach to codes and guidelines" and much more so than generalist mines inspectors, some at least of whom were much more attuned to a risk assessment methodology. The senior inspectorate, at least in New South Wales, also saw some virtue in shifting away from prescription (and acknowledged that some of the inspectorate, however, particularly more 'traditional' inspectors, were still operating within a prescriptive 'compliance mindset'), but they did not want to lose the 'accumulated industry wisdom' that they saw as often contained in prescriptive standards.

In the following section we provide our own analysis of how the tension between prescriptive and process based codes should be resolved.

9.4.3 Completing the journey: Towards a process-based approach

How ACOPs are best framed will depend in large part on the particular characteristics of the industry sector at which they are targeted. A sector specific approach has virtue in resolving the tension between prescription and process-based standards, and in determining which of these types of standards should be preferred and in what circumstances.

The coal mining industry is distinctive in a number of respects. It comprises almost entirely large sophisticated companies – there are no small and medium sized (SMEs) in the two 'coal mining jurisdictions' of New South Wales and Queensland (although ancillary service providers vary in size). It also involves high risk operations which vary substantially according to: the mining environment (and therefore appropriate ventilation controls); the method of mining; the geotechnical environment (and therefore the necessary forms of strata control); whether they are 'gassy' or non-gassy, whether they are underground or open cut, and so on.

Moreover, for a variety of reasons (Gunningham & Sinclair 2012, Chapter 1), the Australian coal industry has invested substantial resources in improving WHS over the last two decades and indeed, according to both injury and fatality statistics, has made good progress in so doing.[62] In short, even with substantial variation between mine sites and companies, the coal mining industry has, more than most other high risk

[62] See Poplin *et al* (2008). However, note that the above analysis relies heavily on LTIFRs which have been widely criticised for their vulnerability to manipulation. For a more recent triangulated analysis, see Gunningham & Sinclair (2012, Chapter 2).

industry sectors,[63] demonstrated a commitment to, and realisation of, improved WHS performance.

Finally, these improvements are widely attributed to the application of management tools that focus on systemic problems rather than individual deficiencies, in particular, the identification, assessment and control of risks, with an in-built system of maintenance and review. Poplin *et al* (2008), for example, noting the marked decrease in LTIs in the Australian coal mining as compared to the USA, suggest that that a risk management approach had a valuable role "in assisting with planning and managing operations, as well as helping some equipment manufacturers supply safer machines". Joy & Terrey (2006, 11), documenting advances made by the Australian coal industry since the early 1990s with structured risk management concepts, tools and systems approaches, noted the profound impact of an approach whereby "the company and site are empowered to apply site systematic risk management approaches, decide on appropriate controls and interact with the regulatory about process quality" (while recognising that it is still a work in progress).

So how should the above characteristics of the coal mining industry serve to shape code design? As regards principles-based standards (which are only very exceptionally relevant), performance standards (which are valuable but have very limited application) and documentation standards (which again are only exceptionally relevant) the answer is: not at all. For these types of standards by their nature lend themselves to a generic approach. But as regards the two types of standards between which it will be

[63] In 2005–06, the industries recording the highest injury rates were Agriculture, forestry and fishing (109 per 1,000 employed), Manufacturing (87 per 1,000), and Construction (86 per 1,000). Australian Bureau of Statistics, *4102.0 - Australian Social Trends, Work Related Injuries* (7 August 2007) at: <http://www.abs.gov.au/ausstats/abs@.nsf/0/63ED457234C2F22DCA25732C002080A7?opendocument> (accessed 8 August 2013).

necessary to choose in the large majority of circumstances – prescriptive and process-based standards – the sector specific characteristics of the industry will be crucially important, for a number of reasons.

First, prescription is most popular with SMEs. Lacking sophistication and resources, they almost invariably invoke the mantra: "just tell us exactly what to do and we'll do it". This has been the finding of almost every investigation of the behaviour of SMEs, both in Australia and internationally.[64] But there are *no* SMEs in the coal mining industry (unlike for example, opal mining), so their needs are of no concern in this context. While there is no justification for complacency, and a considerable distance to the achievement of 'zero harm', nevertheless coal mining companies have for the most part demonstrated a commitment to improved WHS, have achieved a substantial reduction in injuries and fatalities, and are well equipped to devise their own best practice ways of addressing particular hazards. As such, they are far less in need of prescriptive standards than SMEs.

Second, given the considerable variation between the circumstances of different coal mines, prescription-based standards are likely not just to be unnecessary, but may indeed be inappropriate or counterproductive. This is because, as indicated earlier, prescription is best suited to homogenous industries where one size fits all. Where there is substantial variation between the circumstances confronted by different companies or different mine sites within the same company, while a prescriptive standard may be tailored to the circumstances of some, it will inevitably be unsuited to others. For example, while explosion protection requirements are appropriate for any diesel used underground in gassy mines, it is doubtful whether they should be imposed in non-gassy mines.

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[64] See, for example, Gunningham & Johnstone (1999, Chapter 2) and Gunningham & Sinclair (2002).

Third, while prescription-based standards may be valuable in creating a level playing field and establishing clear rules in a highly competitive industry with multiple small players and incentives to 'cut corners' (such as construction), again, this is not the case with mining. In the former, there is likely to be a 'race to the bottom' in safety performance in the absence of clearly defined and clearly enforced standards. But in the mining industry where the relevant drivers (risk management and social license), are to go 'beyond compliance', and where the statistics suggest that aspirations are backed up by action, not just rhetoric, a very different approach may be appropriate: one that facilitates companies doing more than the minimum and which encourages industry innovation and initiative.

Prescription, in contrast, can inhibit innovation. This was a view of both industry and of senior regulator respondents. For example, according to one senior Queensland inspector, prescriptive codes inhibit continuous improvement:

> Once something is in a code that will become the standard. Ninety eight percent of people will choose to follow the code. The code will be a set of rules. People need something to bite on. But the code becomes all that's ever done.

A mining industry executive expressed a similar concern as follows:

> If there is an in-rush code, I do my damndest to meet it. I'd do everything I can, and then they can't touch me. But it's pedantic. They find a technical detail that's missed. If they could say my risk wasn't managed then fair go, but they will issue a directive based on a micro level thing. The code doesn't distinguish between a big thing and a little thing. The inspectors don't draw a line between major and minor. What use is a risk management procedure if the code is minutely written and detailed and specific? *It detracts from a risk-based approach. It makes a*

risk-based approach redundant (emphasis added).

These problems are serious particularly in the context of codes providing a minimum baseline of performance for the industry, not necessarily best practice. As one senior industry respondent put it: "Codes are not the highest level of performance. They are a minimal level of compliance. That's how they should be". This makes it even more important to encourage and facilitate beyond compliance behavior on the part of industry.

Fourth, and crucially, the WHS architecture that has evolved in the mining sector is predominantly process-based (and quintessentially risk and system-based). This is increasingly sophisticated and appears to have achieved considerable reductions in injuries and fatalities (Gunningham & Sinclair 2012, Chapter 2; Joy & Terrey 2006, 12-13). It is also the essential architecture of mine safety legislation that has evolved over the last decade (emphasising as it does, general duties, WHS management systems and hazard management plans). In this context, the introduction of prescription-based standards, far from complementing process-based standards, commonly serves to undermine them, producing outcomes that are likely to be detrimental to the overall cause of WHS. This can occur in a variety of ways, as a number of our industry respondents pointed out. For example, prescriptive codes can serve to constrain effective risk management, as occurs where an inspector insists on a duty holder following a prescriptive code notwithstanding that this will detract from auditing and risk management:

> The inspectorate focused on stone dusting and on whether we were following the recognised standard [broadly comparable to a code of practice[65]]. And this

[65] Recognised standards are not mandatory, but when followed they provide a way of meeting safety and health obligations. A person may adopt another way of managing a risk, but in the

> is pages of detail. But really we should be auditing our mine site OHS management systems – is that system appropriate to manage the risk – but the only way the inspectorate knows how to test [if we are performing safely] is to do it with the recognised standards. So it gets down to whether we have done the petty things, not the important ones.

Similarly, another respondent reported:

> You get a code but it's not the holy grail. You get things written in the most minute detail but it's not the only way to achieve the same result. And it's not always applicable to your circumstances, but if it's written into the standard you are stuck with it even if it does not quite relate to your major hazard analysis.

Finally, it should be noted that, according to the literature, prescriptive standards "are most appropriately reserved for addressing WHS problems where effective solutions are known and where alternative course of action are not desirable, because of the need to control specific and significant risks in a particular way" (Bluff & Gunningham 2012, 19). But while this is uncontentious as a general statement about the appropriate roles of different types of standard, it suggests that the best place for prescription is in regulations, whose purpose is precisely to make mandatory, requirements in these circumstances. However, codes clearly contemplate the appropriateness of 'alternative courses of action' (this is why the code simply specifies *one* acceptable means of compliance) and so are clearly excluded from the scenario contemplated above.

From the above analysis it would appear that the coal mining industry, given its profile, the heterogeneous nature of the hazards at individual mines, its level of sophistication

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event of an incident the person may be required to show that the method adopted was at least equivalent to the method in the recognised standard.

and commitment to improving WHS, and its history of 'internal control' through WHS management systems and risk management, is particularly well suited to the application of process-based standards in codes. Especially those that focus on refining management systems and sharpening risk management practices so as to underpin systematic efforts to address the hazards/risks arising in their operations. It is also the case that superimposing prescription-based standards on this risk-based approach will be counterproductive, and can be anticipated to have a negative impact on the overall level of WHS.

Nevertheless, there is a risk that removing prescriptive material from codes may, as some senior regulators suggest, result in the loss of standards that "encapsulate the wisdom and experience from within the industry". Although this is a powerful argument, the need to preserve such wisdom can be satisfied by incorporating such material in sector specific guidelines as per the New South Wales MDGs. It should be noted that one particular advantage of relying on guidelines rather than codes, is that the former are less likely to be regarded (albeit erroneously) as *de facto* regulations. In this way, the accumulated wisdom that in the past has sometimes been contained in prescriptive codes would not be lost, but would be preserved in a different form.

For all the above, in the many circumstances where there is a tension between the application of process-based (primarily risk-based) codes and prescription-based codes, the former should be preferred, and that prescriptive material previously contained in codes, where it still encapsulates valuable information, should be transferred to guidance material.

9.5 Implementation and interpretation: Regulation by stealth?

While the form and content of codes is important, it is how they are interpreted and implemented by the inspectorate and industry that in large part determines their overall efficacy.

9.5.1 Are codes and guidance material being used as *de facto* regulation?

As described earlier, section 275 of the model WHS Bill makes it clear that it is not mandatory to comply with an ACOP, that it simply describes *one* acceptable way to satisfy the general duty to do what is 'reasonably practicable'. As such, codes do not, and should not, have a binding or prescriptive character (Commonwealth of Australia 2009, 48.26). Moreover, as noted in the previous section, a prescriptive interpretation would be antithetical to the risk-based approach to regulation which has facilitated the Australian coal mining industry in achieving substantial improvements in WHS outcomes, and which also reflects the underlying philosophy of the principal mine safety legislation, which is built around the central pillars of general duties, management systems and major hazard management plans.

But codes not only provide guidance to duty holders, they also assist inspectors in interpreting and implementing WHS legislation. For example, an inspector may refer to an ACOP when issuing an improvement or prohibition notice, or in determining whether a prosecution was justified. And it is here that a substantial tension appears between the risk-based nature of the legislation and of the WHS management practices of the major companies on the one hand, and the interpretation of codes as prescribing particular behaviour, by the inspectorate on the other.

Many industry respondents cited instances where in practice inspectors had treated codes as if they were mandatory standards. That is, inspectors have frequently taken such a rigid and prescriptive approach to codes, that each code becomes, not just one acceptable means of discharging the general duty requirements, but *the only way*. As one industry respondent complained, "the regulators say they want to give you ... increased freedom, but they give you a bunch of prescriptions". This occurs either because "even where the operator does demonstrate a better way to do it the inspector still insists that they comply with the code", or because, notwithstanding that an inspector does not *explicitly* demand compliance with a code, they are unwilling in practice to approve any alternative approach. One industry manager put it this way:

> If you want to go down your own route the inspectors will look very hard at what you are doing ... If they were asked to approve an alternative route, they would not do this if it were a formal process. They wouldn't put their nuts on the line.

The result is that it is, at best, a rare exception for industry to choose the route of equivalence (that is, exercising its discretion find an alternative approach that achieves at least the same degree of safety as the code) rather than simply adhering to an ACOP:

> There are a lot of powerful reasons pushing both inspectors and miners towards the codes. It is the exception that mines will go against codes or MDGs. It would involve a risk assessment, designing a regime, signing off by mine manager and general manager – it only happens once or twice a year.

This rigid and inappropriate interpretation of the role of codes, common among field inspectors, was recognised to be a problem not just by the mining industry, but also by the senior inspectorate, as the following comments attest:

> Inspectors should not be doing it [treating codes as mandatory]. They just don't seem to be able to help themselves... they just say, this [the code] is best practice so why aren't you doing it? (senior inspector)

These concerns were particularly prevalent in New South Wales where codes have been part of the regulatory landscape for many years, but they also resonated in Queensland where recognised standards perform similar functions. Indeed, Queensland respondents had little difficulty anticipating some of the likely consequences of the new regime, including the impact of codes on their operations. As one Queensland industry respondent put it:

> Who determines if you have done something equally safe or better? If I'm not following a code I should be able to ask the inspector – is this ok? The inspector should say whether my alternative approach is OK or not – but they won't because if they get it wrong they would be in the poo. So they aren't going to approve my alternative method. Particularly if they have the CFMEU (trade union] in their ear, whispering, 'you've got it wrong'.

As will be apparent, this rigid approach to ACOPs, like the preference for prescription over risk-based standards, has the unfortunate consequence of inhibiting innovation and constraining efforts to go beyond compliance. But notwithstanding its unfortunate consequences, this approach still has its adherents who, who unsurprisingly, are essentially the same groups which endorse prescription over risk management. These are, once again, many middle managers who are in the firing line if something goes wrong, and who 'just want to be told what to do, and do it', and, also, some field inspectors, particularly those who have been in their positions for many years. For both these groups:

> The easiest thing to do is to comply with codes; it is the path of least resistance. Everyone is most comfortable with this approach, both miners and inspectors (senior mining engineer).

Importantly, this is not only the case with codes but also with guidance material, particularly in New South Wales, where both inspectors and industry rely upon MDGs, many of them highly prescriptive and detailed, to 'tell them what to do'. That is, inspectors not only use MDGs as detailed sources of guidance when it comes to technical issues, but many of them regard compliance with them as the *only* way of discharging the duty holder's general duty responsibility (to do what is reasonably practicable) in circumstances where they are applicable. As one industry respondent lamented: it is "putting a sophisticated tool into the hand of someone who is used to using a blunt instrument". Another stated:

> The general thrust of [WHS legislation] is to be less prescriptive at a high level, but you get creeping prescription at the operational level – this goes against the thrust of enabling legislation. Even though they say they can't be prescriptive, they really are. You end up treating guidelines as though they are legislation.

Many inspectors, too, acknowledge the potential for MDGs to be used prescriptively, and conceded that 'old school traditionalists' in particular, were inclined to cite a failure to meet an applicable standard set out in a MDG[66] as the reason for the issue of a notice.

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[66]For further details of MDGs see the MDG Index at: NSW Trade and Investment (Resources and Energy), *NSW Mining Design Guidelines*, at: <http://www.dpi.nsw.gov.au/minerals/safety/publications/mdg> (accessed 8 August 2013).

In summary, inspectors and industry alike agree that there is a substantial gap between policy intent and implementation practice, and whether this gap is seen as desirable or not, depends very much on where individuals sit within the hierarchy of their own organisation, with senior industry management and the senior inspectorate, tending to line up on one side, and most middle managers and some field inspectors on the other (especially the 'old guard' who 'grew up' with a traditional prescriptive regulatory model). Overall, it is often the views of the latter that prevail, with the result that in many cases codes and guidance material are being applied as if they were mandatory rather than simply offering one possible means of discharging the duty holder's statutory obligations. The result is that even though senior managers emphasise that "if you have got the right systems, the general risk management approach is the way to go", the on-site use of codes and guidance material often falls short of this expectation.

9.5.2 Reforming implementation: Codes as authoritative guidance

As we saw in the previous section, ACOPs, and sometimes guidelines, are being treated by many inspectors as de facto regulations. This is not only inconsistent with section 275 of the model WHS Bill and antithetical to the aspirations of mine safety legislation in the coal mining jurisdictions but also serves to inhibit innovation and continuous improvement, constrains risk based WHS initiatives and impedes other efforts to go 'beyond compliance'. In short, it is not only contrary to the intent of the legislation but is antithetical to achieving best WHS outcomes.

But what action should be taken to ensure that codes are indeed implemented as intended: as authoritative guidance rather than as *de facto* regulation? In this section, we propose five mechanisms designed to ensure that the widely perceived benefits of codes of practice are preserved while mitigating the counterproductive consequences of

the inspectorates' current rigid approach.

The first and obvious means of ensuring that codes are interpreted as the legislation intended, is to change the behaviour of the inspectorates. Senior regulators in both New South Wales and Queensland recognised the desirability of doing so:

> You should train inspectors so they clearly understand a code is a good starting point. You have to draw a line in the sand. But we must not take away their [the operator's] creativity. They have to know that they have an option (Queensland).

At the very least, the intended functions of codes and the inappropriateness of treating them as if they were regulations must be made clear to inspectors in formal training, refresher courses and through written directions from the Chief Inspector. But while this is an essential starting point, it may not be enough in and of itself, given that some inspectors appear to have been misconceived their powers with regard to ACOPs for some considerable time and are deeply wedded to their current approach. A second and related response would be to work through the HSWA, to develop mechanisms that will achieve consistent *and appropriate* use of inspectors' powers. The issue of how inspectors interpret ACOPs is already one of a number of matters being taken up by the HSWA through the *Regulators Harmonisation Project,* which aims to establish a framework for harmonising WHS regulators' approach to the administration of the model WHS Bill. This project has to date developed a range of policies, procedures and operating documents to assist inspectors to implement national laws consistently within and across jurisdictions, particularly through the work groups addressing Procedures for Inspector Powers and Functions and Training. However, it has not addressed mining specific issues that are deemed to be the responsibility of the NMSF, nor has it addressed codes (although it has developed some guidance material for inspectors, for example, guidance on procedures to deal with the entry of permit holders). Historically,

the behaviour of the Mines Inspectorates has been less shaped by HSWA activities than that of the 'generalist' inspectors, and it remains unclear to what extent they would be influenced by initiatives under the *Regulators Harmonisation Project.*

A third avenue, consistent with Section 9.4 above, involves the progressive redesign of codes and guidance material such that the large majority of codes emphasise process and performance-based approaches over prescription (while recognising that in limited circumstances, more technical and detailed standards may be required). This would have the further benefit of minimising the opportunity for inspectors to interpret codes in 'black and white' terms because risk-based codes do not provide bright lines or lend themselves to such a narrow interpretation.

A fourth approach would be to provide a clear pathway for industry to demonstrate equivalence to a code or guideline, thereby overcoming the present uncertainty that makes industry reluctant to risk developing an alternative approach in-house for fear that this will leave them vulnerable to enforcement action, particularly when their operations are subjected to particular scrutiny following an incident or injury. If a clear step-by-step guide were developed as to how equivalence could be demonstrated, in conjunction with a mechanism whereby inspectors were able to formally approve 'equivalence demonstration', this would do much to dispel the current reluctance of industry to innovate. Arguably, for such a mechanism to be viable, inspectors, too, would need some formal protection in the event that such a decision, reasonably arrived at, proved to be erroneous.

A final mechanism, which is beyond the ambit of this chapter but which we have addressed elsewhere (Gunningham & Sinclair 2012, Chapter 8), is nurturing cultural change within companies themselves, without which many of their own personnel will not be ready, willing and able to effectively implement a risk-based (or a process-

based) approach. In essence, the evidence suggests that corporate WHS systems, risk management and other tools of management-based regulation only work well when WHS is institutionalised, and when it gets into the 'bloodstream' of the organisation at site level. In short, only when the formal systems (audits, reporting, monitoring) are supported by informal systems (trust, commitment, engagement) will they be fully effective, and these latter in turn, imply the need for supportive WHS culture at site level.

9.6 Conclusion

This chapter has explored how codes might best be designed and implemented to realise their potential to do much of the 'heavy lifting' under WHS legislation. While we have identified various deficiencies in the design and implementation of codes under Australia's newly harmonising WHS legislation, two in particular stand out: a failure to design codes of a type or types that are best suited to their industry specific context; and a failure on the part of the mines inspectorates to implement codes appropriately.

In terms of the former, no guidelines have been developed as regards which type of standard might best be suited to particular circumstances. The result is considerable incoherence in the development of standards, some of which are ill suited to achieving their WHS objectives. For the most part, policy makers will need to choose between the development of prescription and process-based codes, since these two types of standard are often incompatible. As we have argued, the coal mining industry, given its profile, the heterogeneous nature of the hazards confronting individual mines, its level of sophistication and its history of 'internal control' through WHS management systems and risk management, is particularly well suited to the application of process-based codes. As such, codes that provide a structured way of addressing risk management can make a particular contribution in this regard. Many prescriptive codes, in contrast,

can be anticipated to have a negative impact on the overall level of WHS, since they often detract not only from risk management but from innovation, continuous improvement and beyond compliance initiatives more broadly.

In terms of implementation and enforcement, the propensity of individual inspectors to interpret codes as if they were mandatory is legally indefensible, inhibits preventative WHS innovations and damages relations between the inspectorate and operators. It might be argued that in this regard our findings are unrepresentative, that only an exceptional inspectorate would behave in such a fashion. Sadly, the evidence is to the contrary. Inquires in Western Australia, Queensland and New Zealand all suggest that the pathologies we have identified within the mining inspectorates are typical, not exceptional (Ritter 2004; Gunningham & Neal 2011; Queensland Ombudsman 2008).

Strong measures are required to ensure that inspectors interpret codes appropriately: emphasising that their role in providing authoritative guidance while at the same time preserving opportunities for innovation and risk management. The latter is a process that the Australian coal mining industry has increasingly embraced over the last two decades, during which time the level of deaths and injuries has dropped significantly (Joy & Terrey 2006). The role of good regulation is to nurture that process, which is precisely what process-based codes, interpreted flexibly, can do. In contrast, a compliance mentality on the part of inspectors (and some parts of industry) that countenances no alternative than strict adherence to ACOPs, is a form of regulation by stealth that discourages risk management, constrains initiative and inhibits innovation.

These findings have important implications for the ongoing development of codes under the harmonised WHS legislation, and will also feed into the more specific debate being conducted under the auspices of the NMSF concerning how to develop and implement best practice coal mining regulation. Australian mine safety regulation, with its central

pillars of broad-based general duties, WHS management systems and principal hazard management plans (Gunningham 2007, Chapter 2), is widely seen to be world leading. How unfortunate that implementation and enforcement, on the contrary, fall so far behind international best practice. It is only when this gap has been closed, and when codes are no longer regulation by stealth, that Australian mining WHS regulation will truly approach international best practice.

Chapter 10: Refined list of competencies that should exist within the 'ideal' inspectorate

This chapter is a reproduction of Stage 1 of a two-stage report (Capability analysis of mining inspectorates) by Neil Gunningham and Darren Sinclair in 2009 prepared for the NMSF, Commonwealth Department of Resources, Energy and Tourism. Sinclair was wholly responsible for writing this stage of the report.

10.1 Introduction

The NMSF, an initiative of the Ministerial Council on Mineral and Petroleum Resources (MCMPR), aims to achieve a nationally consistent WHS regime in the mining industry. One of its seven strategies is competency development, with a goal of competency support: to encourage and promote continuous skills development and consistent levels of competency nationwide, for both the regulator and the industry. The NMSF Implementation Report sets out a three-stage process for the regulator component of the strategy:

- Stage 1: Refine the list of competencies that should exist within the 'ideal' inspectorate.
- Stage 2: Undertake an independent capability analysis of the inspectorate, based on the above list.
- Stage 3: Develop and/or deliver training to improve competency where it is needed most.

The chapter relates to the first of these stages.[67]

A list of competencies of the ideal inspectorate was developed at the Role of the Regulator Workshop, held by the Steering Group in February 2008. The identified competencies, for both the individual inspector and the inspectorate as a whole (i.e. as an organisation) were summarised into three main categories: (i) technical (e.g. mining engineering, electrical engineering, ergonomics); (ii) management and support (e.g. mine management, communication and consultation, policy development); and (iii) enforcement and investigation (e.g. understanding legislation, inspection, accident and incident investigation). However, the competencies identified at the workshop were regarded as only the first stage in the development of this strategy.

The brief with regard to this first stage of the consultancy was to further refine this competency list, utilising existing competency resources. For this purpose the most useful sources were found to be the Competency Model for Mine Safety Inspector/Specialist developed by the United States Department of Labor Mine Safety and Health Administration (2003) and the United Kingdom Health and Safety Executive's core competence frameworks, core regulatory framework and Health and Safety Core Regulators' Development Needs Analysis Tool, all of which were piloted in 2008 and are being 'rolled out' in 2009. We also drew on a number of other sources, including the United States Federal Railroad Administration's Railroad Safety Inspector Competencies, the Behavioural Core Competency Profile of the Canadian Association of Administrators of Labour Legislation OHS Committee, the Nuclear Safety Regulators – National Occupational Standards Development Research Report 2008, the Skills

[67] The larger Gunningham & Sinclair report to the NMSF encompassed Stages 1 and 2, but not Stage 3.

Australia Public Sector Training Package (PSP04 Version 3), and the NOHSCEP (2008).[68]

Based on these and other sources, and on a perusal of the broader regulatory literature, the list of competencies identified by the 'Role of the Regulator' workshop was refined as follows, seeking to identify the competencies that an 'ideal' inspectorate should possess. This process began by identifying the overall objectives of a mining inspectorate and by identifying five key outcomes that are essential to achieve these objectives. Objectives and outcomes were not addressed at the Role of the Regulator workshop but in our view competencies (collective or individual) can only sensibly be identified in the context of what they are intended to achieve.

In terms of objectives, there is no dispute that a mining inspectorate's core concern is to ensure compliance with applicable WHS law, policies and agreed practice (and by so doing, to minimise work related death, disease and injury). However, there is increasing recognition that a further role is to encourage, reward and facilitate 'beyond compliance' behaviour, at least by industry leaders. Certainly some inspectorates are expanding their role from purely legislative compliance to become workplace agents of change. The Victorian WorkCover Authority for example, seeks to recruit "multi-skilled adaptable health and safety professionals who can help workplaces create the solutions that will produce sustainable change".

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[68] The NOHSCEP is a principles-based document endorsed by each HWSA jurisdiction. It is interim in nature, pending the development and jurisdictional implementation of model national OHS laws. It is intended to ensure consistency in outcomes and that common approaches are taken by workplace health and safety authorities to the laws they administer. Each workplace health and safety authority will customise its policies to reflect its particular legislative and administrative framework and the national policy:
(see http://www.hwsa.org.au/files/documents/Compliance_and_Enforcement_policy.pdf).

At the next level of analysis, we identified five *outcomes* that must be achieved for a mining inspectorate to achieve its objectives efficiently, effectively and equitably:

(i) *Risks and hazards.* Mining is an industry where hazards are large, risks are inherent and change is continual. Successful management of risks associated with mining thus requires a systematic approach. It is essential that inspectors can identify those hazards with the greatest potential for adverse WHS outcomes and have an understanding of the general risk-management approaches, plans and systems best able to address them.

(ii) *Persuasion and enforcement.* Inspecting, investigating, advising, influencing and enforcing are core inspectoral activities and how they are discharged will fundamentally affect the behaviour or regulated entities and the achievement of desired WHS outcomes. The primary emphasis should be on assisting industry to comply through building industry capability to properly manage workplace risks, while also maintaining an effective mix of positive motivators and effective deterrents.

(iii) *Consistency and proportionality.* A mine operator is entitled to expect that the similar circumstances will produce a similar response from inspectors and that inspectors' actions will be proportionate to the extent of identified hazards, consequential risk of work-related injury or illness, the seriousness of any deficiency in the measures taken by relevant duty-holders and the operator's compliance record. Consistency, both in terms of process and outcomes, is necessary to ensure fairness in the treatment of different regulated entities and to maintain the credibility of the inspectorate. Such consistency is desirable within jurisdictions as well as across them.

(iv) *Relationships.* Developing and maintaining a good professional relationship with mines sites and other stakeholders, based on trust and mutual respect, is essential to

achieving desired WHS outcomes. Regulatory outcomes usually emerge out of consultation, dialogue and negotiation. Unsurprisingly, a constructive relationship usually generates positive outcomes, and vice versa.

(v) *Improvement and integration.* Many large mining companies have developed a sophisticated range of management tools intended to minimise work-related injury and disease. Some of these companies aim to go beyond compliance with existing legislation. Inspectoral practices need to be integrated with, and to complement and enhance corporate systems and controls, in order to encourage and facilitate continuous improvement.

Most of the above five outcomes relate primarily to ensuring compliance (and in the case of persuasion and enforcement, exclusively so) but 'improvement and integration' and many of the competencies within it is concerned explicitly with encouraging and facilitating beyond compliance and with continuous improvement.

In terms of the next level, the distinction made at the Role of the Regulator workshop between collective and individual competencies is retained, but both categories have been added to significantly, and adapted some of the competencies identified at that workshop in the light of capabilities identified in the various documents referred to above. We then endeavoured to map the various competencies into one of the five outcome categories (however it should be noted in this context that there will inevitably be some overlap of competencies among them).

It should also be noted that not all inspectors could be expected to possess all competencies. There is a role for both generalists and specialists (and indeed for teams involving both, as noted in previous NMSF documents). For example, the type and level of training required by inspectors will vary depending upon whether one is

addressing general or technical competencies, with core mining technical skills central to the latter.

For ease of access the competencies have been summarised in tabular form, followed by a more detailed elaboration below. For those who prefer a diagrammatic representation building on the Role of the Regulator workshop model, a modified version is also below at Table 7.

Table 7: Inspectoral competencies

OBJECTIVE				
Ensuring Compliance to Encouraging 'Beyond Compliance' Behaviour				
OUTCOMES				
Risks and Hazards	**Persuasion and Enforcement**	**Consistency and proportionality**	**Relationships**	**Improvement and Integration**
COMPETENCIES				
Collective competencies Knowledge and review of risk and hazard management Abreast of technological developments Range of technical specialists Data analysis Capacity to address non-traditional risks Capacity to draw on multiple indicators	**Collective competencies** Graduated compliance and enforcement response Range of accident and investigation skills Targeted compliance Responsive sanctioning	**Collective competencies** Organisational management Line management Peer exchange Mentoring and training	**Collective competencies** Leadership Professional standards Information exchange (and communication more generally)	**Collective competencies** Leadership Engagement with mining companies WHS management expertise Tracking relative mine-site performance WHS policy for beyond compliance Range of policy options Continuous learning
Individual competencies Review hazard identification and management Review risk analysis and management One or more technical skills Industry experience Investigative skills	**Individual competencies** Knowledge of /familiarity with WHS law Inspect and identify breaches Accident and investigation Encourage compliance Flexible and responsive approach Mix of positive motivators and strong deterrents Knowledge of prosecution procedures	**Individual competencies** Organisational knowledge Partnering and networking Tool selection Self-management Planning and evaluation	**Individual competencies** Integrity Communication (oral, written and technological) Interpersonal skills Responsiveness	**Individual competencies** Knowledge of mine-site systems, standards and procedures Knowledge of best-practice WHS policy and practices Audit skills Problem solving and initiative Influence and negotiation Guidance and assistance Continuous improvement

10.2 Objective

Ensuring compliance and encouraging 'beyond compliance' behaviour.

10.2.1 Outcome 1: Risks and hazards

- Ensure the identification of hazards with the greatest potential for adverse WHS outcomes.
- Ensure the effective management risks and hazards.

10.2.1.1 Collective competencies

- Detailed knowledge of WHS issues in the mining industry and capacity to review, assess and challenge operator's ability to identify hazards, understand risks and put in place controls (*steering group members in disagreement over whether it is role of inspector to identify hazards, or assess operator's ability to identify hazards).*
- Capacity to keep abreast of technological and safety advancements in terms of management and reduction of associated risks.
- Provide a range of technical specialists within an inspectorate, including those with direct industry experience, (*steering group members in disagreement over "direct industry experience)* covering:
    - Operational management methods.
    - Engineering (mining, electrical, civil, mechanical, ventilation, geo-technical).
    - Occupational hygiene.
    - Mining-related expertise (e.g. geo-mechanical).
    - Mining operator experience, ergonomics.
    - Safe handling of explosives and dangerous goods.
    - Risk management.

- Training with regard to review of major risks and hazards (and mining technical skills).
- Data analysis – particularly in order to identify safety risks and trends.
- Capacity to review and assess management health risks in additional to safety risks.
- Capture multiple indictors of risk and hazard management, including inspectoral insights, data analysis, and management, worker and union input.

10.2.1.2 Individual competencies

- Hazard identification and management (review, assess and challenge):
    - Recognise high-risk hazards.
    - Review procedures and processes to mitigate hazards to acceptable levels.
    - Familiarity with risk-management systems.
- Risk analysis and management (review, assess and challenge):
    - Assess management risks of projects, processes and work tasks.
    - Review procedures to mitigate and control risks.
    - Familiarity with safe systems of work.
- One or more of the above specialised technical competencies (including relevant technical/tertiary qualifications (eg 1st Class Ticket) – *steering group members in disagreement over inclusion of the bracketed section on qualifications.*
- Industry experience – mining related experience/expertise in one or more fields (and/or in an allied industry) *steering group members in disagreement over industry experience – alternative wording suggested "industry operating experience (mining related is an added benefit)"*
- Investigative skills – capacity to draw on multiple sources of information of risks and hazards (eg knowledge of industry, data, and management and worker and union input).

10.2.2 Outcome 2: Persuasion and enforcement

- Select appropriate enforcement option(s) and apply graduated enforcement response to WHS non-compliance.
- Investigate contributing factors/causes in the event of major WHS incidents, in particular serious injuries/fatalities, and investigate complaints.
- Assist industry to comply through building capability to properly manage risks, while also maintaining an effective mix of positive motivators and effective deterrents (up to and including closing mine sites until problems are adequately addressed).

10.2.2.1 Collective competencies

- Able to deliver graduated compliance and enforcement response – consistent with the NOHSCEP, including:
    - Ensure duty-holders are knowledgeable about WHS laws and can achieve compliance (e.g. via safe systems approaches to effectively managing risks).
    - Ensure duty-holders comply with WHS laws or are held to account.
    - Deal immediately with serious risks.
- Possess specialised accident and investigation skills.
- Implement a targeted compliance and enforcement actions that address areas of greatest risk to health and safety.
- Responsive sanctioning consistent with the NOHSCEP.

10.2.2.2 Individual competencies

- Knowledge of/familiarity with WHS law – including applicable regulations, required roles and responsibilities of duty-holders (and others) and available (and proportionate) sanctions.

- Capacity to inspect and identify breaches of general duty of care provisions (e.g. arising from inadequate processes or safety systems) as well as of specific regulations.
- Encourage duty-holders to comply while ensuring that there are fair and timely consequences for those who do not.
- Adopt a flexible and responsive approach consistent with the NOHSCEP.
- Able to apply an effective mix of positive motivators and effective deterrents
- Good working knowledge of prosecution procedures – and ability to recognise when to call on additional expertise.

10.2.3 Outcome 3: Consistency and proportionality

- Achieve consistency across companies/mine-sites and inspectors within a jurisdiction (as well as across jurisdictions), and proportionality (relating enforcement action to the seriousness of the matter).

10.2.3.1 Collective competencies

- Organisational management – foster consistency and proportionality of enforcement actions across the inspectorate, including through development of policies and procedures and internal quality control (ie self-review).
- Line management – provide resource, technical and moral support to line inspectors.
- Peer exchange – facilitate opportunities for inspectors to exchange information, experiences and approaches.
- Mentoring and training – provides regular, one-on-one guidance, and training aimed at fostering consistency and proportionality (eg via nationally recognised qualifications).

10.2.3.2 Individual competencies

- Organisational knowledge – coordinates with other parts of the organisation, knowledge of, and follows, inspectoral compliance and enforcement policy and guidelines, seeks advice and support where necessary.
- Partnering/networking – works with others, shares ideas, information and best practice with other inspectors, workers and unions.
- Ability to choose the appropriate regulatory tool for particular circumstances.
- Self-management skills:
    - Works consistently even without direct supervision.
    - Time management.
    - Motivated to succeed and demonstrate responsible/consistent behaviour.
- Planning and evaluation – organises work, sets priorities, determines resource requirements, formulates long- and short-term goals/strategies and monitors progress.

10.2.4 Outcome 4: Relationships

- Maintain constructive professional working relationship with mining companies and those working at individual mines sites (including managers and workers), based on trust, mutual respect and knowledge of WHS issues in the industry, and good communication (aligned with Global Code of Integrity for Labour Inspection).
- Improved dialogue between management and workers.
- Maintain the respect and support of peers, supervisors and subordinates across the inspectorate (and with key government organisations).
- Maintain open dialogue with other key stakeholders (including workers, unions, suppliers and contractors).

10.2.4.1 Collective competencies

- Leadership – demonstrably set the standard for quality relationships within and without the inspectorate.
- Professional standards – establish and communicate clear behavioural benchmarks for inspectors.
- Information and communication technology – use a variety of vehicles/media to communicate effectively and in a timely manner.
- Ability to assess and, where appropriate, make suggestions to improve dialogue between workers and management.

10.2.4.2 Individual competencies

- Integrity – trustworthy, ethical, independent and honest in dealing with all stakeholders (including managers, workers, unions, contractors and suppliers).
- Communication:
    - Oral communication skills (explains complex ideas, including legal and policy requirements, listens to others and comprehend operator issues).
    - Written communication skills (including information technology skills).
    - Ability to assess how well concerns, instructions and aspirations are conveyed at the workplace, and identify possible improvements.
- Interpersonal skills:
    - Ability to consult internally and externally.
    - Cooperative and courteous.
    - Self confident and assertive (when necessary) – drawing on a sound knowledge of the industry, core mining skills, and major risks and hazards.
    - Capable of handling situations involving tension, stress or hostility.
    - Ability to engage with all levels at mine sites, from managers to workers.

- Responsiveness – follows up, takes personal responsibility and pursues appropriate action.

10.2.5 Outcome 5: Improvement and integration

- Complement and enhance internal mining company WHS management standards, systems and procedures.
- Distinguish between 'living and applied' and 'presentational and shelf-bound' mining company WHS standards and systems.
- Deliver regulatory outcomes appropriate to the size, sophistication and type of mining operation.
- Reinforce mine-site safety culture.
- Identify and help companies achieve beyond compliance WHS outcomes.

10.2.5.1 Collective competencies

- Leadership – encourage integration of regulatory and company WHS objectives and processes.
- Engagement with mining companies – particularly at the corporate, senior manager and industry association level.
- WHS management expertise – including international best practice, and the limitations of paper systems lacking management/worker commitment to them.
- Statistical data analysis and performance assessment – within and between companies.
- Policy on general WHS principles and practices – including achievement of beyond compliance.

- Range of policy options tailored to operator size, sophistication and/or type – including simplified WHS management systems for smaller mining companies/sites.
- Continuous learning across all five outcomes, and ongoing improvement of inspectoral skills.

10.2.5.2 Individual competencies

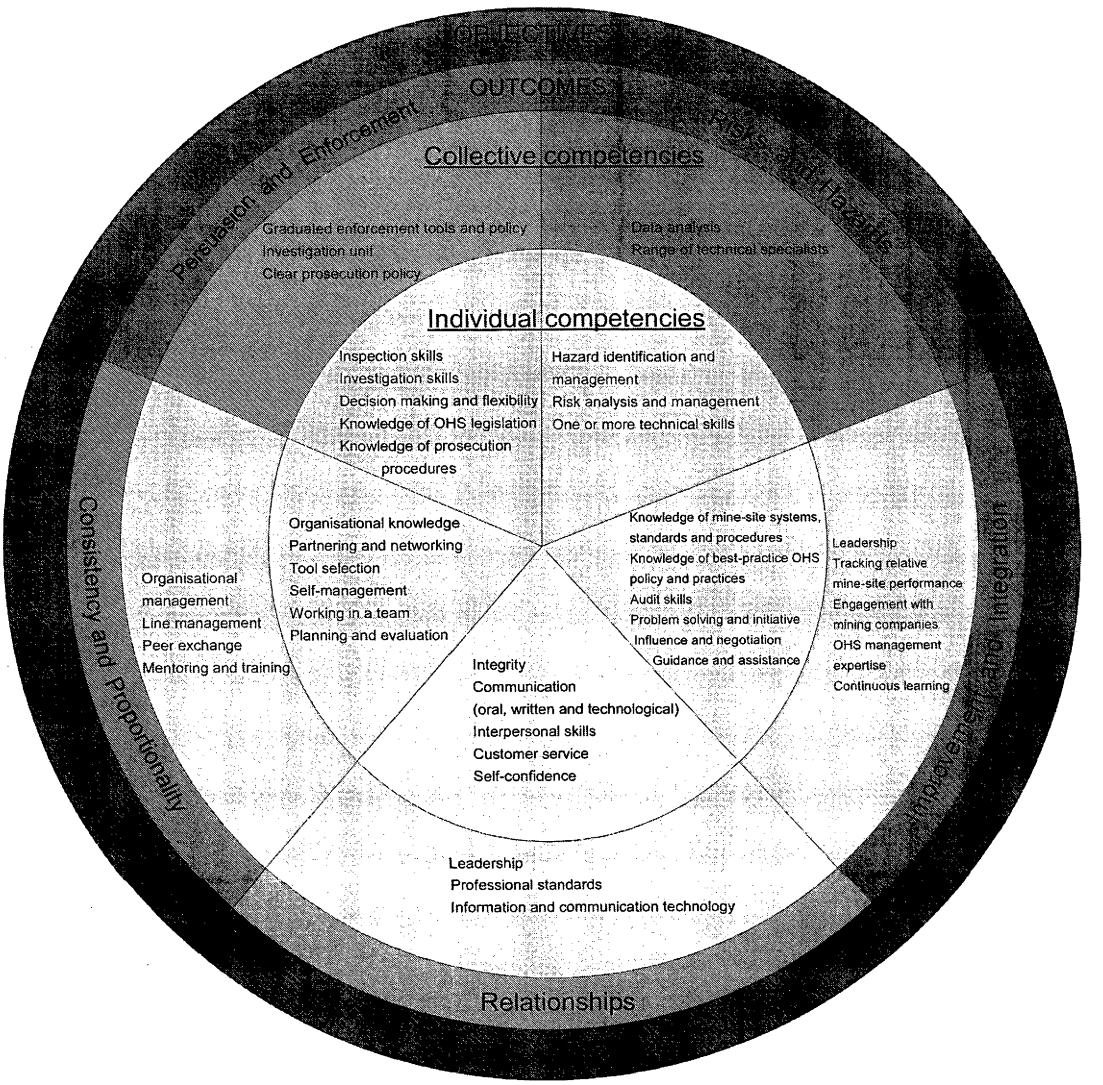
- General knowledge of corporate approaches to operator standards, systems and procedures – including capacity to integrate with external regulatory process and performance standards, and their potential shortcomings (eg the use of short-cuts, lack of middle management commitment).
- Knowledge of best practice WHS principles and practices within organisations, including change management – in particular opportunities to achieve and sustain beyond compliance outcomes, and the dangers of over-reliance on paper systems.
- Knowledge of BBS programs.
- Advise, guide and teach:
    - Help others to learn through informal and formal means.
    - Identify training needs.
    - Constructive feedback and suggestions.
- Audit skills – standards, systems, procedures and worker competencies.
- Problem solving and initiative – identify problems, evaluate alternatives, prepare improvement strategies, and make (and keep records of) recommendations.
- Influence and negotiation – persuade mine sites (and supervisors) to cooperate and accept recommendations, and exploit opportunities for improvement.
- Ability to tailor recommendations to operator size, sophistication and/or type – requires a good knowledge of the mining industry and, in particular, the needs, circumstances and constraints of smaller mine companies/sites.

- Knowledge of strategies to facilitate operator continuous improvement (eg by improving functioning of risk management tools and WHS management systems).

10.3 Competencies diagram

Below is a diagrammatic representation of the competencies list. This builds on the diagrammatic model of the Role of the Regulatory Workshop, to incorporate the additional competencies identified in this project. It should be noted, however, that the diagram does not correspond precisely to the competencies in this current draft, as they have been undergoing ongoing refinement. Obviously, the final diagram would be updated to reflect the final list of competencies.

Figure 2: Competencies list



Chapter 11: National enforcement guidelines for mining inspectorates

This chapter is a reproduction of Stage 1 of a larger two-stage report by Neil Gunningham and Darren Sinclair in 2010, prepared for the NMSF, Commonwealth Department of Resources, Energy and Tourism. Sinclair was wholly responsible for writing this stage of the report.

11.1 Introduction

The Stage 1 Report drew on the national and international literature (and in particular official reports and legislative instruments) to identify best practice principles with regard to: (i) stating the purpose of national enforcement implementation guidelines; (ii) key principles underpinning guidelines; and (iii) enforcement criteria, enforcement measures, principles with regard to the application of sanctions, investigation, and prosecution. Best practice for these purposes means policy mechanisms that are effective (in terms of achieving best results) and efficient (in doing so at least cost to both duty holders and the regulator), while also maintaining community confidence. The Stage 1 recommendations are reproduced in the box below.

Stage 1 Recommendations

1. Each jurisdiction should adopt the proposed National Enforcement Implementation Guidelines. The guidelines should be published, both on the regulatory agency's website, and in hard copy.

2. The Guidelines should state that their purposes include achieving WHS outcomes that are effective (in terms of reducing the incidence of work related injury and disease)

and efficient (in doing so at least cost to both duty holders and the regulator), while also maintaining community confidence.

3. The Guidelines should be worded so as to provide duty holders with a clear understanding of the regulator's approach. In particular, they should set out the basis and criteria by which the regulator decides upon the degree and form of regulatory control that it believes should be put in place for addressing occupational hazards.

4. The Guidelines should be based on the principles of proportionality, accountability, consistency, transparency, targeting, cost-effectiveness, equity, due process and natural justice, responsiveness and flexibility.

5. In making the decision to take enforcement action (which may fall short of prosecution) best practice criteria are: adverse effect, culpability, compliance history and attitude of the offender; impact of enforcement on encouragement or deterrence; mitigating or aggravating circumstances, the likelihood of the offence being repeated; whether the offence involves an immediate risk to the health and safety of a person at work; and whether the safety issue can be rectified in the presence of an inspector.

6. In terms of enforcement, best practice implies a balanced approach of positive motivators and strong deterrents. To the extent that the inspectorate has the authority to give advice under current legal arrangements (and under the model WHS Bill it will have), then best practice would involve stating this role in the Guidelines

7. In terms of enforcement strategy (ie how regulators should go about the enforcement task) best practice involves both risk based and responsive regulation. The enforcement pyramid is a valuable tool to use in determining which regulatory tool to employ in a given instance (that is, in deciding at what point in the pyramid to intervene and which instrument to select, given the characteristics of the regulated entity and the degree of risk or type of breach).

8. In designing an appropriate sanctioning regime for regulatory non-compliance, regulators should have regard to five Penalties Principles. A sanction should: (i) aim to change the behaviour of the offender; (ii) aim to eliminate any financial gain or benefit from non-compliance; (iii) be proportionate to the nature of the offence and the harm caused; (iv) aim to restore the harm caused by regulatory non-compliance, where appropriate; and (v) aim to deter future non-compliance.

9. Best practice with regard to investigations is represented by the relevant provisions of the Health and Safety Executive Enforcement Policy Statement which specifies how regulators should use discretion in deciding whether incidents, cases of ill health, or complaints should be investigated, the importance of maintaining a proportional response and particular factors to be taken account of in deciding the level of response to be used.

10. It is desirable to adopt the Prosecution Guidelines of the Australian Directors of Public Prosecutions and the public interest tests that apply. However, there is some variation between the criteria used to define public interest in different jurisdictions. As a minimum, the Guidelines should include the core criteria of adverse effect, culpability, compliance history and attitude of the offender; impact of enforcement on encouragement or deterrence; and mitigating or aggravating circumstances,

11. In exercising their discretion with regard to prosecution, decision-makers should: (i) focus on risk rather than consequences; (ii) take previous track record seriously (which makes escalation up an enforcement pyramid credible); and (iii) emphasise that prosecution should not take place in the absence of culpability. For these purposes, culpability should mean a substantial falling short of reasonable expectations (a form of negligence), recklessness or intent. The actual decision to prosecute should be based on a calculus that takes account of all three of the above factors.

Based on the principles identified at Stage 1, the objective of Stage 2 is to develop a set of national enforcement implementation guidelines. These guidelines are intended:

- To provide practical guidance to mines inspectors in their compliance and enforcement decisions.
- Through more effective enforcement, to reduce the risk and incidence of incidents, injuries and disease.
- To increase the consistency of enforcement policies and practices within and between jurisdictions.
- To increase the efficient allocation of regulatory (and duty-holder) resources.
- To enhance WHS capacity and compliance amongst duty-holders.
- To improve enforcement transparency and provide duty-holders with a better understanding of enforcement decision-making processes.

Previously, a draft model Guidelines (Model C) was provided for stakeholder comment. Although Model C is approximately a quarter of the size of the EMM model (which we were asked to refer to) the feedback received was that it was overly complex. Responding to that feedback, two alternative models (Models A and B) have been produced, which are set out in full below.

- **Model A** is a streamlined and substantially simplified version of Model C. In particular, the decision-making framework has been consolidated into five discrete steps, and an enforcement matrix introduced. The suite of enforcement mechanisms has also been modified to more readily accommodate incremental escalation up an enforcement pyramid. Finally, three example enforcement decisions are included.
- **Model B** was developed because a minority of NMSF Steering Group members requested enforcement guidelines that contain *no* prescriptive elements in order to

maximise inspectoral discretion. Our own view of Model A is that the five step approach, while clearly structured, is expressly intended to be used as a *guideline*, and as such, does facilitate inspectoral discretion and flexibility. Nevertheless, to accommodate to the concerns expressed above, we developed an entirely non-prescriptive alternative model (Model B).

To provide a context for understanding how the guidelines were developed it is first necessary to describe the relationship between the guidelines and existing policy documentation, the enforcement tools available, the enforcement issues addressed and how they were addressed.

11.2 Development national enforcement implementation guidelines: A context

11.2.1 Existing enforcement guidelines

Inspectors use various enforcement techniques to address risks and secure compliance with the law. These range from advice and persuasion, through various administrative notices, to prosecution. As has been pointed out, "making decisions about appropriate enforcement is fundamental to the role of an inspector" (Health and Safety Executive 2005a, 1).

Two key documents relevant to the development of National Enforcement Implementation Guidelines for the mining sector are the United Kingdom Health and Safety Executive's (2005a) EMM and the HSWA's NOHSCEP. Although both these approaches provide valuable insights into the development of enforcement guidelines, they also suffer from substantial shortcomings.

In the case of the EMM, these shortcomings are as follows:

- At 43 pages long, the EMM is excessively detailed and wordy, and may appear intimidating to some inspectors.
- The decision making process is overly complex given the relatively limited range of possible enforcement outcomes.
- The EMM is unwieldy to apply in the field.
- The EMM does not make a distinction between prospective or preventative enforcement action (before an incident or accident has occurred) and retrospective enforcement (after an incident, accident or fatality has occurred), notwithstanding the very different enforcement strategies that these different circumstances imply.
- Strict adherence to the EMM may leave little room for the discretionary provision of advice and guidance.

In contrast to the detailed guidance of the EMM, the NOHSCEP is a principles-based document that employs a mixture of risk based compliance and response regulation. It is in essence a policy document, and *it does not provide a practical, step-by-step decision-making process for individual inspectors.*

The proposed National Implementation Enforcement Guidelines contained in this Stage 2 Report seek to build on the strengths of the above approaches while compensating for their weaknesses. In particular, the approach extends beyond the NOHSCEP policy statements to include a streamlined and practical step-by-step decision-making process, but one that avoids the excessive detail and complexity of the EMM approach. Where practicable, this seeks to maintain consistency with the NOHSCEP approach so as to align mining WHS enforcement with generic WHS enforcement and to build upon the latter's specific strengths.

11.2.2 Enforcement approaches

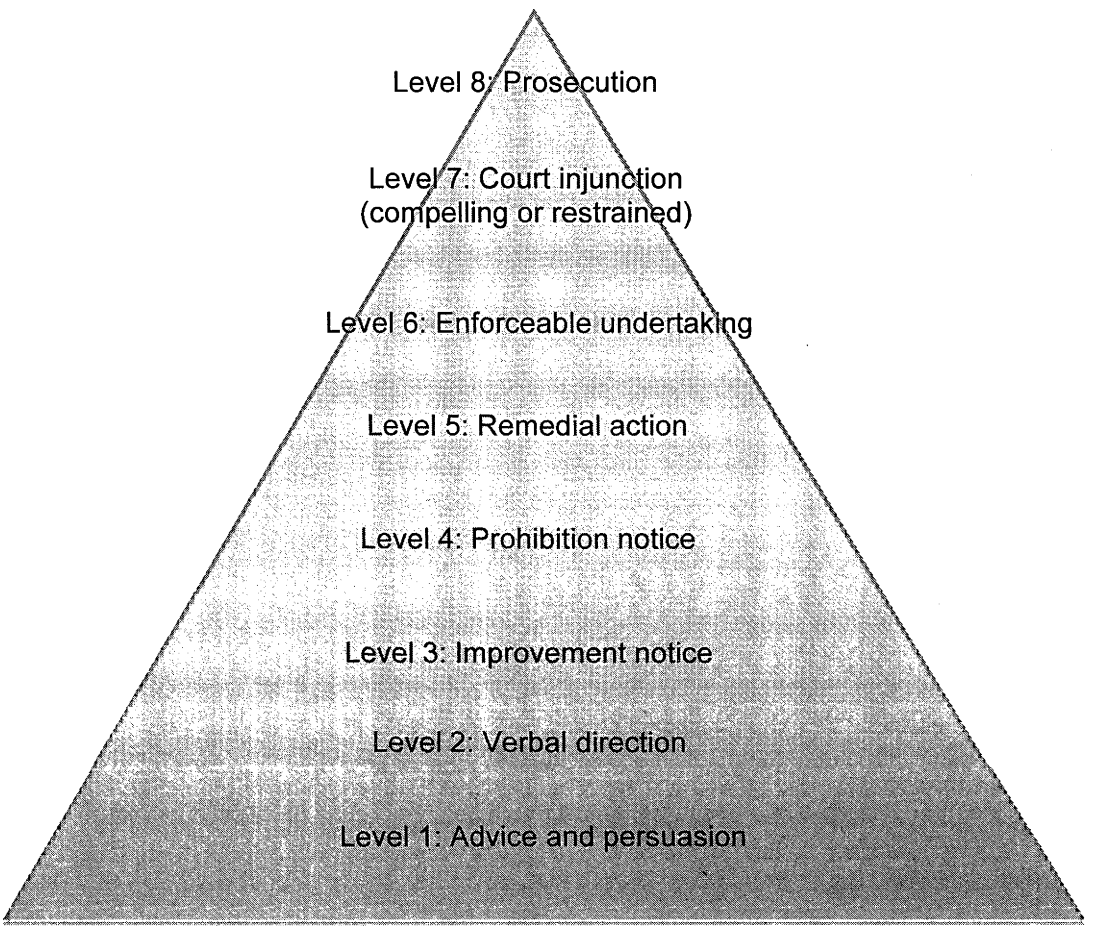
Drawing on the findings of the Stage 1 Report, and consistent with the EMM and NOHSCEP, the proposed National Implementation Enforcement Guidelines are a complementary combination of two key enforcement approaches, widely referred to as *(i) risk based* and *(ii) responsive enforcement*:

- *Risk based compliance and enforcement* applies inspectoral resources and enforcement actions to high risk duty holders and to each duty holder's areas at greatest WHS risk. Risk based compliance and enforcement seeks to target the resources available to each mines inspectorate to areas of greatest need and where they are most likely to have greatest impact on improved working environments and safety.
- *Responsive compliance and enforcement* requires inspectors to take account of the duty holder's particular circumstances, history and attitude in determining their enforcement response (in this form, responsiveness does not conflict with proportionality and fairness). An essential component of a responsive approach is the capacity to escalate up an enforcement pyramid (see 'enforcement tools' at Section 11.2.3 below).

11.2.3 Enforcement tools

Achieving consistency in enforcement across jurisdictions is largely dependent on inspectorates having at their disposal the same, or at least an equivalent, suite of enforcement tools. This is particularly the case for a responsive compliance and enforcement strategy that allows escalation up an enforcement pyramid (which, it should be noted, does not necessarily mean starting at the base of the pyramid). The following enforcement pyramid is drawn from the model WHS Bill.

Figure 3: Enforcement pyramid



Note: following successful prosecution, courts may impose a series of progressively punitive/restorative sanctions, namely:

- Adverse publicity order.
- Restoration order.
- Community service order.
- Injunction.
- Training order.
- Fine.

11.2.4 Compliance and enforcement instruments

A graduated and responsive enforcement strategy requires a variety of different compliance and enforcement tools, to suit the various levels of an enforcement pyramid. Some of these tools will be designed to encourage and reward compliance (various forms of education, assistance, advice and persuasion), others will be geared to reminding enterprises of their regulatory responsibilities and nudging them to comply with them (improvement and prohibition notices, on the spot fines), and still others will involve credible sanctions at the top of the pyramid (penalties against individuals, criminal sanctions and the threat of closure).

Although the model WHS Bill addresses the issue of enforcement instruments, it is far from comprehensive in this regard. It specifically provides power to issue improvement and prohibition notices (and the power to take remedial action when the latter are not complied with, and to apply for an injunction compelling a person to comply with a notice), to accept WHS undertakings (enforceable undertakings), and to prosecute for failure to comply with a health and safety duty. There is also a residual power provided by s 152 that: "Subject to this Act, the regulator has the power to do all things necessary or convenient to be done for or in connection with the performance of its functions".

However, as regards the mining industry there is a need to provide for a broader range of compliance and enforcement options, so as to provide a more efficient, effective and responsive regulatory toolkit to the mining inspectorates. The additional compliance and enforcement options might sensibly include the following:

- *Self-inspection and self-audit*: Near the base of the enforcement pyramid may be those approaches that actively encourage duty holders (especially SMEs) to

regulate themselves. Two instruments with considerable potential (targeted to SMEs) are self-inspection and self-audit. Some inspectorates (eg New South Wales) already have a self-audit checklist on their website while others already have a power to require self audit. The authority of the inspectorate to order such actions should be formalised under model Mining Regulations. Although it can be argued that they are not strictly compliance/enforcement instruments they should be explicitly addressed because companies engaging in self-inspection and self-audit would need to be guaranteed legal privilege over their results (so as to prevent such information being used in any future prosecutions against them).

- *Infringement Notices* ('on-the-spot fines') have been found to be a very effective means of 'getting the safety message across'. Although the model WHS Bill has a heading for infringement notices in Part 13 Div 3, there is no provision in the model WHS Bill itself. The Bill advises readers to "see the jurisdictional note in the appendix" but there is no such note. However, it may be that further amendments will be made to rectify this anomaly and to include infringement notices.

- In the United Kingdom (Macrory 2006, 68) it has been suggested that it might be possible to combine both non-financial mechanisms, such as *enforceable undertakings*, with financial administrative elements of a sanction, in what is termed *'Undertakings Plus'.* This would be invoked where, notwithstanding that "an undertaking offered by the business may be appropriate... the circumstances of the breach also require the payment of a financial penalty" (Macrory 2006, 68). For example, where non-compliance has demonstrably benefited the business financially, it might be stripped of this gain by imposition of a fixed or variable monetary penalty, but invited (not coerced) to contemplate engaging in a legally binding undertaking as to its future conduct and as to how it will go about achieving it, as an alternative to court action. Others argue that since enforceable undertakings, by their nature, are an alternative to prosecution, this is problematic.

- There would be particular value in an additional mechanism, more targeted to systematic WHS management (unlike improvement and prohibition notices) at a point in the pyramid short of enforceable undertakings or punitive sanctions. In particular, following the lead of many environmental statutes, WHS regulators should be empowered to seek a mandatory *compliance audit* – a systematic, documented and objective review of a mine's operations and compliance – to be undertaken by an independent third party auditor, but with the audit being paid for by the regulated enterprise and the results made available to the regulator. Here 'the process may be the punishment' since the cost of the audit may be substantially more than any likely fine. Inspectors would issue an order, with the opportunity for appeal by the duty holder (the same approach as with improvement and prohibition notices). Such an approach is already provided for under Western Australian mining legislation. As with New South Wales' environmental legislation, the power to require such an audit would be limited to circumstances where the regulator reasonably suspects that the duty holder has on one or more occasions contravened the Act or regulations.

- Another potentially valuable mechanism not included in the model WHS Bill is a *Directive*, issued by an inspector, as contemplated under Queensland mine safety legislation. This would fit in the enforcement pyramid at the level immediately above 'Remedial Action'. The virtue of this mechanism is that it enables an inspector to initiate action much broader than that which might be required by an improvement or a prohibition notice, and one which could be issued in a much broader range of situations than either of these two notices. However, it is not as extensive as the type of Enforceable Undertaking contemplated by Part 11 of the model WHS Bill (a WHS undertaking accepted by the regulator). The latter could not only be much more ambitious but could also (based on past experience) cost the duty holder some six to ten times the amount of a fine resulting from prosecution.

Note: the proposed National Enforcement Implementation Guidelines in Part II below combine the above instruments with the existing model WHS Bill instruments.

11.2.5 Enforcement issues

In drafting the National Implementation Enforcement Guidelines a range of enforcement issues have been incorporated and/or considered.

11.2.5.1 Identifying enforcement priorities

Although this document is concerned with implementation guidelines once an inspector has entered a workplace, it should be noted that the decision of which workplaces to inspect, is an equally important one, and there is a separate literature on the question of where and where and how an inspectorate should deploy its scarce resources (Gunningham 2007, Chapter 4).

For present purposes, the critical issues include identifying where an inspector should begin an inspection, where they should focus their attention, what they should look for, and who they should seek to contact. Inspectors' time is inevitably limited, and it would be a waste of scarce resources if inspectors were to proceed in a random or haphazard fashion. A methodical and targeted approach aimed at the greatest risks is preferable, and this principle is incorporated in the draft Guidelines.

11.2.5.2 Direct versus management-based risks

A distinction can be made between *direct* and *management-based* risks. The former includes those risks (or failures to act) that create immediate and discernable risk (eg failure to guard dangerous machinery). In short, they have the potential to lead directly to work related death, disease or injury (ie there is a direct causal link between the risk and a subsequent incident or injury). The latter includes WHS management systems, hazard management plans and risk management systems – strategies that do not have a direct causal link to a particular risk or event, but, rather, have an indirect, dispersed and longer term influence on WHS outcomes.

11.2.5.3 Retrospective versus prospective enforcement

The task confronting inspectors in relation to enforcement will vary depending on whether they are inspecting a site on the basis of an event, accident or incident that has already occurred, or whether they are seeking to identify risks that may bring about a future incident. These two situations may be described as retrospective and prospective, respectively. In the case of the former, there is no need to identify the risk of the event, as it has already occurred, but rather, the causes and responsibility for it. In the case of the latter, the first task (in determining whether to take action and if so what action to take) is to calculate the level of risk.

11.2.5.4 Injury versus health, acute versus chronic

The immediacy of incidents leading to acute injuries makes them an obvious target of inspectoral enforcement. In contrast, chronic injuries and disease, psychosocial hazards and long-term health are sometimes neglected aspects of inspectoral enforcement. Redressing this imbalance requires not just a shift in focus on the part of

inspectors, but also a shift in how they consider risk and its potential impact on worker health.

11.2.5.5 Operator versus duty-holders up the supply chain

Just as inspectors have historically focused their attention on injuries over health and major accident precursors, so too have they tended to concentrate on operators rather on duty holders further up the supply chain. Yet it is widely acknowledged that the design, manufacture, supply and installation of plant and equipment can have profound consequences, both positive and negative, for the level of risk in mine sites. Enforcement guidelines must treat seriously, the role of upstream suppliers and their capacity to mitigate risk (while this is a focus of the model WHS Bill supplier of WHS and other consultancy services like HAZID/HAZOP and drafting safety and health management plans should also be captured).

11.2.5.6 Owners versus duty-holders down the supply chain

As is well known, there has been a steady rise in the use of contractors (both to manage entire sites and to supplement existing owner-operator workforces) and a disproportionate amount of work related injury and disease is associated with their activities. For these reasons it is important that inspectors focus not just on mine owners and their employees but also on contractors and the vulnerability of contingent workers.

11.2.5.7 Large versus small operators

There is a very wide gap between the sophistication of major mining companies and small and medium sized operators in addressing WHS. As such, it is desirable for

inspectors to tailor their enforcement strategy, interaction and actions accordingly. In particular, small operators will require far greater advice, guidance, and quite probably, prescription. It is also likely that smaller operators will have less frequent interactions with the inspectorate, necessitating explicit direction from the inspector and steeper action up an enforcement pyramid. In contrast, in their interactions with larger companies, inspectors will more profitably focus their attention on WHS management-based strategies.

11.2.5.8 Advice and guidance versus punitive measures

There is a range of enforcement options that encourage and assist compliance, and inspectors should be encouraged to employ them. These include:

- Incident investigations
- Targeted workplace inspections
- Audits
- Technical services
- Recognition and rewards
- Prevention programs
- Information, guidance, education and advice

Where advice and persuasion fails, enforcement strategy will need to escalate (from whichever level of the pyramid is first accessed) to more negative incentives and ultimately to punitive sanctions (see enforcement pyramid).

11.2.5.9 Responsive sanctioning complements responsive compliance

The principles governing such sanctioning should aim to:

- Change the behaviour of the duty-holder;
- Eliminate any financial incentive of non-compliance;
- Be proportionate to the nature of the offence and the harm caused;
- Reduce the harm caused by regulatory non-compliance, where appropriate;
- Deter future non-compliance; and
- Be responsive and consider what is appropriate for the particular duty holder.

11.2.5.10 Compliance and beyond compliance

The ultimate objective of the inspectorate is not just to ensure compliance with a minimum standard, but also to encourage and reward duty holders where possible to substantially exceed such minimum requirements.

11.2.5.11 Role of employee representatives

Employee representatives currently have WHS powers, and these will be enshrined under model WHS Bill (including the power to issue provisional improvement notices and to direct that dangerous work cease). Consequently, there will continue to be opportunities/requirements for the inspectorate and employee representatives to cooperate and collaborate in the implementation of an enforcement strategy that maximises WHS outcomes – in cases where an employee representative, for example, issues a provisional improvement notice, the inspectorate may be compelled to review such actions. In order to facilitate a productive working relationship, inspectors and employee representatives need to

establish a level of trust, communication and cooperation that allows for the free exchange of relevant information and coordinated, complementary follow-up efforts.

11.2.6 Implementation issues

In the course of consultations with stakeholders three key issues arose pertinent to the implementation of national enforcement guidelines. First is the need for simplicity so as to facilitate inspectors implementing the decision-making guidelines in the field. To achieve such simplicity we have greatly reduced the complexity of the EMM model, whilst still retaining essential elements of enforcement decision-making. Further, as noted in Part II below, or view is that inspectors in the field *should utilise a single page decision-making check-list* (see Section 11.6 below), and use the more detailed policy guidelines as a reference document. Additional implementation tools to assist inspectors may be required.

Second, if inspectors are provided with too many enforcement options it may be more difficult to achieve consistency within jurisdictions. For this reason, we have included an element of flexibility in the enforcement levels at Step 5 below (whilst maintaining consistency with the model WHS Bill provisions). We have also noted that jurisdictions will adapt them to their own particular needs and circumstances.

Third, and again to enhance consistency in their application, inspectors require comprehensive training in the application of the enforcement guidelines. This should be coupled with ongoing monitoring to assess the uptake and success of the guidelines. Although it is beyond the remit of the consultancy brief, we strongly endorse the need for effective training and monitoring.

11.3 National enforcement implementation guidelines

11.3.1 Preamble

A broadly similar approach to WHS regulation is taken by the Australian jurisdictions. It comprises legislation which codifies common law duties of care, complemented by detailed regulations and codes of practice, and incorporates a system of education, inspection, advice, enforcement and, where warranted, prosecution. The importance of harmonisation of WHS laws (including mine safety laws) is reflected in the development of the model WHS Bill and in initiatives under the NMSF.

11.3.2 Purpose

The purpose of the National Enforcement Implementation Guidelines is to assist mining inspectors to adopt a consistent enforcement effort that is effective (in terms of reducing the incidence of work related injury and disease) and efficient in achieving compliance while also maintaining community confidence that the laws are being administered fairly and consistently.

This policy operates to support the achievement of national priorities of:

- Reducing high incidence/severity risks.
- Improving the capacity of business operators and workers to manage WHS effectively.
- Preventing occupational disease more effectively.
- Eliminating hazards at the design stage.
- Strengthening the capacity of government to influence WHS outcomes.

- To promote transparency and consistency, this policy will be available on the website of each mining inspectorate/workplace safety authority.

Additional steps might include providing information about appeals, conducting regulator enforcement audits and developing a code of conduct for regulators.[69]

11.3.3 Scope

The National Enforcement Implementation Guidelines are endorsed by each jurisdiction. They are interim in nature, pending the development and jurisdictional implementation of the model WHS Bill. They are intended to ensure consistency in outcomes and that common approaches are taken by jurisdictions to the laws they administer.

11.3.4 Aims

That jurisdictions implement compliance and enforcement strategies in order to:

- Ensure duty-holders have access to information about WHS laws and how to comply.
- Ensure duty-holders comply with WHS laws or if they fail to comply ensure they are held to account.
- Ensure duty holders eliminate or properly control risks.
- Take action to deal immediately with serious risks.

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[69] Text in normal type replicates the existing the HWSA's NOHSCEP. Text in italics has been suggested for inclusion by members of the NMSF Steering Group. Whilst the latter would arguably enrich the document, it would result in Sections 1-6 of the NMSF Enforcement Guidelines deviating from the NOHSCESP. There is disagreement amongst stakeholders as to the possible inclusion of the italicised text.

- Promote and achieve sustained compliance with the law.
- Deter non-compliance and prevent workplace injury.
- *Focus on safety (risk and conduct), not outcomes and prosecutions.*
- *Motivate duty holders to engage in continuous improvement.*

11.3.5. Key principles

Key principles of regulation underpinning compliance and enforcement activities of are that jurisdictions should be:

- *Consistent* – regulators will endeavour to ensure that similar circumstances at workplaces lead to similar enforcement outcomes, thus providing greater certainty at the workplace.
- *Constructive* – regulators provide support, advice and guidance to help people comply with WHS laws.
- *Transparent* – regulators demonstrate impartiality, balance and integrity.
- *Accountable* – regulators are willing to explain their enforcement decision-making and uphold avenues of complaint or appeal.
- *Proportionate* – compliance and enforcement responses are proportionate to the seriousness of the non-compliance.
- *Targeted* – to areas of highest risk or strategic enforcement (eg to protect vulnerable workers).
- Additional principles might include *due process, natural justice* and *flexibility.*

11.3.6 Compliance and enforcement strategy

The modern workplace health and safety authority/mines inspectorate uses a wide selection of compliance promotion and enforcement strategies ranging from information, advice, persuasion, co-operation, inspection, verification and compulsion through to deterrence (eg prosecution and/or removal of licence or other authorisation or permission).

Workplace WHS/mines inspectorates have adopted a strategy to use an effective mix of positive motivators and strong deterrents to achieve compliance with the law and improved health and safety. This strategy seeks to encourage duty-holders to comply while ensuring that there are fair and swift consequences for those who do not.

11.4 A two-pronged approach

11.4.1 Risk based compliance and enforcement

Firstly, the policy aims to apply resources and target compliance and enforcement actions to areas of greatest risk to health and safety. Risk-based compliance and enforcement seeks to target the resources available to each mining inspectorate to areas of greatest need and where they are most likely to have the greatest impact on improved working environments.

11.4.2 Responsive compliance and enforcement

Secondly, in order to ensure that regulatory response is effective at leading to sustained compliance at the workplace, compliance and enforcement measures also

seek to be responsive to the particular circumstances of the duty-holder or workplace that is the subject of attention.

Responsive regulation seeks to use the most effective and appropriate enforcement measures to achieve compliance.

Responsive sanctioning complements responsive compliance and enforcement. The principles governing such sanctioning aim to:

- Change the behaviour of the duty-holder.
- Eliminate any financial incentive of non-compliance.
- Be proportionate to the nature of the offence and the harm caused.
- Reduce the harm caused by regulatory non-compliance, where appropriate.
- Deter future non-compliance.
- Be responsive and consider what is appropriate for the particular dutyholder.

11.5 Decision-making framework

11.5.1 Model A

This is a streamlined and modified version of the initial draft enforcement guidelines (Model C). In particular, the decision-making framework has been consolidated into five discrete steps, and an enforcement matrix introduced. In response to feedback, the suite of enforcement mechanisms has been modified from the model WHS Bill to more readily accommodate incremental escalation up an enforcement pyramid. Finally, three sample enforcement decisions are included. This framework is intended to *guide* rather than to prescribe the decision-making framework and to *facilitate* rather than mandate

a structured approach.

Note: It is anticipated that inspectors would employ the streamlined *Enforcement Checklist* (see 11.7 below) on site, and use the more detailed decision making framework outlined below as a policy reference document.

Summary of decision-making framework

Step 1. Clarify the purpose of the visit.

Step 2. Determine the nature of the hazard or breach.

Step 3. Determine the risk arising from the hazard or breach.

Step 4. Identify the duty-holder(s) and duty-holder factors.

Step 5. Make an enforcement decision.

Step 1: Clarify the purpose of the visit

a) Prospective – a hazard or non-compliance issue is yet to be identified.

Where should inspectors direct their regulatory attention? They should draw on, but not be limited to, the following sources of information (but dealing first with matters that carry a risk of personal injury):

- An incident or injury has occurred (and has been reported).
- Inspectorate-wide strategic priorities (eg ventilation or road surfaces).
- Inspectoral audits (a proactive strategic program based on risk assessment).
- Risk management and WHS systems and other on-site documentation.
- The views of management.
- Relevant information from workers and their representatives.

- Previous WHS and compliance history.

If the inspector does not find a hazard or breach, then no further action is taken. If the inspector does find a hazard or breach, then they proceed to Step 2.[70]

b) Continuing – follow-up to past warning or directive of existing breach.

The inspector already knows about the non-compliance issue. If the circumstances of the breach are unchanged, and the issue has not been remedied (or a process for remedy put in place), the inspector proceeds directly to Step 5 *with the assumption of a negative duty-holder factor.* If the circumstances have changed, the inspector proceeds to Step 2.

Step 2: Determine the nature of the hazard or breach

The inspector determines the nature of the hazard or non-compliance issue, whether it presents a direct and/or management-based risk[71], and including estimating the extent to which it falls short of relevant WHS benchmarks (eg a prescribed standard, relevant code of practice, industry norm).

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[70] This raises the issue of *how* an inspector determines if there is a breach (eg they may make a comparison of the actual state of premises compared to the standard set in the regulations or Act). In the interests of reducing complexity, we chose not to examine this question in detail. NMSF steering group members, especially inspectors, may have further suggestions.

[71] It is important to recognise at this point that direct and management-based risks are not mutually exclusive, and that some hazards or compliance issues may contain elements of both. In such cases, inspectors should address both direct and management-based risks concurrently.

a) Direct hazard/non-compliance

The hazard or non-compliance issue poses a *direct risk* to WHS. For example, there may be a missing guard-rail, or electrical power is not correctly isolated. The inspector estimates the performance gap according to the following categories:

- *Small performance gap* – falls just short of WHS benchmarks.
- *Medium performance gap* – falls substantially short of WHS benchmarks.
- *Large performance gap* – entirely fails to address WHS benchmarks.

The identified *performance gap* will be utilised in Step 5. The inspector proceeds to Step 3.

b) Management-based non-compliance

The non-compliance issue is *management-based*. For example, there may be a safety management system that does not meet regulatory requirements, or risk assessment procedures that may be inadequate. The inspector estimates the level of management-based performance gap according to following categories:

- *Minor* – deficiencies in relevant documentation/administrative arrangements that have the potential for limited negative impact and can be easily rectified.
- *Major* – deficiencies in relevant documentation/administrative arrangements that have the potential for broad negative impact and require substantive modification and/or updating.
- *Absent* – relevant documentation/administrative arrangements do not exist, and need to be created from scratch.

The identified management-based *performance gap* will be utilised in Step 5. But first, the inspector proceeds directly to Step 4.

Step 3: Determine the risk arising from the hazard or breach

Inspector conducts a risk assessment of *direct risks* and calculates the risk factor.[72]

a) Identify the level of the risk (how likely is it than a WHS event will occur?):

- *Probable* – the hazard or breach presents a very high risk to WHS.
- *Possible* – the hazard or breach presents a moderate risk to WHS.
- *Remote* – the hazard or breach represents only a remote risk to WHS.

b) Identify the impact of the risk (what is the likely consequence?)

- *High impact* – the hazard or breach risks a serious WHS outcome, with substantial or complete functional impairment, such as a fatality, loss of limb, major internal injury and/or substantial, long-term and irreversible health impacts.
- *Medium impact* – the hazard or breach risks a significant WHS outcome, with significant function impairment, such as broken limb, large lacerations, serious ligament/tendon damage, and/or serious but reversible/manageable medium-term health impacts.
- *Low impact* – the hazard or breach risks a minor WHS outcome, with limited functional impairment, such as minor strains, cuts and abrasions and/or minor treatable short-term health impacts.

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[72] It may be argued that the quantitative risk factor is of limited practical value, that it may be difficult to implement in the field, and can be seen as arbitrary. While there is merit in this criticism, a key requirement of the consultancy brief was to build on the EMM model, which has as a risk factor as a central component.

c) Identify the extent of the risk (how many individuals are likely to be affected?):

- *Single or few (three or less) individuals at risk.*
- *Multiple (more than three) individuals at risk.*

Complete initial risk assessment where *single or few individuals* are at risk based on the level and potential impact of risk. Where *multiple individuals* are at risk, multiply the risk factor by 2.

Table 8: Risk factor weightings

	High impact risk	Medium impact risk	Low impact risk
Probable risk	9	6	3
Possible risk	6	3	2
Remote risk	3	2	1

- *Risk factor 9 or greater* – the inspector should take immediate action (including sealing off the area and/or serving a prohibition notice, which in extreme circumstances may result in stopping production) to remove the risk. After immediate action has been taken, the inspector then continues through the remaining steps.
- *Risk factor less than 9* – the inspector proceeds through the remaining enforcement steps. Enforcement action is contingent on what happens under these steps.

Step 4: Identify the duty-holder(s) and assess duty-holder factors

The inspector identifies the responsible duty-holder/s, and then considers relevant duty-holder factors.

a) Identify responsible duty-holder(s):

- *Mine operator* – these include PCBUs, officers and/or directors of corporations, on-site statutory duty-holders and persons who control or manage workplaces.
- *Downstream duty-holders* – these include large whole of site contractors, principal contractors, labour hire companies and smaller, trade sub-contractors, and employees.
- *Upstream duty-holders* – these include designers of plant, buildings and structures, manufacturers of plant and substances, and importers/suppliers of plant or substances, franchisors and holding companies and persons, who install, erect or commission plant.

b) Assess relevant duty-holder(s) (and other public interest) factors:

- Is the duty-holder obstructionist and unwilling to cooperate?
- Is the duty-holder intentionally or recklessly in non-compliance?
- Is the general condition of the mine site poor?
- Does the duty-holder have a history of non-compliance?
- Has the duty-holder been subject to previous compliance/enforcement action on the same or related issue (this factor only applies to follow-up enforcement action with regard to a direct hazard)?
- Is the proposed enforcement action proportional to the size and sophistication of the duty-holder?
- Is the proposed enforcement action proportional to the relative contributions of operator, upstream and downstream duty-holders?
- Is the proposed enforcement action proportional to the extent to which the duty-

holder falls short of achieving compliance (cross refer to 'performance gap' in Step 2)?

- Is the proposed enforcement action likely to be unnecessarily disruptive to mine site operations and/or supplier operations?

Step 5: Make an enforcement decision

The inspector makes an enforcement decision by weighing the evidence from the previous stages to determine which type and level of enforcement action is appropriate. The following *enforcement response* boxes are used to guide the decision-making process for *direct risks* and *management-based risks* respectively (recognising that some issues may contain elements of both). Finally, the inspector should review their enforcement decision against public interest factors.

a) Enforcement matrix – direct risks

The following enforcement matrix provides a preferred pyramidal enforcement response to breaches with *direct risks* based on three inputs:

- The *performance gap* (Step 2).
- The *risk factor* (Step 3).
- Relevant *duty-holder factors* (Step 4).

Table 9: Enforcement matrix – direct risks

PERFORMANCE GAP & DUTY-HOLDER FACTORS	RISK FACTOR								
	1	2	3	4	5	6	7	8	9
Small gap Positive factors									
Small gap Neutral factors									
Small gap Negative factors									
Medium gap Positive factors									
Medium gap Neutral factors									
Medium gap Negative factors									
Large gap Positive factors									
Large gap Neutral factors									
Large gap Negative factors									

Enforcement decision[73]:

Level 1. Advice, persuasion and warnings

Level 2. Self-inspection and self-audit

Level 3. Improvement, infringement and prohibition notices/directives

Level 4. Mandatory compliance audit

Level 5. Enforceable undertakings and undertakings 'plus' or directives

Level 6. Prosecution

b) Enforcement matrix – management-based risks

The following box provides a preferred pyramidal enforcement response to breaches with *management-based risks* based on two inputs[74]:

- The *performance gap* (Step 2)
- Relevant *duty-holder factors* (Step 4).

[73] It is anticipated that jurisdictions will adapt the enforcement levels, both in terms of the number and the nature of the levels, to their individual needs and circumstances (in particular, the available enforcement tools). One jurisdiction, for example, has indicated a strong aversion to the use of enforceable undertakings (citing them as unwieldy and resource intensive). Nevertheless, they have been included in these enforcement guidelines as they are a key component of the model Work Health and Safety Act.

[74] The enforcement matrix for management risks does not include a risk factor as it is difficult to conceive as to how to conduct a risk assessment of management risks (this is why in essence a distinction is made between 'direct risk' and 'management-based risk'). The UK Health and Safety Executive's (2005a) EMM approach makes a similar distinction between 'health and safety risks' and 'compliance and administrative arrangements'. NMSF Steering Group members may have suggestions as to ways to address management-based risks, as distinct from direct risks, including the possibility of risk assessments (and how they might be conducted).

Table 10: Enforcement matrix – management-based risks

PERFORMANCE GAP	DUTY-HOLDER FACTORS			
		Small gap	Major gap	Absent
	Positive factors			
	Neutral factors			
	Negative factors			

Enforcement decision[75]:

Level 1. Advice, persuasion and warnings

Level 2. Self-inspection and self-audit

Level 3. Improvement, infringement and prohibtion notices/directives

Level 4. Mandatory compliance audit

[75] Following on from Footnote 3, it is difficult to conceive of how to impose Levels 5 and 6 (enforceable undertakings or prosecution) for management-based risks (assuming, in particular, an absence of a risk assessment process). As such, the proposed enforcement levels cease at Level 4 (mandatory compliance audit). A potential limitation of this approach is that it may imply that management bases issues are less important than direct risks (which is not the intention). NMSF Steering Group members may have suggestions as to ways to deal with this issue. As with direct risks, it is anticipated that jurisdictions will adapt the enforcement levels, both in terms of the number and the nature of the levels, to their individual needs and circumstances (in particular, the available enforcement tools).

c) Review enforcement decision[76]

Before implementing their enforcement decision, the inspector should review their decision against broader public interest factors, in particular:

- Where injury/disease has resulted, is the proposed enforcement action proportional to the level of harm incurred?
- Is the proposed enforcement action proportional to the public concern and the need for deterrence?
- Is the proposed enforcement action consistent with other strategic considerations (eg the need to send a strong message, given the prevalence of the offence across the industry)?
- Is the decision consistent with comparable cases (like cases should be treated alike)?

In reviewing their enforcement decision, inspectors may wish to consult with their peers and supervisors to enhance consistency.

Note: A decision-making flow chart and a decision-making checklist for Model A are provided below.

[76] It has been suggested that this review component of Step 5 should constitute a separate and distinct Step 6, and that this would be consistent with, for example, prominent continuous improvement approaches. The authors have considerable sympathy for this view. Nevertheless, the review component has been left as a component of Step 5 in order to comply with the request of others to simplify and reduce the overall number of decision-making steps.

11.5.2 Sample enforcement decisions (under Model A)

1. Work platform injury

A worker was injured whilst working on a platform (installing roof cables) attached to a load haul dump (LHD) *via a quick detach system and being driven by a LHD operator.* As the LHD was reversed, one rear wheel encountered a 300mm depression in the road, causing the platform to pivot upwards and jam the worker into the mine roof, breaking his arm.

Step 1. Clarify the purpose visit.

The inspector visits the accident site after the mine has notified that an accident has occurred. This is a *prospective inspection*, as it does not relate to a prior incident – a hazard/breach is yet to be identified. Inspector proceeds to Step 2.

Step 2. Determine the nature of the hazard/breach.

The inspector determines that a breach has occurred as the work platform and LHD arrangement did not comply with relevant WHS regulations, and that it is a *direct risk*. Further, the inspector determines that there is a *medium performance gap* as the breach falls substantially short of relevant WHS benchmarks – in particular, it does not match the relevant Australian Standard covering "mobile elevating work platforms" (people should not be transported on work platforms unless the work platform is designed for travelling). The inspector also notes that there may also be an issue relating to the absence of a relevant safe work system.

Step 3. Determine the risk arising from the hazard/breach.

The inspector determines that the breach represents a *possible risk* (the platform itself is stable when stationary, only when moving does the risk arise) with a *high potential*

impact (a person may fall from the platform or be forced against the mine roof). As there are at most two workers on the platform at any one time, there are *less than three* workers at risk. Combined, this produces as *risk factor* of 6.

Step 4. Identify the duty-holders and duty-holder factors.

The inspector notes the mine is operated by a sub-contractor and identifies them as sharing duty-holder responsibilities with the owners. The inspector notes that although they informed the inspectorate of the incident, and have indicated a willingness to cooperate, there have been a series of non-compliance issues, albeit for unrelated matters. Combined with the poor site (road) conditions that led to the incident, the inspector concludes that there is overall a negative duty-holder factor.

Step 5. Make an enforcement decision.

The inspector applies the *medium performance gap*, the *risk factor of 6* and the *negative duty holder factor* to the enforcement matrix for direct risks, which produces a *Level 4* enforcement decision: *mandatory compliance audit.* The inspector reviews the enforcement decision and concludes that it is proportional to the level of harm incurred. The inspector orders a mandatory compliance audit of work platform arrangements and systems/procedures (along with advice and guidance), and a *prohibition notice* on the use of the existing, unsafe work platform until appropriate modifications are made.

2. Persistent road dust

The inspector conducts a follow-up visit to a mine site where a verbal warning has been previously issued for non-compliance in failing to keep road dust down by frequent watering.

Step 1. Clarify the purpose visit.

The inspector concludes that the non-compliance issue is *continuing*, and that the circumstances have not changed, and proceeds directly to Step 5.

Step 5. Make an enforcement decision.

The inspector previously concluded that the road dust was a *direct risk* and had arrived at a *Level 1* enforcement decision (based on a *small performance gap, positive factors*, and *risk factor of 4* (*multiple individuals*)). This had resulted in the inspector issuing a verbal warning. With an automatic *negative duty-holder factor* (on the *basis that it is retrospective visit with a previous enforcement measure*), this now becomes a *Level 2* enforcement decision. The inspector requires that the mine conduct a *self-inspection* and a *self-audit* of its road dust suppression practices.

3. Deficient management system

The inspector conducts a review of a mine sites' safety management systems at the management's request.

Step 1. Clarify the purpose visit.

After reviewing WHS safety management system, focusing on production processes, the inspector notes many of the associated Safe Work Procedures pre-date a significant change in the longwall process, and are now require substantial updating.

Step 2. Determine the nature of the hazard/breach.

The inspector determines that this is a management-based non-compliance issue. On its own, it would qualify as a *minor performance gap*, but the inspector also notes that the scheduled self-audit, review and reporting of the overall WHS management system are now more than a year overdue. This tips the scales towards a *major performance gap*.

Step 4. Identify the duty-holders and duty-holder factors.

The inspector identifies the mine owner/operator as the responsible duty-holder. The inspector notes that the mine has an excellent compliance history, and has demonstrated a strong willingness to cooperate – as evidenced by their invitation for inspectoral review.

Step 5. Make an enforcement decision.

Even though there is a *major performance gap*, the positive duty-holder factors lead the inspector to issue a verbal warning. The inspector also provides advice and guidance on what is required by the mine site to bring their production safety management system into compliance.

11.5.3 Model B

A minority of NMSF Steering Group members requested enforcement guidelines that contain *no* prescriptive elements in order to maximise inspectoral discretion.

Summary of decision-making framework

Step 1. Clarify the purpose of the visit.

Step 2. Determine the nature of the hazard/breach.

Step 3. Determine the risk arising from the hazard/breach.

Step 4. Identify the duty-holders and duty-holder factors.

Step 5. Make an enforcement decision.

Step 1: Clarify the purpose of the visit

Inspectors should clarify the purpose of their visit, in particular, whether it is *prospective* (a breach is yet to be identified) or *continuing* (a follow-up to a past warning or directive). In determining where to direct their regulatory attention, inspectors should draw on, but not be limited to, the following sources of information:

- Accident or incident has occurred (and has been reported).
- Inspectorate-wide strategic priorities (eg ventilation or road surfaces).
- Inspectoral audits.
- Risk management and WHS systems and other on-site documentation.
- The views of management.
- Relevant information from workers and their representatives.
- Previous WHS and compliance history.

Note: Inspectors should deal first with matters that carry the risk of personal injury.

Step 2: Determine the nature of the hazard/breach

Assuming that a hazard or breach is found, the inspector determines the nature of the hazard or breach, in particular, whether is an example of *direct non-compliance* (where the breach poses a direct risk to WHS) or it is *management-based non-compliance* (for example, an operator may have a safety management system that does not meet regulatory requirements or risk assessment procedures that may be inadequate). The inspector should also estimate the extent to which the duty-holder falls short of relevant WHS benchmarks (for example, a prescribed standard, relevant code of practice, industry norm).

Step 3: Determine the risk arising from the hazard/breach

Employ the following three factors to conduct a risk assessment of direct risks, identifying, in particular, the *level of the risk* (how likely it is that an WHS event will occur), the *impact of the risk* (what is the likely consequence) and the *extent of the risk* (how many individuals are likely to be affected).

Step 4: Identify the duty-holder and assess duty-holder factors

The inspector identifies the responsible duty-holder: *mine operators* (including PCBUs, officers and/or directors of corporations, on-site statutory duty-holders and persons who control or manage workplaces); *downstream duty-holders* (including large whole of site contractors, labour hire companies and smaller, trade sub-contractors); and/or *upstream duty-holders* (including designers of plant, buildings and structures, manufacturers of plant and substances, and importers/suppliers of plant or substances and persons, who install, erect or commission plant). The inspector also assesses relevant duty-holder factors, including:

- Is the duty-holder obstructionist and unwilling to cooperate?
- Is the duty-holder intentionally or recklessly in non-compliance?
- Is the general condition of the mine site poor?
- Does the duty-holder have a history of non-compliance?
- Has the duty-holder been subject to previous compliance/enforcement action on the same or related issue (this factor only applies to follow-up action)?
- Is the proposed enforcement action proportional to the size and sophistication of the duty-holder?
- Is the proposed enforcement action proportional to the relative contributions of operator, upstream and downstream duty-holders?
- Is the proposed enforcement action proportional to the extent to which the duty-holder falls short of compliance (cross refer to 'performance gap' in Step 2)?
- Is the proposed enforcement action likely to be unnecessarily disruptive to mine site operations and/or supplier operations?

Step 5: Make an enforcement decision

The inspector makes enforcement decision by weighing the evidence from the previous steps to determine which enforcement response is appropriate. In this regard, inspectors should strive to incorporate *risk based* and *responsive* approaches to compliance and enforcement. Before implementing their enforcement decision, the inspector should review their decision against broader public interest factors:

- Where injury/disease has resulted, is the proposed enforcement action proportional to the level of harm incurred?
- Is the proposed enforcement action proportional to the public concern and the need for deterrence?

- Is the proposed enforcement action consistent with other strategic considerations (eg the need to send a strong message, given the prevalence of the offence across the industry)?

Note: A decision-making flow chart and a decision-making checklist for Model A are provided at Sections 11.6 and 11.7 respectively below.

11.5.4 Investigation and prosecution (under both models)

The decision to investigation and potentially prosecute occurs after an inspectoral workplace visit, and necessarily requires the engagement of senior management.

11.5.4.1 Investigation

There are two paths leading to a formal enforcement investigation separate from a no-blame Investigative Causal Analysis Method type investigation (and potential subsequent prosecution). First, an inspector reaches an enforcement decision to recommend prosecution and refers the matter to senior management/the investigation unit for further consideration – with the latter determining if prosecution is warranted and feasible (in the case of smaller jurisdictions, with limited resources, this may not be feasible).

Second, in the event of a fatality or a major impact incident involving *multiple individuals (*greater than 3), or an event of high potential without causing damage or injury, a formal investigation is obligatory (and will similarly determine if prosecution is warranted and feasible).

If a decision to formally investigate has been made it would normally be conducted by

an individual or team of inspectors separate from the original inspector, for example, a specialist investigation unit (again, in the case of smaller jurisdictions, with limited resources, this may not be feasible).

The role of a formal investigation is to determine:

- The circumstances leading to the risk/event.
- Who or what is responsible for the formation of those circumstances.
- The nature, level and attribution of any culpability involved.
- Whether or not to proceed with prosecution (see below).
- Who and/or what entity(s) should be subject to prosecution.

11.5.4.2 Prosecution

The model WHS Bill specifies the circumstances if not conditions in defence of prosecution under the proposed Act, including who may be prosecuted, available appeal mechanisms, prosecution timeframes and communication. Jurisdictions will be required to act in accordance with these provisions. Further guidance is provided by the national DPP guidelines and a set of prosecution principles (see box below).

DPP guidelines

The Australian Director of Public Prosecutions (DPPs) have agreed upon a common set of principles to be used in determining the question as to whether or not a prosecution should be commenced, or, if commenced, should be permitted to proceed. Although in some jurisdictions these criteria are expressed in different language, they do not differ in substance, and should be followed by inspectorates in making a prosecution determination. In determining whether or not to prosecute, three criteria common to all jurisdictions in the DPP guidelines need to be met. They are as follows:

1. The existence of a prima facie case, that is, whether the evidence is sufficient to justify the institution of proceedings.

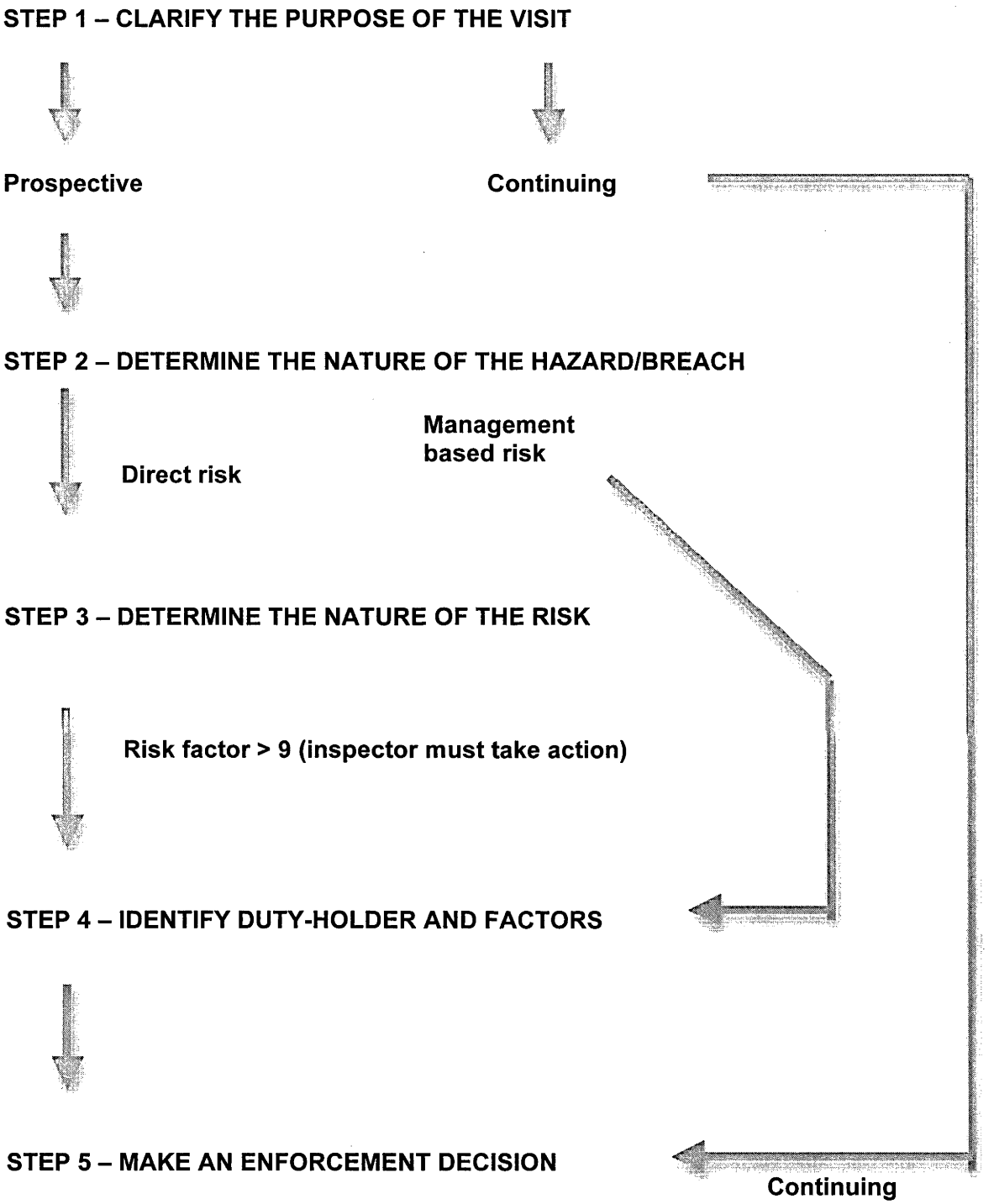
2. There needs to be a reasonable prospect of conviction, that is, an evaluation of how strong is the case likely to be when presented in court. This takes into account such matters as the availability, competence and credibility of witnesses and their likely impression on the court or tribunal that will determine the matter, and the admissibility of any confession or other evidence, and any lines of defence available to the defendant.

3. The public interest that may include (but is not limited to) the following considerations:

- To the seriousness or, conversely, the triviality of the alleged offence or whether it is only of a technical nature.
- Any mitigating or aggravating circumstances.
- The characteristics of the duty-holder – any special infirmities, prior compliance history and background.
- The age of the alleged offence.
- The degree of culpability of the alleged offender.

- Whether the prosecution would be perceived as counter-productive, that is, by bringing the law into disrepute.
- The availability and efficacy of any alternatives to prosecution.
- The prevalence of the alleged offence and the need for deterrence, both specific and general.
- Whether the alleged offence is of considerable public concern.
- Whether the law needs to be 'tested' in cases where the possibility of a conviction is hard to verify.

11.6 Enforcement flow-chart



11.7 Enforcement checklist (Model A)

Inspection case No: _____

1. Purpose of inspection Prospective ☐ Continuing ☐

If continuing, previous case No: _____ (go to step 5 if unchanged circumstances)

2. Nature of the breach Direct risk (go to step 3) ☐ Management-based (go to step 4) ☐

Brief description

Performance gap Small ☐ Medium ☐ Large ☐

Relevant standard/code of practice:

_____

3. Risk assessment

	High impact risk	Medium impact risk	Low impact risk
[illegible]	[illegible]	6	3
Possible risk	6	3	2
Remote risk	3	2	1

Risk factor: _____ (where multiple individuals at risk (3 or greater), multiply risk factor by 2).

4. Identify duty-holder and duty-holder factors

Responsible duty-holder Operator ☐ Upstream ☐ Downstream ☐

Name of duty-holder:

_____

Cooperation	Positive	☐	Neutral	☐	Negative ☐
Motivation	Positive	☐	Neutral	☐	Negative ☐
Site condition	Positive	☐	Neutral	☐	Negative ☐
Previous breach	Positive	☐	Neutral	☐	Negative ☐
Average	Positive	☐	Neutral	☐	Negative ☐

5. Enforcement decision:

_____

(refer to relevant enforcement matrix)

Review decision against levels of harm, public interest/outrage, strategic considerations and lik cases.

Chapter 12: Conclusion

This thesis has addressed two broad themes, first, the factors that may impede the achievement of continuous improvement in WHS outcomes across the industry, as well as at individual mine sites within coal mining companies, and second, the role of the external regulatory environment in impacting on the internal WHS operations of coal mining companies.

In terms of the first theme, it was found that WHS management systems do not exist in a vacuum. Their implementation and uptake are influenced by the culture into which they are received. The presence of mistrust, in particular, in various manifestations between corporate managers, mine site managers, middle managers, line managers and workers, can have a corrosive impact the efficacy of WHS management systems. Where managers or workers fail to embrace such systems, or worse, choose to bend their will against them, then this can have very real and detrimental impacts on WHS practices and performance outcomes. This can occur despite the best of intentions of corporate management in seeking better WHS outcomes through the introduction of WHS management systems. The finding was evidenced by the dramatic differences in WHS practices and performance across mine sites within a single mining company, with a uniform approach to WHS management systems.

Turning to the second theme, the thesis found that, just as mine site culture is crucial to WHS practices and performance, so too is the behaviour and attitudes of mining inspectors. Here, it is the presence of mistrust between inspectors and miners, limitations in the capacity of management-based regulation to overcome persistent mine site resistance, and overreach in the application of codes of practice that,

collectively, have the capacity to the role of external regulation in complementing and enhancing internal WHS management systems adopted by coal mining companies.

Beyond these two overarching themes, there are several key constituent findings that help to flesh out the strengths, weaknesses and challenges of contemporary WHS practices, performance and regulation in the Australian coal mining industry. First, coal mining companies operating have developed and implemented sophisticated WHS management systems designed to improve WHS outcomes. This has coincided with an impressive declining fatality and injury rates, as measured by official safety statistics, and more ambitious WHS improvement targets. It has also coincided with the introduction of complementary external government regulation that emphasises 'management-based' approaches, in particular, an integrated systematic approach to WHS. In recent years, however, the welcome improvement in WHS outcomes following the introduction of WHS management-based architectures have not been sustained, and have instead plateaued. This points to potential limitations in the prevailing approaches of internal WHS management systems and external WHS regulation.

Second, the thesis examines forensically a crucial component of mine safety culture, namely, the presence of *mistrust,* and its capacity to undermine WHS practices and outcomes, in particular, the role of WHS management systems. Mistrust is prominent in worker-manager and mine site manager-corporate relations, as well with the external WHS inspectorate. The thesis identifies the presence of mistrust as a major threat to WHS outcomes, particularly in relation to WHS management systems. As such, the presence of mistrust undermines the improvement that can be achieved under WHS management systems.

A third finding was the striking differences in culture between mine sites of a single company, and how this impacts on WHS outcomes. This is pertinent given the strong

emphasis that Australian coal mining companies have placed on the implementation of corporate-wide WHS management systems. In particular, there is a cluster of characteristics associated within heightened levels of mistrust at mine sites (within a single company) that have poorer WHS outcomes.

Further to internal levels of mistrust, a fourth finding is that mistrust between mining companies and the regulatory inspectorate undermines WHS outcomes. The replacement of an advise and persuade approach with a more adversarial deterrence orientated approach leads to mistrust. This constricts communication between miners and inspectors, with the former withholding information for fear of assisting future prosecutions, and the latter concerned that giving advice could undermine future prosecutions.

A fifth finding concerns the role of codes of practice in changing landscape of WHS regulation. Although they are an important component of management-based regulation, there are major problems with their design and application. The net effect is that codes have become a form of regulation by stealth. And the national harmonisation process has missed an opportunity to tailor codes to the particular circumstances of the Australian mining sector.

Finally, the thesis found that there is a high degree of variability in the inspectoral competencies of regulators across Australian jurisdictions. Given this, there is scope to provide scope to provide detailed guidance to inspectors in making enforcement decisions, which the thesis provides through a framework of risk-based regulation and responsive enforcement.

In conclusion, the thesis argues that too much faith has been placed in the capacity of WHS management systems to deliver continued improvements in WHS outcomes. In large part this is because WHS management systems are subservient to the culture into which they are received. The autonomy of Australian coal mining sites, together with a history of industrial disputes, undermines the effectiveness of WHS management systems. Adding mistrust to this mix only compounds the problems. It incumbent on Australian coal mining companies, then, to foster trust within mines sits to enhance the capacity of WHS management systems. Further, the tools available to, and the behaviour and attitudes of, mining inspectors can also impact on the efficacy of internal WHS management systems and, consequently, WHS outcomes. Mistrust between miners and inspectors, in particular, can impede the efficacy of management-based regulation in variety of ways. As such regulators also need to adopt institutional practices that complement and support internal company WHS management systems.

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