



**MINE SAFETY
INSTITUTE OF
AUSTRALIA PTY LTD**
ABN - 3115 135 4442

MINE ACCIDENTS AND THE LAW



Legislation Origins

- **In 1838 after a freak accident at Huskar Colliery in Silkstone**
- **The public became aware of conditions in the country's collieries**
- **Queen Victoria ordered an inquiry.**

1838 Huskar Disaster



- A stream overflowed into the ventilation drift
- causing the death of 26 children;
- 11 girls aged from 8 to 16 and 15 boys between 9 and 12 years of age

Children's Employment Commission.

F I R S T

REPORT OF THE COMMISSIONERS.

M I N E S.



The Legislation Reform

- **Mines and Collieries Act 1842**
- **Prohibited Girls and Boys under 10 from working in UG coal mines.**

In Memoriam

July

Northern England - covered by this web site

Date	Colliery	Cnty	Cause	Lives	Sufferers
03 Jul 1825	Fatfield, Juliet Pit	DUR	Explosion	11	Names
19 Jul 1819	Sheriff Hill	DUR	Explosion	35	Names
28 Jul 1837	Workington	CUL	Inundation	27	Names

Rest of UK - not on this site

1 Jul 1853	Bent Grange	LAN	Explosion, firedamp, ignition caused by faulty ventilation	20	Names
11 Jul 1905	National	GLA	Explosion, firedamp, ignition caused by shot firing	119	Names
13 Jul 1922	East Plean	STI	Explosion, coal dust, ignition caused by flame from blown-out shot	12	Names
15 Jul 1856	Cymmer	GLA	Explosion, firedamp, ignition caused by safety lamp	114	Names
15 Jul 1880	Risca	MON	Explosion, firedamp. Ignition probably caused by Clanny Lamp	120	Names
18 Jul 1874	Ince Hall, Saw Mill Pit	LAN	Explosion, firedamp, ignition caused by blown-out shot	15	Names
2 Jul 1879	Blantyre, No. 1 Pit	LKS	Explosion, firedamp, ignition caused by naked light	25	Names
2 Jul 1937	Holditch	STS	Explosion, firedamp, ignition caused by fire at coal cutting machine, caused by friction of the picks in the cut	30	Names
21 Jul 1869	Haydock, Queen Pit	LAN	Explosion of firedamp caused by shot firing	59	Names
23 Jul 1870	Charles	GLA	Explosion, firedamp, ignition caused by naked light	19	Names
23 Jul 1850	Commonhead, Airdrie	LKS	Explosion	18	Names
28 Jul 1923	Maltby Main	YKS	Explosion, firedamp, ignition caused by spontaneous combustion	27	Names
29 Jul 1941	Crigglestone	YKS	Explosion, firedamp, ignition caused by shot firing	22	Names
3 Jul 1856	Old Coal Pit	SAL	Explosion, firedamp, ignition caused by safety lamp	11	Names
30 Jul 1973	Markham	DBY	Shaft accident, overwind, caused by failure of mechanical break of winding engine	18	Names
31 Jul 1857	Heys	LAN	Explosion of firedamp	40	Names
4 Jul 1838	Huskar, Moorside Pit	YKS	Inundation	26	Names
4 Jul 1893	Thornhill, Combs Pit	YKS	Explosion, firedamp, ignition caused by naked light	139	Names
7 Jul 1870	Silverdale, Sheriff Pit	STS	Explosion, firedamp, ignition caused by naked light	19	Names
9 Jul 1912	Cadeby Main	YKS	2 explosions, firedamp and coal dust, ignition caused by gob fire	88	Names
9 Jul 1846	East Wheal Rose	CON	Inrush	38	Names
9 Jul 1918	Stanrigg and Arbuckle	LKS	Inrush of moss	19	Names



Coal Mines Inspection Act 1850

- **The 1842 Mines Act had not dealt with safety in the mines; this legislation attempted to rectify that omission. More inspectors were provided to enforce the 1842 Act and were to produce reports of conditions and safety standards in the mines.**

New Hartley Disaster 1862

- **Killed 204**
- **Only 1 shaft**
- **Queen Victoria made a law that a mine must have 2 trafficable entrances.**

The day the world changed?



Aberfan 21 October 1966



Aberfan 21 October 1966?

- **There was no law for dumps.**
- **No one at the mine was injured.**
- **How could this have happened?**
- **Who was responsible?**
- **Had been identified for years!**



Safety and Health at Work

Report of the Committee
1970-72

Chairman
LORD ROBENS

Robens Report 1972

People are heavily conditioned to think of safety and health at work as in the first and most important instance a matter of detailed rules imposed by external agencies.

Robens Report 1972

The primary responsibility for doing something about the present levels of occupational accidents and disease lies with those who create the risks and those who work with them.

NSW Coal Mine Disasters



1887	Bulli Colliery	Explosion	81 killed
1889	Hamilton Colliery	Pillar Collapse	11 killed
1896	Stockton Colliery	Fire & Toxic gas	11 killed
1898	Dudley Colliery	Explosion	15 killed
1902	Mt Kembla Colliery	Explosion	96 killed
1905	Stanford Merthyr Colliery	Explosion	6 killed
1923	Bellbird Colliery	Fire & Toxic gas	21 killed
1965	Old Bulli Colliery	Fire & Toxic gas	4 killed
1967	Wye Colliery	Pillar Collapse	5 killed
1979	Appin Colliery	Explosion	14 killed
1991	South Bulli Colliery	Outburst	3 killed
1991	Western Main Colliery	Pillar Collapse	3 killed
1996	Gretley Colliery	Inrush	4 killed

Australian Coal Mine Disasters



- **Bulli fire 1965 (NSW) - 4**
- **Box Flat 1972 (QLD) - 17**
- **Kianga 1975 (QLD) - 13**
- **West Wallsend 1979 (NSW) - 0**
- **Appin 1979 - (NSW) 14**
- **Moura 4 1986 (QLD) - 12**

Australian Coal Mine Disasters

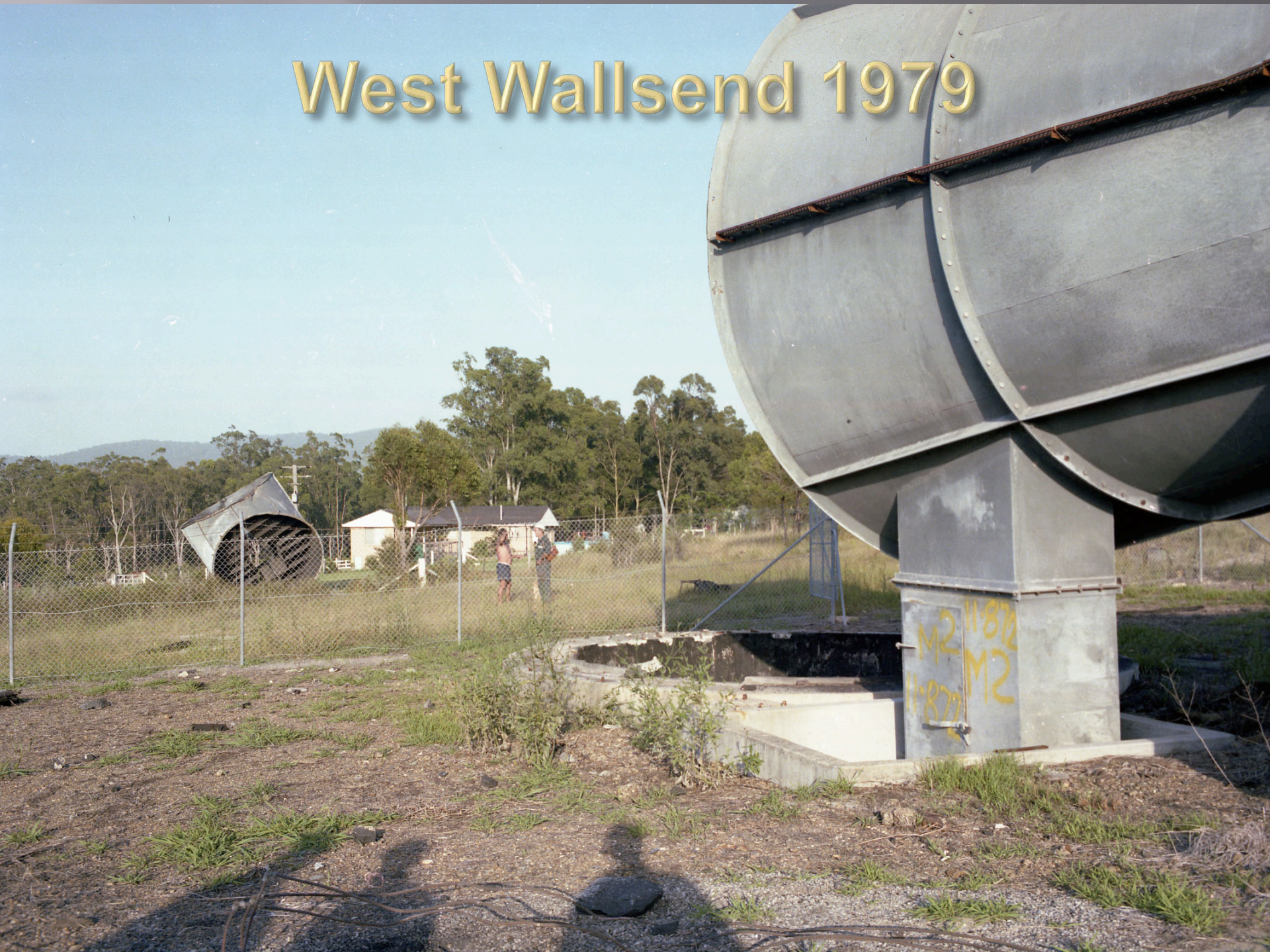
- Moura 2 1994 (QLD) – 11
- Endeavour 1995 (NSW) – 0
- Pike River 2010 (NZ) - 29
- Blakefield South 2011(NSW) - 0



West Wallsend 1979

- Power company changed Tx
- Fan was off for about 36 hours
- Mine filled full of methane.
- Power restored before inspection.
- Electrician turned the power on and blew up the mine.

West Wallsend 1979



West Wallsend 1979



Appin1979

- **Ventilation change.**
- **Accumulation of methane.**
- **Ignited by something?**

Need more Inspectors

I raise also what is probable well-known to the Department, the dearth of competent Inspectors to perform the whole task adequately. Inspections sometimes are separated by months and then do not involve the whole mine. There appears to be a totally inadequate number of Electrical Inspectors. The amount of paper-work alone for a local Inspector must be enormous. **No record of the result of an inspection seems to be left at a mine.** This, however, is a subject for Departmental management.

Appin1979

by his battery-operated cap lamp. Without a methanometer, however, the deputy cannot measure methane in quantities of less than 1.25%. Thus he cannot tell if the mine is complying with the Statute in regard to quantities in the relevant intake airways where the statutory limit is 0.25%. The deputy must be given a methanometer in addition to his lamp. However, there

Appin – Fan Starter Box

Some 23 - 25 metres outbye from its original position was the 'B' heading auxiliary fan, part of its cable still attached having been severed some 14 metres from the fan, and lying on its side. It weighs almost 1 ton. The fan starter box was exposed. It was found to be in a non-flameproof condition. Its hinged rear door, fitted with 24 holes for studs to be screwed against the metal flange around the opening of the box, contained one stud only, screwed for 2 threads. 14 of the missing bolts or studs from the fan were located nearby.

Endeavour 1995

A bleeder system to remove hazardous accumulations of methane from the 300 Panel gob had not been established. The lack of such a bleeder system allowed methane to accumulate in the gob. During a roof fall, methane was pushed from the gob into the working places of the 300 Panel. The ventilation system did not prevent the inrush of methane onto the section and it was not capable of diluting this methane to below explosive levels. This explosive mixture of methane was most likely ignited in the No. 21 crosscut approximately between the Nos. 1 and 3 headings. The non-flameproof condition of a coupling device in the shuttle car cable appears to be the most likely ignition source. The ensuing explosion resulted in damage to portions of the 300 Panel, the 400 Panel, and in 8 West.

Legislative Review

- **1997 Regulation**
- **Adoption of risk based philosophy**
- **Based on the Robens Blueprint**
- **Arguably ahead of its time!**

Division 2 Duties of operators of coal operations

Subdivision 1 Health and safety management systems

20 Duty of operator to prepare health and safety management system

- (1) The operator of a coal operation at which mining is carried out must prepare a statement in accordance with this Act and the regulations, stating how the health and safety of the people who work at the coal operation, or who are directly affected by the coal operation, will be protected. This is a *health and safety management system*.



37 Operator must prepare management structure

- (1) As part of the health and safety management system for a coal operation, the operator of the coal operation must prepare a document that sets out the management structure of the coal operation.
- (2) The management structure must nominate people within the structure by position and must outline their areas of responsibility and accountability.

2014 NSW Draft Regulation

(5) **Electrical engineering control plan**

The mine operator of a mine in which there is a risk to health and safety associated with electricity at the mine:

- (a) must prepare an electrical engineering control plan for the mine that sets out the means by which the mine operator will manage those risks in accordance with clause 9, and
- (b) must ensure that the plan is developed, implemented and periodically reviewed by a person who is, or who is under the supervision of:
 - (i) the individual holding the statutory position of electrical engineering manager or electrical engineer at the mine, or
 - (ii) if no person is required to hold either of those positions at the mine, a competent person.

NSW

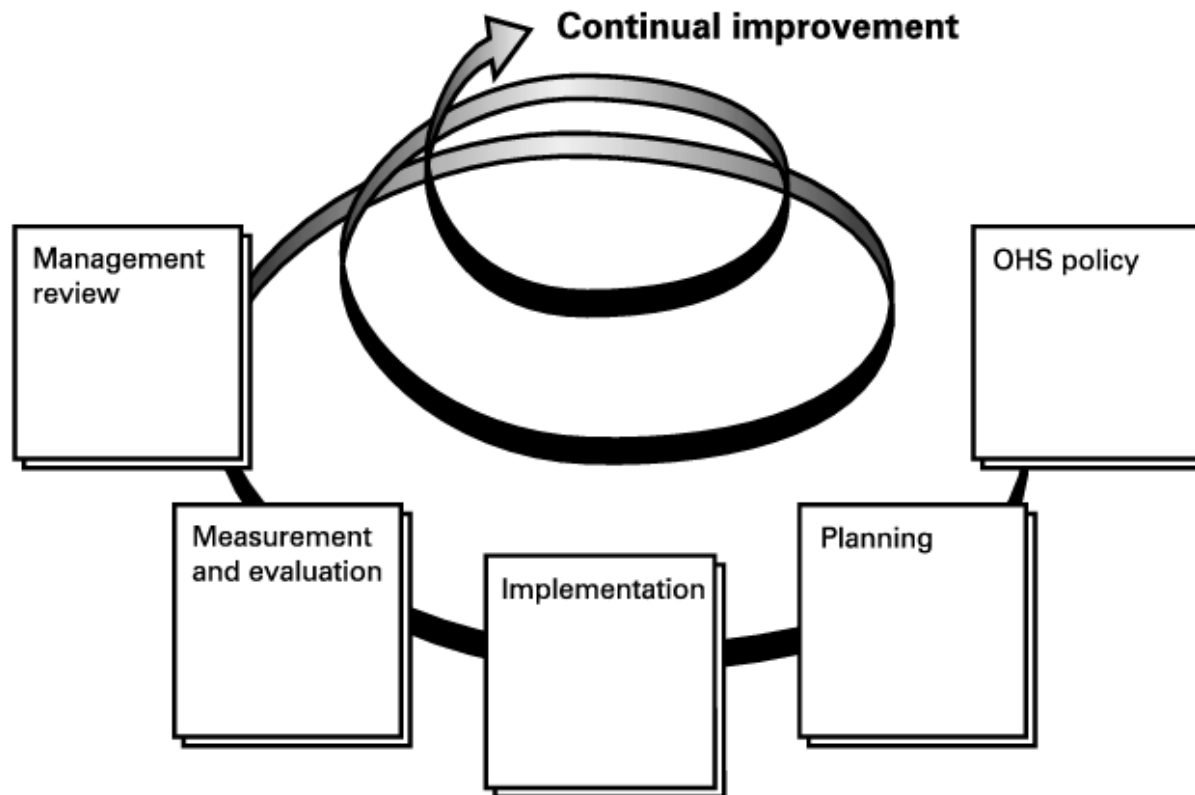


Figure 1 OHS Management System Model



Philosophy



Pike River 2010





Pike River 2010

CHAPTER 11

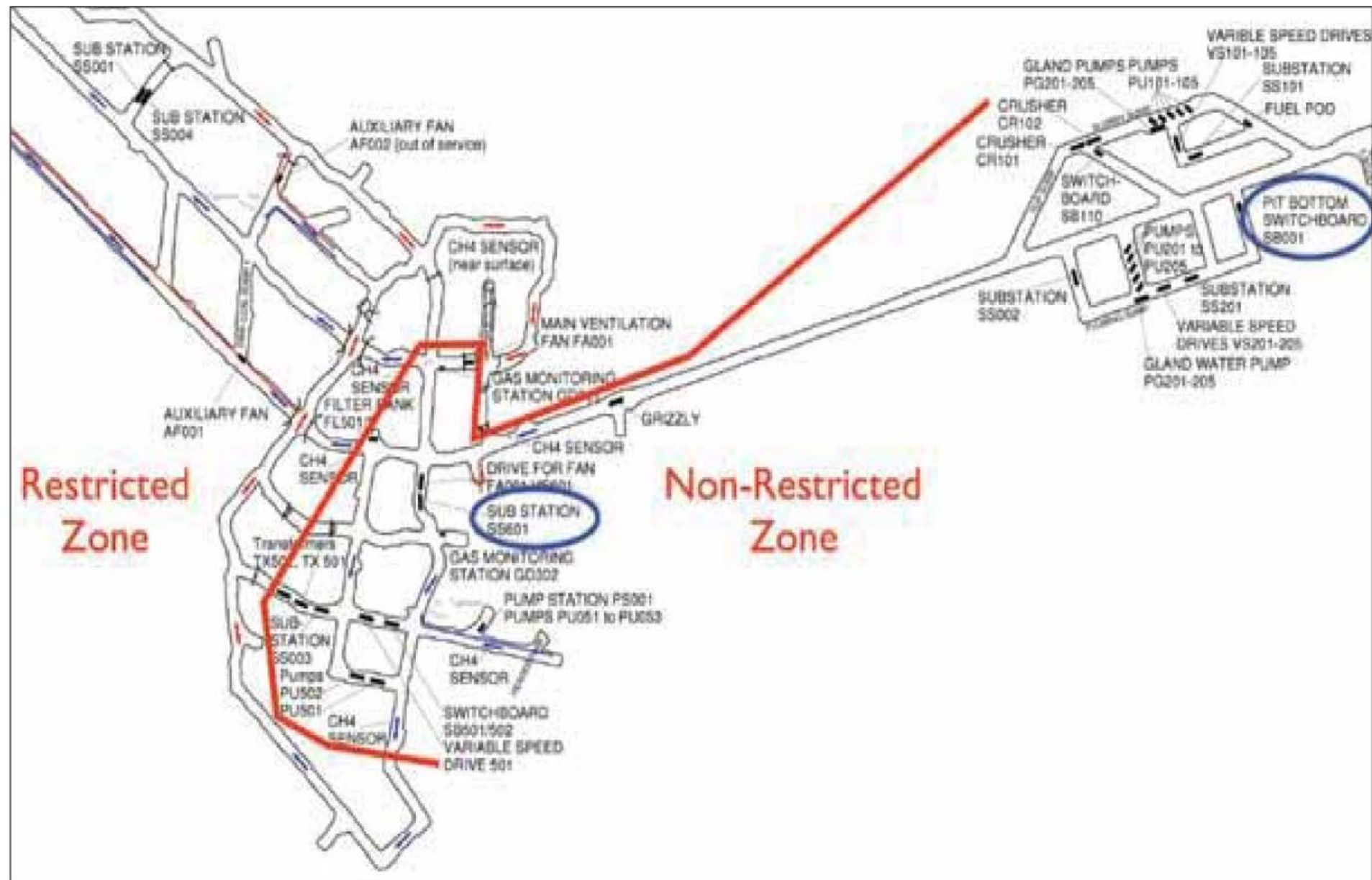
Electrical safety

Introduction

1. This chapter considers the underground electrical system at Pike River. The integrity of parts of that system, and its potential to be a source of ignition for the first explosion, have been the subjects of conflicting evidence.



Pike River 2010



Pike River 2010

These requirements were reflected in Pike's detailed ventilation management plan. It contemplated that an 'electrical supervisor' would define any non-restricted zones, following a risk assessment. The zones were to be shown on a plan kept in the surface controller's office.⁶ Electrical equipment had to meet legislative standards. Inspections were to occur with a frequency that differed according to the equipment.

The restricted and non-restricted zones were defined in August 2010, but the process outlined in the management plan was not followed. There was no risk assessment to define the location of the restricted zone.⁷

By then Pike had already installed a large amount of electrical equipment, some of which was neither intrinsically safe nor flameproof, in the pit bottom south and Spaghetti Junction areas of the mine. The motor for the main fan, numerous pumps and VSDs fell within that non-restricted zone as defined.⁸

Pike River 2010

34. From the 13th of July 2010, apart from two dates when the rig was not available, each of the work orders were documented as 'not done'. Only one calibration check was completed, and this occurred on 19 November 2010 as it was believed the sensor was stopping the rig at a lower level of methane than normal. This check determined that the methane detector was faulty.
35. The Drill Rig continued to operate after September 2010 with an expired NATA calibration of the gas sensor. There were also weekly methane sensor checks that were not completed by PRCL. This means that the accuracy of the gas sensor and the protection it was intended to provide could not be relied on.

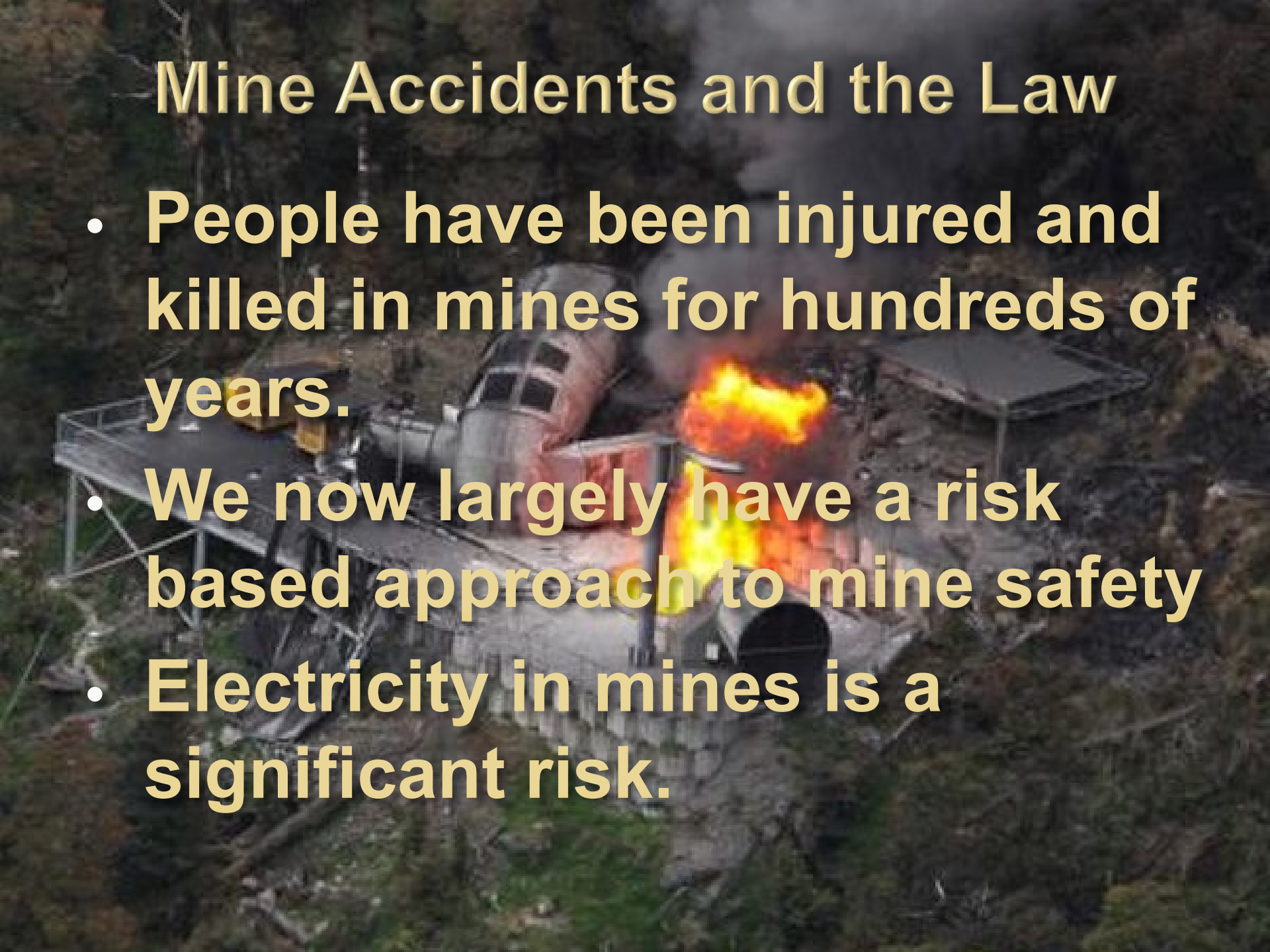
Mine Accidents and the Law

- **We are all people first.**
- **We are mine workers second.**
- **You are an electrician third.**

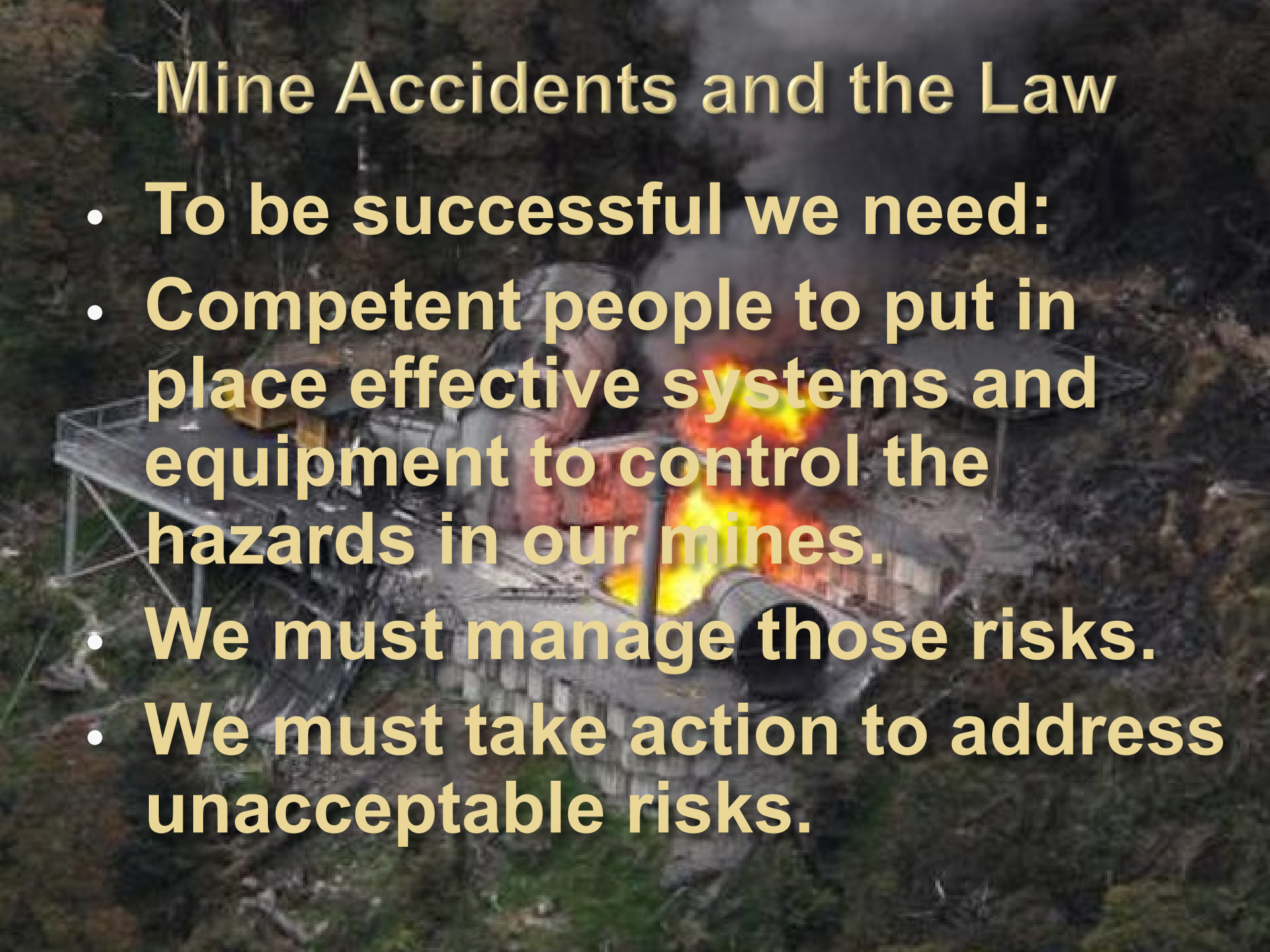


Mine Accidents and the Law

- **People have been injured and killed in mines for hundreds of years.**
- **We now largely have a risk based approach to mine safety**
- **Electricity in mines is a significant risk.**



Mine Accidents and the Law

- **To be successful we need:**
 - **Competent people to put in place effective systems and equipment to control the hazards in our mines.**
 - **We must manage those risks.**
 - **We must take action to address unacceptable risks.**
- 
- A photograph of a mine interior showing a large fire burning in a tunnel, with a person visible in the background. The fire is bright orange and yellow, and the tunnel is dark and filled with equipment and structural elements.

A Miners Legacy

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Jason Blee

9th April 2007

Moranbah North Underground Mine

Welcome

Note: For details on a free copy of The Jason Blee Legacy DVD, please Click on the News Tab.

A Miner's Legacy is a not for profit foundation established to provide support, advice and assistance to families of mine workers involved in fatal mine accidents. A Miner's Legacy does not seek to replace the responsibilities of employers, mine operators, the government or other interested parties. A Miner's Legacy aims to ensure you and your loved ones are supported in the most compassionate manner.

A knock on the door is often a welcome surprise from family and friends. When that knock on the door is bearing news of a loved ones passing, it starts a journey that no family should have to endure.

Advice from families who have suffered similar tragedies in over a century of mining in Australia have shaped the services of A Miner's Legacy. These services are obligation free and