CHAPTER 7

Health and safety management

Introduction

1. Employers must take all practicable steps to ensure the safety of employees. In coal mining and other high-hazard industries best practice is to manage the significant risks involved through a health and safety management system that provides a mechanism for identifying hazards and the risks associated with them, and managing those risks.
2. This chapter introduces the systems concept and its basis in law and practice. It then discusses Pike's approach to planning, implementing, monitoring and reviewing its system.
3. The focus is on the people most involved in developing and managing the health and safety system and what was needed to put it into practice.
4. There is further analysis in other chapters on critical mine systems and organisational factors. Workplace safety is multi-faceted. In mining it is the product of good ventilation and gas control, effective hazard management, ongoing worker training and supervision, and a commitment by managers and directors to worker safety.

Health and safety management systems

5. A health and safety management system is 'that part of the overall management system which includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the OHS policy, and so managing the risks associated with the business of the organization'.[1] It integrates a range of safety management tools and functions including 'senior management commitment, hazard identification, risk management, safety reporting, occurrence investigation, remedial actions and education'.[2]
6. A health and safety management system provides a framework or structure for the development, implementation and review of the plans and processes necessary to manage safety in the workplace.[3]The influences that shape the system and the main elements for an underground coal mine are illustrated in the following diagram.

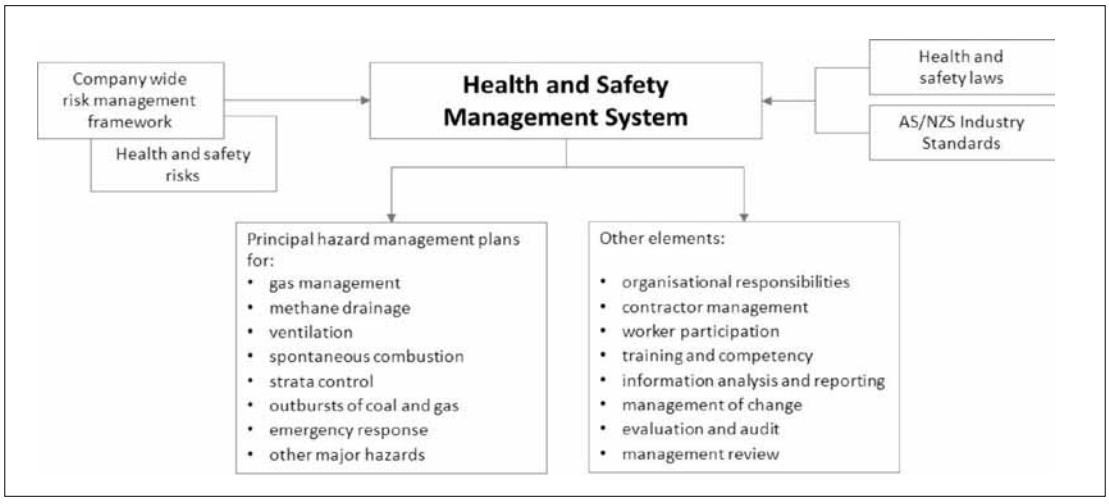

Figure 7.1: Elements of a health and safety system

Requirements of the Health and Safety in Employment Act 1992 (HSE Act)

7. The act's objective is to advance worker safety by 'promoting excellence in health and safety management, in particular through promoting the systematic management of health and safety'. Employers have a general duty to 'take all practicable steps to ensure the safety of employees while at work',[4] through providing a safe environment, work facilities and plant and ensuring that workers are not exposed to hazards.[5] Employers must identify and assess hazards,[6] then implement a hierarchy of controls to eliminate, isolate or minimise those that might cause serious harm.

8. Other obligations on employers include informing employees about hazards to which they might be exposed and the steps to be taken to avoid being harmed by those hazards; ensuring worker health and safety representatives have access to information about health and safety systems; ensuring that employees are properly trained and supervised; and involving workers in health and safety matters.

9. Employees must take all practicable steps to keep themselves safe and not harm others.

The elements of a health and safety management system

10. Two Australasian industry standards provide guidance on health and safety management systems.[7] These recommend that an organisation:

    - defines its health and safety policy and ensures commitment to the system through leadership and allocation of resources. This is a board and executive management function;
    - develops a management plan to control specific hazards;
    - implements the plan by involving people at all levels in the organisation. Implementation includes allocating resources, assessing training needs, making sure information is communicated, establishing incident/accident and hazard reporting systems, documenting the system and changes, and setting up procedures for continued assessment and control of hazards;
    - measures and evaluates health and safety performance, through inspections, monitoring, incident reporting, investigations and audits; and
    - reviews the system at the executive management level to ensure it is operating effectively and remains appropriate. 'Management review is the cornerstone of the system.'[8]

11. The design of a health and safety management system should be tailored to the circumstances of an organisation and its stage of development. Pike's system, for example, had to recognise that the company was in development and early production mode, mining in difficult conditions, reliant on a growing and diverse workforce, and planning to establish a high-production operation based on hydro mining. Hazard identification and control needed to take account of all these challenges.

12. The commitment of everyone in the organisation, from the chair of the board to trainee miners, is vital to a properly functioning health and safety management system. There must be attention to detail in all aspects of the operation, from design of the mine, procurement of plant and equipment to mining activities – all tasks that affect workplace safety, directly or indirectly.

The Pike approach

An integrated approach

13. Pike recognised the need for an organisation-wide, integrated approach to safety management. The corporate

health and safety policy stated that creating a safe work environment is 'both the individual and shared responsibility of all PRCL employees, management and board' and 'that people at all levels' must be committed to achieving high health and safety standards.[9] Documentation shows that all aspects of the operation were seen as part of the health and safety management system and that responsibilities were dispersed across the organisation as depicted in this diagram.

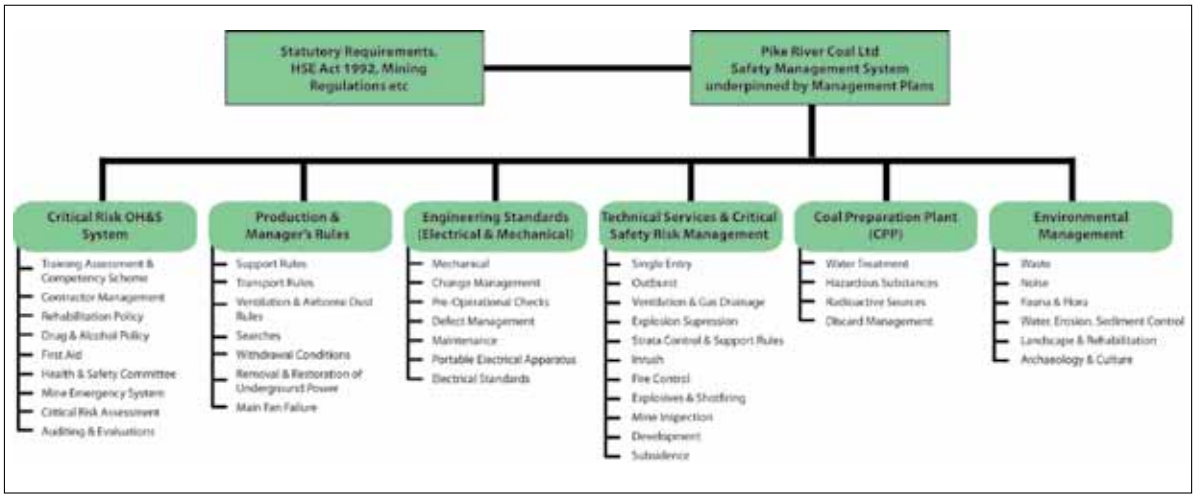

Figure 7.2: Pike safety management systems and management plan[10]

Role of the board

14. In its charter, the board's health, safety and environment (HSE) committee acknowledged that the board was ultimately responsible for health and safety and environmental policies and compliance with relevant laws. Responsibility for implementation rested with executive management. The actions of this committee and the board more generally are evaluated in Chapter 5, 'Governance and management'. The HSE committee and the board did not properly identify and manage the major health and safety risks facing the company.

15. Implementation of the health and safety management system was made more difficult because there were no clear objectives and targets during the development phase. Pike relied on having a fully externally auditable health and safety management system by the time 'steady-state production' was reached, which meant that 'virtually … all of your infrastructure is in place, all of your plant and equipment has been … fully commissioned and you are a coal mine producing coal'.[11]

16. This goal was understandable if it meant the system would mature in pace with development of the mine. Workplace safety is a work in progress, and the identification and management of hazards ongoing. But it is critical that health and safety management begins at the planning, design and mine development stages and remains relevant to the stage the mine has reached. At Pike River the drive to produce coal in 2010 led to a view that management of some hazards could await the implementation of a long-term solution, when for example a suitable second egress and a usable fresh air base (FAB) should have been high-priority safety requirements.

The safety and training department

17. High-hazard and complex organisations generally employ specialist health and safety officers. Their existence does not remove the responsibility from directors or managers to manage health and safety in the same way as they manage other risks facing the organisation, such as those relating to production and finance.

18. The functions of Pike's safety and training department included developing the health and safety management system, developing and managing the incident and accident reporting system, conducting underground and medical equipment audits and inducting and training workers. Neville Rockhouse was the safety and training manager. He joined Pike in 2006. Mr Rockhouse had a post-graduate qualification and experience in health and

safety and, earlier in his career, some mining experience. However, at the job interview he impressed upon Peter Whittall that his mining work experience was distant, was not in a gassy mine and did not extend to hydro mining.[12]

19. Mr Rockhouse twice gave evidence to the commission. This posed special difficulties for him: he lost one son in the tragedy and another was one of the two survivors who escaped from the mine.

20. Mr Rockhouse had a heavy workload, sometimes working between 60 to 80 hours per week. He sought more staff for his department, but was largely unsuccessful.[13] He found it difficult to get co-operation from other managers. Although Mr Rockhouse was the architect of most of the health and safety documents, he depended on technical input from the managers or staff of other departments. He had no authority over the managers and staff and there was no central oversight of the way departments managed health and safety other than Mr Rockhouse who was 'chasing them constantly to get stuff done'.[14]

21. The commission is satisfied that Mr Rockhouse needed significant support and guidance in developing Pike's health and safety management system, and direction on priorities. This was lacking. And when Mr Rockhouse was vocal in raising safety concerns, for example the absence of a second means of egress and the need for a refuge chamber,[15] his concerns were not addressed. Generally, his department struggled for credibility alongside the more production-focused departments.

22. The resourcing of the safety and training department, including the staff members who assisted Mr Rockhouse, has been discussed in Chapter 6, 'The workforce'.

Implementing the system

23. Mr Rockhouse began in 2006 with 'pretty much a blank sheet of paper' and was told 'go for it'. He had previous experience in designing a system 'from scratch', but not for a coal mine. However, Mr Rockhouse saw it as 'an exciting project'.[16] He drew on Australian and New Zealand industry standards and had access to management systems from other mines, mainly in Australia, which he adapted to Pike's circumstances. The system was to be computer-based, and was intended to be 'world class'.[17]

Documentation

24. The documented system was developed mainly by Mr Rockhouse.[18] The main document was the *Corporate Safety Manual: Safety in the Pike River Coal Workplace*,[19] which covered the employer commitment to safety management practices; planning, review and evaluation; hazard identification; information, training and supervision; incident/accident reporting and investigation; employee participation; emergency planning; and contractor management.

25. Beneath the manual was a hierarchy of documents, including departmental management plans, safe operating procedures (SOPs) to assist in managing known hazards, trigger action response plans (TARPs) to define the response to specific events, and job safety and environment analyses (JSEAs) for specific tasks.

26. A permit to work system operated to define the boundaries for specific work activities. Other documents included the mine manager's rules, an induction handbook, a SubbyPack™ (for contractors) and a hazard register.

27. By November 2010 there were over 398 documents in the electronic system.[20] Of these 227 were in draft as they were not signed off by two managers, although they were still used in the meantime. The number, and length, of the documents posed a challenge to the credibility of the system.

28. Although many of the documents were helpful, there were problems, not only with the sheer volume of material, but also with some of its content. For example, in 2010 two consultants and a Pike manager assessed the ventilation management plan and concluded it needed a complete review.[21]

Communication of health and safety issues

29. Informing workers, the board and the regulator about health and safety issues is an important component of any system.

30. Employees must be provided with a range of health and safety information, including about 'identified' hazards to which they may be exposed or that they may create. They may refuse to do work they believe is likely to cause them serious harm. That belief may be based on the advice of health and safety representatives, who must have access to sufficient health and safety information to enable them to perform their functions. Work cannot be refused because it carries an 'understood risk' of serious harm; the risk must have materially increased beyond the understood risk.[22] These rights depend on access to accurate information.

31. Pike had a number of mechanisms for providing health and safety information to employees and contractors, including inductions, training, news flashes and tool box talk safety advisories. While these were no doubt of benefit, two problems are apparent.

32. First, it seems some known information, bearing on hazards and increased risk, was not widely published. For example in late October 2010 a high reading of methane occurred at the ventilation shaft. A ventilation expert, John Rowland, said 'I would assume that such an event would be of sufficient importance that subsequent investigations and remediation strategies would be widely publicised to at least all site personnel, as a matter of very urgent priority'.[23] Mr Rockhouse agreed but said 'I didn't even know about it so no, no it wasn't done.'[24]

33. Prior to the tragedy Mr Rockhouse was not aware of methane readings of 5% reported by deputies during October 2010. When asked whether they received publicity or were notified to site personnel he stated 'No they didn't. You can't trust people can you.'[25] Methane readings were also not being properly reported in daily production or weekly operations meetings, nor through the health and safety system.[26]

34. The hazard was not only that of a potentially explosive methane incident in the workplace, but also that the mine lacked the capacity to prevent that, and further potentially explosive methane levels.

35. Second, this and subsequent chapters identify hazards and risks, some at a systemic level, which it seems were not fully identified or assessed by Pike. Without Pike having accurately identified them and their nature, it is unlikely that workers were informed of them.

36. Board health and safety communication was mainly via executive management's monthly operations report. Direct contact between the safety department and the board was rare. There was a weak link between the board HSE committee and the safety and training department. The committee met Mr Rockhouse infrequently and he did not always receive its minutes.[27] There was what Mr Rockhouse termed 'a cursory look at what was going on' by the HSE committee.[28]

37. Notification of health and safety information to the Department of Labour (DOL) was also inadequate. Employers must notify serious harm and other incidents prescribed by regulation 10 of the Health and Safety in Employment (Mining – Underground) Regulations 1999. These include an explosion or ignition of coal dust or gas, fire or spontaneous heating, unplanned outbursts of gas or water, loss of control of a vehicle, employees being trapped, structural failures, unplanned falls of ground, major collapses of part of the workings, uncontrolled accumulations of flammable or noxious gas, and failures of a main ventilation fan for more than 30 minutes.

38. Pike's incident and accident reporting procedure required serious harm notification, but did not capture and notify all matters required by regulation 10. Many notifiable incidents were not reported to DOL, including high methane readings of about 5% in October 2010.[29]

39. To Mr Rockhouse's knowledge Pike did not review or take legal advice regarding whether it was notifying the matters it was required to notify.[30]

The workers site health and safety committee

40. The site committee was of the kind envisaged in the HSE Act. It had the power to make recommendations about health and safety matters which an employer had to adopt, or give written reasons for not doing so.

41. The committee's function was defined as monitoring health and safety, but 'focused on injury prevention' and significant hazard identification and management because 'this process is the key to all of our injury prevention initiatives'. Its role was to gather information from workers, table that information and develop controls to 'manage risk and prevent harm'.[31] The committee was to comprise an elected chair, a manager, a representative from each department and a union representative,[32] although no union involvement eventuated.[33] The committee did not have a budget or authority over workers, although departmental managers had access to funds.[34] Later, membership of the committee was increased to include contractor representatives from McConnell Dowell Constructors Ltd and trucking company TNL Group Ltd.

42. The committee met monthly. Minutes were taken and widely circulated, including to the chief executive, general manager and Mr Rockhouse, who sometimes attended meetings. The minutes were also made available to workers by email and by placing copies on notice boards and on smoko tables. However, Adrian Couchman, the chair of the committee, said there was never any feedback from workers.[35]

43. The committee maintained an 'action sheet' that recorded required actions, the person responsible for implementing them and an assignment and completion date. The sheets show that attention to completing actions varied. Ordinarily, simpler matters were attended to promptly, but actions assigned to some departments were routinely left unresolved. Mr Rockhouse stated, 'some department heads took little notice of action points arising from the meetings'.[36]

44. Attendance at committee meetings was an ongoing problem. For example, only five of the 10 representatives attended the final meeting on 8 November 2010.[37] The engineering department was consistently unrepresented, and had still not appointed someone to the committee as at November 2010.[38] Sometimes, there were more managers than workers at meetings, which concerned Mr Couchman, given that the committee was intended to be a workforce forum for health and safety concerns.[39]

45. Despite these problems the committee remained the voice of the workforce. Following the November 2010 meeting it raised numerous concerns, including the return to service of an unrepaired Jugernaut that had caused a back injury, poor underground management of fire hoses, the unavailability of a driftrunner underground at shift changeover periods and at other times when an evacuation could be declared, a shortage of fans and vent cans underground, the location of a toilet 1.2km away from the working faces, and the inability of miners to contact the control room by digital access carrier (DAC) or phone.[40] When Mr Couchman conveyed these concerns to Douglas White, Mr Rockhouse and Stephen Ellis, Mr White responded immediately, saying, 'my patience is wearing rather thin on some of these issues'.[41] These were clearly recurrent problems.

46. The most significant obstacle the committee faced was its inability to make progress on the major issues it raised. On 3 March 2010 Mr Couchman, as chair, wrote to Mr Rockhouse asking 'if there has been any further progress made on reaching a resolution in regards to the 2nd means of egress'.[42] On 17 March 2010 Mr Rockhouse replied, noting that, following a significant risk assessment, the Alimak section of the ventilation shaft would not be used as a second emergency egress if the drift was impassable. Instead a FAB was to be constructed in the slimline shaft stub. But a proper FAB was not completed by the end of June. There was only a pull-down brattice stopping to isolate the slimline shaft stub. This was an interim measure while the FAB was designed and ventilation surveys undertaken.[43]

47. When the committee met on 13 September 2010, and noted that development of a second means of egress was planned 'sometime in the coming months', it resolved 'that this was not adequate and requested a firm plan be made available to identify when the 2nd means of egress would be actioned'.[44] Mr Couchman was designated to

action this. The matter was raised at the next meeting, on 11 October, when in the absence of any response from the company, it was reassigned to Mr Ellis to 'chase it up for us'.[45] At the November meeting it was noted that Mr Ellis would report 'next month'.[46]

48. Hence, by the date of the explosion little progress had been made. There was a plan to establish a walkout second egress, but its construction was at least 12 months off. The interim safeguard of a proper FAB had not eventuated either. A fundamental concern of the workforce remained unaddressed – eight months after it was first raised.

Evaluation and monitoring

49. Ongoing evaluation of available information is an important component of a health and safety management system. It identifies emerging issues and risks and opportunities for improvements. This requires monitoring and reporting mechanisms, management analysis of the resulting information and a response to any warning signs, including effective feedback to the workforce.

50. As well as information from the site health and safety committee, numerous records and reports provided information about problems at the mine. Deputies and underviewers completed reports every shift. Control room operators prepared shift, daily and event reports. Engineers, electricians and machine operators regularly inspected and reported on diesel engines, fans, pumps, sensors and electrical equipment.[47]

51. The safety and training department, assisted by the Mines Rescue Service, audited rescue and medical equipment; the New Zealand Fire Service undertook audits and prepared reports on surface facilities.

52. Later chapters consider the effectiveness of monitoring of specific systems such as those relating to methane, ventilation, strata and mining practices. This section looks at other reporting mechanisms and the company's general response to safety information from within the mine.

Incident/accident reporting and investigation

53. Pike had an incident/accident reporting and investigation system in place. Workers were required to report events on a report form.[48] These forms went to the safety and training department. Mr Rockhouse investigated some serious matters himself. Otherwise investigations were undertaken by a manager or staff member from the appropriate department. Some events were investigated by a team, which could include the mine manager.

54. The workers reported many incidents and accidents. The commission analysed 1083 reports and summarised a selection of 436 in a schedule.[49] The schedule groups events by type, including methane spikes, ventilation, strata, bypassing, equipment sparking and a number of others. The numbers suggest that the workforce, including contractors, were committed to reporting events, though the extent of non-reporting is unknown. The reports certainly contained a wealth of information which, if properly analysed, revealed much about the systems and conduct underground.

55. However, there were problems with the investigation process. Many reports were assigned to an investigator, but no investigation was completed. This was evident from the report forms filed with the commission. Mr Couchman described the extent of this problem. Some departments would have only a handful of investigations outstanding, while the engineering and production departments sometimes had up to 70 uncompleted investigations and some were over a year old. Measures to deal with the backlog were unsuccessful. When the backlog was discussed with Mr White in October 2010 he decided that they should be cleared and a fresh start made 'with a new management and a new mine manager.' This meant that the incidents were never properly investigated.[50]

56. The site health and safety committee reviewed a selection of incident/accident reports at its monthly meetings. Approximately six of these were selected at random, and a committee member assessed whether stipulated remedial actions had been carried out.[51] If not, the incidents were reopened and followed up.

57. There was some trend analysis of, and action was taken on, some issues, such as contraband. But because reports were not analysed systematically for recurring safety problems, or weaknesses in control measures, many matters

were not discovered. In this way potential information about safety and emerging risks was lost, and information that could have been obtained from completed investigations was not put to best use. The extent of this deficit was most apparent when Mr Rockhouse described his reaction to seeing the schedules prepared by the commission: 'Mr Wilding, when you spent that three days with me and you showed me that stuff you had me reduced to tears. I know there was no analysis like you've done with that [information] at Pike River.'[52]

58. There was also a breakdown in providing feedback to the report writers. Mr Couchman considered there was no established system for providing feedback.[53] Mr Rockhouse understood that when an investigation was completed, there should have been feedback to the reporter but this 'didn't happen.'[54]

Use of lead and lag data

59. An additional problem was the way overall safety performance was being measured at Pike. The health and safety management system and reporting to management and the board was based mainly on lag, rather than lead, data. Lead indicators 'are measures of pre-emptive actions or initiatives that assist in preventing workplace injury',[55] for example, the percentage of hazards rectified and near miss investigations. They enable trends and weaknesses in processes to be identified before serious incidents occur. Lag indicators measure events and impacts after the event.

60. In the early days of the mine there was discussion of using lead indicators as key performance measures for managers,[56] though lag indicators (lost time injuries and later medical treatment injuries) were used.[57] Lag rather than a mixture of lag and lead data was also reported to the operations meetings and to the board.[58] There is no sign that the board of directors appreciated the importance of using both types of data.

Management review

61. Periodic management review of the health and safety management system is essential to ensure it remains relevant and to plan improvements. Beyond an audit of statutory compliance in early 2010,[59] there was no systematic attempt to review the health and safety management system initiated by Pike management.

62. The closest to a review was an insurance risk survey conducted by Hawcroft Consulting International. This established risk ratings that influenced the premiums Pike paid for insurance cover. The company's health and safety management systems were rated as average or above, save in one respect – risk management. This received an average rating in 2009, but a below average/low standard rating in 2010.[60] The commentary to the survey explained that 'Over the next 12 months Pike River Coal will be in a transition phase from development to steady state coal production from the monitor panels. A number of risks exist associated with methane (gas drainage efficiency), wind blast potential (monitor panels only), goaf falls in monitor panels and actual behaviour of the immediate massive strata.' And, as at July 2010, 'management had not conducted a broad brush risk assessment or formal operational risk assessments into these principal hazards, therefore some risks may remain unknown.'[61]

63. Mr Rockhouse was alive to this problem. Aware of Hawcroft's recommendation for a broad-based assessment, he raised the matter at various managers' meetings. Mr Whittall responded that the issue should be 'taken offline', to be discussed 'at a later date outside of this forum.'[62] There was no discussion and no broad assessment of risks before hydro mining began.

64. A review of the whole health and safety management system would have identified anomalies, many of which could have been readily rectified. For example, the mine manager's rules required people to go to 'a ventilated place' when gas concentrations exceeded 'safe levels',[63] whereas regulations prescribe a 'flammable gas' level of '2% by volume, or more' as the trigger point for withdrawal.[64] Management plans referred to compliance with codes of practice, when these did not exist in New Zealand. These errors probably resulted from using overseas materials when drafting the Pike documents.

65. There was also a gap between the documented system and actual practices underground. The ventilation management plan provided a glaring example of this. In accordance with best practice it required the appointment

of a ventilation engineer, whose critical role was to oversee the ventilation system. But no one was appointed to this position (see Chapter 8, 'Ventilation', paragraphs 89–101). The plan also contemplated the installation of a tube bundle monitoring system, but the mine did not have one.

66. More generally, when referred to numerous examples of conduct and practices that were contrary to the procedures described in the documented system, Mr Rockhouse lamented that 'the purpose of their creation was to actually be used and be followed to keep everyone safe. Clearly that has not occurred across a lot of departments.'[65]

Hazard recording

67. Pike had a suite of documents that enabled the reporting and recording of hazards and associated information. This included accident and incident forms and 'I am safe' booklets which workers could use to report hazards and a 'baseline risk assessment significant hazard register' (register), which listed hazards rated for their risk and probability and their controls. However, that system was not effective. Four examples illustrate why.

68. First, new information gathered by Pike was not always incorporated into the register. When hazards were reported on the accident and incident forms or in 'I am safe' booklets there would be a check to ensure those hazards were listed in the register. If not, they would be included. But multiple occurrences of the same hazard, and reporting of an accident or incident, did not result in re-evaluation of the probability and consequence of the hazard.[66] The concerns raised in the Hawcroft report did not flow into the register.[67]

69. Second, the register dealt with hazards discretely, for example hazards relating to vehicles, water management, working at heights and ventilation management. The register did not reflect the increased risks resulting from a combination of hazards. Those risks should have become apparent had there been a broad brush risk assessment of the type raised by Hawcroft.

70. Third, many of the controls listed in the hazard register were dependent on compliance with Pike's management plans and operating procedures, and the proper training and assessment of, and operation of equipment by, workers. Yet, as seen elsewhere, there were significant problems with those aspects, which suggest that many of the 'controls' did not exist or could not be relied on.

71. Finally, to Mr Rockhouse's knowledge the register was not used for management-level operational planning.[68]

Conclusions

72. The company did not have a clear strategy from the board that set out its vision, objectives and targets for health and safety management. It did not treat health and safety as a key corporate risk and prioritise the development of an integrated health and safety management system.

73. The executive management team therefore did not always prioritise safety matters. Mr Rockhouse, without a strong mandate, found it difficult to influence and involve others. The safety and training department at Pike appears to have been marginalised.

74. The Pike health and safety management system was never audited internally or externally. If it had been, deficiencies would have been identified, including the gap between the standards and procedures laid down in the Pike documents, and the actual mine practices. Examples of this are highlighted throughout Chapters 8 to 12, on the critical mine systems.

75. Pike generated a lot of information about the safety of critical mine systems and practices underground. This included information about contraband, bypassing of safety devices, ventilation problems, methane spikes, sensor

failures and information on numerous other topics. But much of the information was not analysed and responded to. If it had been, some of the problems discussed in this report would have been highlighted, and a number of warning signs that pointed to the risk of an underground explosion would have been noticed.

76. The appointment of a specialist health and safety adviser does not alleviate the need for an organisation-wide acceptance of responsibility for health and safety management.

ENDNOTES

[1] Standards Australia and Standards New Zealand, Occupational Health and Safety Management Systems – General Guidelines on Principles, Systems and Supporting Techniques, (AS/NZS 4804:2001), 15 November 2001, p. 4.
[2] Civil Aviation Authority of New Zealand, Safety Management Systems Policy, http://www.caa.govt.nz/SMS/SMS_Policy.htm
[3] David Cliff, The Management of Occupational Health and Safety in the Australian Mining Industry, 2012, International Mining for Development Centre, p. 5, http://im4dc.org/wp-content/uploads/2012/01/UWA_1698_Paper-03.pdf
[4] Health and Safety in Employment Act 1992, ss 5(a), 6.
[5] To ensure there is broad coverage, and reflect the variety of workplaces, similar duties are imposed on those who control workplaces, the self-employed, principals to contracts and suppliers of plant.
[6] The definition of hazards is broad. It can include 'physical, chemical, biological, psychosocial and mechanical factors': Kathleen Callaghan, witness statement, 31 October 2011, FAM00042/8, para. 23.
[7] Standards Australia and Standards New Zealand, Occupational Health and Safety Management Systems – Specification with Guidance for Use (AS/NZS 4801:2001), 15 November 2001; Standards Australia and Standards New Zealand, AS/NZS 4804:2001.
[8] Standards Australia and Standards New Zealand, AS/NZS 4801:2001, p. 40.
[9] Pike River Coal Ltd, Health & Safety Policy, DAO.001.09556/1.
[10] Pike River Coal Ltd, Strata Control Management Plan: Management Plan (Final Document), 21 October 2010, DAO.025.38374/4.
[11] Neville Rockhouse, transcript, p. 4200.
[12] Ibid., pp. 4197–98.
[13] Ibid., pp. 4340–41; Neville Rockhouse, witness statement, 13 November 2011, ROCK0002/13, para. 30.
[14] Neville Rockhouse, transcript, p. 4253.
[15] Ibid., pp. 4290–91.
[16] Ibid., pp. 4209, 4278, 4361.
[17] Ibid., p. 4365.
[18] Before Mr Rockhouse began work, Pike had a documented system that he considered would not meet AS/NZS 4801: Neville Rockhouse, transcript, p. 4209.
[19] See table of contents: Pike River Coal Ltd, Corporate Safety Manual: Safety in the Pike Coal Workplace, 2008, DOL7770030013/1–7.
[20] Department of Labour, Pike River Mine Tragedy 19 November, 2010: Investigation Report, [2011], DOL3000130010/235, para. 5.5.2.
[21] Andrew Sanders, Pieter van Rooyen and John Rowland, see Chapter 8, 'Ventilation', paras 39–42.
[22] Health and Safety in Employment Act 1992, ss 12, 28A.
[23] John Rowland, witness statement, 25 November 2011, ROW007/1, para. 4.
[24] Neville Rockhouse, transcript, p. 4244.
[25] Ibid.
[26] Ibid., pp. 4224–25, 4244–45.
[27] Ibid., p. 4235.
[28] Ibid., p. 4366.
[29] Ibid., pp. 4266–67.
[30] Ibid.
[31] Pike River Coal Ltd, Corporate Safety Manual: Section 1.8, 26 November 2008, DAO.001.08360/1–2.
[32] Neville Rockhouse, witness statement, 13 November 2011, ROCK0002/37–38, paras 125–26.
[33] Adrian Couchman, transcript, p. 3811.
[34] Neville Rockhouse, transcript, pp. 4231–32.
[35] Adrian Couchman, transcript, pp. 3818–19.
[36] Neville Rockhouse, witness statement, 13 November 2011, ROCK0002/38, para. 126.
[37] Pike River Coal Ltd, Health and Safety Committee, Meeting Minutes, 8 November 2010, DAO.002.08159/1.
[38] Email, Adrian Couchman to Douglas White, Neville Rockhouse and Stephen Ellis, 9 November 2010, DAO.002.08157/1.
[39] Adrian Couchman, witness statement, 28 November 2011, COU0001/20, para. 109.
[40] Email, Adrian Couchman to Douglas White, Neville Rockhouse and Stephen Ellis, 8 November 2010, DAO.002.08157/1–2.
[41] Email, Douglas White to Adrian Couchman, Neville Rockhouse and Stephen Ellis, 9 November 2010, DAO.002.08157/1.
[42] Email, Adrian Couchman to Neville Rockhouse, 3 March 2010, DAO.002.08049/1.
[43] Letter, Neville Rockhouse to Adrian Couchman, 17 March 2010, DAO.002.08049/2–3.
[44] Pike River Coal Ltd, Pike Health and Safety Committee, Meeting Minutes, 13 September 2010, DAO.002.08125/2.
[45] Adrian Couchman, transcript, p. 3817.
[46] Pike River Coal Ltd, Health and Safety Committee, Meeting Minutes, 11 October 2010, DAO.002.08138/2.
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