Glossary

ABM	Alpine bolter miner. A type of continuous miner that allows simultaneous cutting, bolting and roof support.
Adit	A near-horizontal access or tunnel into an underground mine.
Alimak shaft/raise/rise	The Alimak bypassed the collapsed lower section of the main ventilation shaft, measured 2.5m in diameter and was equipped with a 55m vertical ladder.
Anemometer	Instrument for measuring air velocity within roadways.
Auxiliary fan	Smaller fan used to ventilate dead-end roadways underground. Used in conjunction with ducting to force or extract air to or from the end of the road.
Backbye	See outbye.
Barometric pressure	Atmospheric pressure as indicated by a barometer.
Booster fan	Fan located underground within the main ventilation circuit to increase airflow.
Borehole/drillhole	Hole created by drilling to gather geology information or for gas drainage. Can be done from the surface or underground.
Brattice	Impervious plastic/fabric cloth used in the construction of ventilation control devices, e.g. stoppings.
Bridging panel	Also known as section or panel at Pike River. Mining area connected to the mains roadways consisting of access roads and extraction areas with a separate ventilation circuit. See panel.
Brumby	Multi-purpose four wheel utility vehicle which can be fitted with attachments such as an excavator bucket.
Bypassing	Refers to circumventing or working around safety devices.
CABA system	Compressed air breathing apparatus. A CABA system may include a fixed compressed air supply where units can be refilled while being used or a backpack system similar to scuba diving.
C-ALS	A cavity auto scanning laser system that uses laser beams to create a three-dimensional image of a void.
Carbon dioxide (CO_2)	Formed underground by engine exhaust and/or oxidation of coal or fire and may be a coal seam gas. It is colourless but has an acidic odour at high concentrations.
Carbon monoxide (CO)	A colourless, odourless gas formed by the incomplete combustion of carbon or a carbonaceous material (e.g. diesel machines, mine fire, spontaneous combustion of coal).
Caving	See roof fall.
CIMS	The co-ordinated incident management system provides common management principles, structure and terminology for multi-agency emergency response activity in New Zealand.
Cleanskin	Worker with little or no underground mining experience.
COC	Certificate of competence. Also referred to as ticket, permit or licence.
Continuous miner	Purpose-built machine for driving/developing roadways in coal. Capable of continuously loading the cut material into the coal transport system (e.g. flume, shuttle car, conveyor).
Contraband	Items that are prohibited underground, for example, cigarettes.
Control room	Surface location performing the centralised function of monitoring, operating and controlling the mine.
Conveyor	Fixed equipment used for continuously moving stone or coal.
Core logging	The drilling of holes in an extraction zone's roof and floor to take core samples for geotechnical logging.

CPP	Coal preparation plant. Situated approximately 8.2km from the portal, the CPP received coal through the coal slurry pipeline and then washed and processed it for collection.
Cross-cuts	Underground roadways developed at regular intervals to join one or more main roadways.
Crushing station/crusher	An area at pit bottom stone where the coal from the working faces was sized and crushed to <35mm to form a slurry for transportation by flume and pipeline to the CPP.
Cutter head	Mechanical protection device on the continuous miner that will shear if sufficient force is applied to the cutting head of the machine.
DAC	Digital access carrier system. An underground communications system that operates like a party-line telephone system.
Deputy	Reporting to underviewers, the deputies carried out the safety inspections, examinations and reporting required by the company and by law and gave supervision and guidance to their crews.
DOC	Department of Conservation.
DOL	Department of Labour. Now part of MBIE.
Down-dip	Located down the slope of a dipping coal seam.
Drift/drive/tunnel	An underground roadway.
Driftrunner	Motorised vehicle used to transport miners to and from the surface.
Drill stub	A small area (2–5m) off a main roadway to allow drilling equipment to be set up to avoid blocking the main roadway.
Egress	An exit from a mine.
Emergency refuge	An underground room-like sealed facility to maintain a respirable atmosphere in emergencies. It may have an air source that is independent of the main ventilation air. See FAB.
ERMP	Emergency response management plan. The ERMP outlined Pike's procedures and plan for responding to emergencies.
ESR	The Institute of Environmental Science and Research (ESR) – a provider of forensic services to the New Zealand Police.
Evasé	The exhaust structure for the main underground and surface fans.
EXITO	Extractive Industry Training Organisation.
Explosion panels	Hinged doors/panels on the exhaust structure for the main fan that are forced open by the pressure generated by an explosion, to protect the evasé from the force of the blast.
Explosive range	Methane is flammable and explosive when mixed with oxygen between 5 to 15% methane in air by volume.
FAB (fresh air base)	An underground room-like sealed facility to maintain a respirable atmosphere in emergencies.
Flame arrestor	Metal ribbon flame cell elements designed to inhibit flame propagation by absorbing and dissipating heat from coal-seam gas passing through and venting into the atmosphere. Attached to the top of Pike's 6" gas riser at the surface next to the slimeline shaft.
Flameproof	Flameproof equipment is enclosed in a special housing to ensure any ignition of methane is safely contained inside the enclosure.
Floxal	A unit used to generate and pump nitrogen into a mine to make the atmosphere inert.
Flume system/slurry pipeline	An open steel channel for transporting a coal and water slurry downhill from mining areas.
Forcing fan	A forcing fan sends air along the intake towards the working faces of a mine.
FRAS	Fire resistant anti-static. Can apply to brattice.
Free venting	The practice of releasing methane from the drainage boreholes into the return of a mine's ventilation system.

GAG	Górniczy Agregat Gaśniczy unit used to pump inert gases and water vapour into a mine to extinguish fire and stabilise the atmosphere after an explosion.
Gas chromatograph	Gas analysis equipment used to precisely measure the full range of gaseous constituents of a mine gas sample.
Gas drainage	Capturing and removing the naturally occurring gas in coal seams to prevent it entering mine airways. The gas can be drained in advance or after mining using different techniques. Often referred to as methane drainage if methane is the main gas component target to be captured.
Gassing out	Coal mining term for an excessive amount of flammable gas in the general body of a mine's air.
Gassy mine	A mine where tests on three successive days indicate the presence of flammable gas in an area, district, or main airway on the return or exhaust side.
Goaf	The void created by coal extraction that is usually unsupported and susceptible to roof collapse.
Graben	A block of strata between two faults that has moved downward.
Grizzly	Feeder and sizer for the conveyor. Situated 2.1km inbye of the portal.
Gunningham and Neal	Professor Neil Gunningham and Dr David Neal SC in February to July 2011 conducted an independent internal *Review of the Department of Labour's Interactions with Pike River Coal Limited*. The Australian authors are a social scientist and a senior counsel with specialist interests in occupational health and safety.
Guzzler	A machine located 18m behind the hydro monitor used to collect and direct the slurry away from the mining areas.
Hard coking coal	High-quality bituminous coal suitable to make coke.
Headings	Two or more roadways generally driven parallel to access an area of the mine.
HSE Act	Health and Safety in Employment Act 1992.
Hydro mining/hydro monitor	The use of a high-pressure water jet from a specialised hydro monitor machine to cut coal.
Hydrogen (H_2)	Colourless, tasteless and odourless gas. Highly flammable (4 to 74%).
Hydrogen sulphide (H_2S)	Colourless gas with rotten egg odour. Highly toxic.
Improvement notice	A notice issued by the health and safety regulator (a mining inspector) requiring a health and safety deficiency to be rectified.
Inbye	The direction towards the coal face from any point of reference.
Ingress	An entry into a mine.
In-seam drainage	Removal of coal seam gas with the use of in-seam drillholes and associated pipework.
In-seam drilling	Drilling of boreholes through the coal seam from an underground location.
INSITE	DOL's electronic data management system.
Intake	An underground roadway that has uncontaminated/fresh air moving through it.
Interburden	An interval of sediments of varying depth that lies between two or more coal seams.
Joint investigation	Investigation into the tragedy conducted by the New Zealand Police and Department of Labour.
JSEA	Job safety and environmental analysis. A safety management method to evaluate certain jobs, tasks, processes or procedures and eliminate or reduce the risks and hazards.
Jugernaut	Type of loader (LHD).
Lag indicator	A measure of performance made after a safety incident, e.g. lost time injury rates, methane readings.
Lead indicator	A forward-looking performance measure designed to help organisations introduce preventative measures before a safety incident occurs, e.g. near miss reporting.
LHD or loader	Load haul dump machine – low-profile front-end loader.

Longwall mining	A method of mining coal in long straight slices.
Main fan/primary fan	Largest fan(s) that draws air into or pushes air through a mine.
Main ventilation shaft	Vertical access with a primary purpose to exhaust air out of the mine.
Mains	Roadways that provide long-term access and ventilation pathways to and from the mining areas (panels/sections).
Manometer	Instrument for measuring pressure differences.
MBIE	Ministry of Business, Innovation and Employment.
MED	Ministry of Economic Development. Now part of MBIE.
Metalliferous mine	Defined by regulation as including a surface or underground mine extracting, processing or crushing any mineral.
Methane (CH_4)	Highly flammable coal seam gas, which is tasteless and odourless. Highly flammable (5 to15%).
Methane make	The volume of methane released into a mine. Can also mean the rate at which a mine produces methane.
Methane outburst	The sudden ejection from the coal face into the mine workings of methane and carbon dioxide, generally including coal and rock.
Methane spike	An increase in the level of methane in a mine atmosphere.
MinEX	MinEx Health and Safety Council, the national health and safety organisation for the New Zealand minerals industry.
MRS	New Zealand Mines Rescue Service, a specialist mines rescue service.
MRT	New Zealand Mines Rescue Trust. It is a separate legal entity to the MRS and was incorporated pursuant to the Charitable Trusts Act 1957.
Negotiated agreement	An agreement between the health and safety regulator (a mining inspector) that a health and safety deficiency will be rectified, usually within a defined time frame.
NOHSAC	National Occupational Health and Safety Advisory Committee. Established in 2003 to provide independent advice to the minister of labour on major occupational health and safety issues. NOHSAC was abolished in 2009.
Northern Lights	Electronic system for tracking workers underground.
NZFS	New Zealand Fire Service.
NZQA	New Zealand Qualifications Authority.
Outbye/backbye	The direction away from the coal face from any point of reference.
Outcrop	A segment of the coal seam or bedrock exposed to the atmosphere.
Overcast	A structure built in an underground roadway intersection to keep air paths separated, so that intake and return air can pass through the intersection.
Overpressure	A pressure peak in a mine ventilation system caused by roof fall/fire/explosion/blast.
Panel	Mining area connected to the mains roadways consisting of access roads and extraction areas with a separate ventilation circuit.
Permit to mine	Weekly detailed plan of the forecast underground mining activities. Production and health and safety risks of the planned activities are identified and mitigation measures outlined.
Personal safety	Addressing the risks of various types of physical injuries (slips/trips/falls/struck-by incidents) usually associated with a hazard that is close to workers.
Pike	Pike River Coal Ltd (in receivership from 13 December 2010). The company name was changed from Pike River Coal Company Ltd on 13 March 2006.

Pike River	The Pike River coal mine and/or the area near or surrounding the mine.
Pit bottom in coal	An area of permanent roadways inbye of the main drift that housed water storage, pumping systems, electrical infrastructure and the main fan.
Pit bottom in stone	A roadway area off the main drift containing underground services for coal collection, crushing and transport, water storage, high-pressure pumping systems and electrical infrastructure.
Pogo sticks	Expandable poles with an internal spring often used to hold up cables or brattice in a mine.
Portal	Surface entry point into a mine.
PPM	Parts per million.
Process safety	The prevention and mitigation of unintentional releases of potentially dangerous materials or energy from the mining process.
Prohibition notice	A notice issued by the health and safety regulator (a mining inspector) requiring that an activity cease until such time as a health and safety deficiency has been rectified.
Range	Refers to Pike's system of boreholes, pipes and other devices designed to capture and remove gas from coal seams to the surface. See gas drainage.
Reflector sticks	At Pike River these were pieces of PVC pipe about 1m long wrapped with reflective tape intended to reflect light or be easily visible.
Rescue station	MRS rescue station at Rapahoe on the West Coast providing logistical support, emergency equipment and 24 hour on-call rescue personnel.
Return	Any underground roadway that has 'used' or 'contaminated' air moving through it towards the surface after it has passed a mining area.
Rib	The walls of a roadway or heading.
Rider seam	The Brunner seam consists of the main seam and above it a narrower rider seam, separated by interburden of variable thickness.
Riser	At Pike River the riser refers to a vertical 6" pipe through which methane-laden air was discharged to the surface. The riser was connected to the 4" methane drainage pipe line running along the roof and ribs of the mine.
Roadheader	Purpose-built machine for driving roadways in stone or coal capable of loading the cut material into the stone/coal transport system (e.g. flume, shuttle car, LHD, conveyor).
Robens report	The seminal 1972 United Kingdom report that resulted in widespread health and safety legislative change in a number of countries, including New Zealand.
Roof bolt/roof bolting techniques/cable bolts	Boreholes from 1 to 2.5m long are drilled upward in the roof and bolts are inserted into the holes and anchored at the top by a chemical resin or mechanical device. Bolts may be inserted in a pattern. The purpose is to clamp together several roof beds to form a composite beam with strength considerably greater than the sum of the individual beds acting separately.
Roof fall/caving	Process where the roof fails to the extent that it collapses. It can be planned or unplanned.
Safegas	SIMTARS automated fire and explosive gas analysis system.
SCADA	Supervisory control and data acquisition is an industrial computer system that monitors and controls processes.
Section	See panel.

Self-contained self-rescuer (SCSR)/self-rescuer	A temporary breathing system for use when the mine atmosphere becomes unbreathable. There are two possible systems: one with a simple filter (rarely used); the other, using potassium super peroxide, reacts with exhaled CO_2 and water vapour and produces sufficient oxygen for approximately 30 to 60 minutes of use. Intended to allow the user to move from their current location to fresh air or another air source.
Shotcrete	Mortar or concrete sprayed through a hose and nozzle onto a surface at a high velocity. Used to form ground support in roadways and other structures in mines. Shotcrete can be unreinforced or reinforced with steel mesh/bars, steel fibres or synthetic fibres, e.g. polypropylene.
Shot-firing	The operation of dislodging coal and/or stone from a development or extraction face with explosives.
SIMTARS	Safety in Mines Testing and Research Station. A Queensland government organisation focusing on research, consulting, testing, certification and training services for the improvement of mining industry safety and health.
Slimline shaft	Small diameter shaft from the mine to the surface connected to the pit bottom area of Pike River.
Slurry pipeline	See flume system.
Smoke lines	A series of rope lines and small cones hung along underground roadways to assist in guiding people through the mine to a point of safety in the event of an emergency and low visibility.
SOP	Safe operating procedure. Procedure developed for safely undertaking tasks and operating equipment.
Spaghetti Junction	The intersection at the termination of the main drift, 2300m from the portal, so named because of the roadways and services that converged in this area.
Spike	See methane spike.
Spontaneous combustion	Coal reacts with oxygen to create heat. If the heat liberated during the process accumulates, the rate of the reaction increases and there is a further rise in temperature. When this temperature reaches the ignition temperature of coal, the coal starts to burn.
Standpipe	A gland driven into the wall face and grouted into position as a permanent access point to a methane drainage borehole.
Steady state coal production	The point at which a mine achieves a reliable coal extraction rate.
Stone dust	Limestone dusted over the roof, ribs, face, and throughout a mine to render exposed coal dust inert.
Stopping	A structure (temporary or permanent) built across a roadway to direct the air flow.
Stratigraphic (strata) complexity	The structure of sedimentary rocks, which have recognisable parallel beds of considerable lateral extent. The beds deposited reflect the geological history (relative complexity) of a region.
Structural (faulting) complexity	Fractures in the rocks that make up the Earth's crust, along which there has been relative displacement, i.e. rocks on either side have moved past each other.
Stub	A small dead-end extension (2–5m) off main roadway. Stubs may be used for drilling, or locating plant and equipment, or to allow one vehicle to pass another.
Subsidence	Downward movement of the ground surface.
Surface collar	Located at the top of the main ventilation shaft, a reinforced concrete collar designed to take the loads of the raise bore rig and the exhaust structure for the main underground and surface fan.
Tag board	System for identifying who is underground. Tags are placed on a board before entering the mine usually at the portal, and are removed on departure.
TARP	Trigger action response plans. Step-by-step process of what to do, who to call and actions to take when urgent action is required.

Telemetric system (real-time)	System where gas monitoring data is collected and analysed at an underground location and the result relayed electronically to another point (control room) for evaluation. Compare with Maihak system, where gas is pumped from underground but analysed on the surface.
Tell-tale	Device installed into the roof for measuring ground movement in the immediate/near roof strata.
Tool box talk safety advisory notice	Notice produced by the Pike safety and training department to notify underviewers of remedial action arising out of an incident at the mine.
Tube bundle monitoring system	Bundle of tubes spread throughout underground workings to transport gas samples to the surface for Maihak (or other) analysis.
Tunnel	Roadway that links the surface operations to the coal seam. Underground tunnels are sometimes known as roadways, drifts, or headings.
Underground monitor pump	Pump that generates high pressure and high volume water that is used to excavate coal via the hydro monitor.
Underviewer	Underviewers reported to the statutory mine manager. The underviewers were responsible for co-ordinating and planning activities, managing employee attendance and issues, ensuring safety systems were implemented and maintained, and carrying out inspections and examinations.
Variable speed drive (VSD)	Equipment that regulates the speed of an electric motor.
Vent cans	Tubing used to distribute or exhaust air from auxiliary fans.
Ventilation circuit	Pathway that air follows through the mine or a section or a panel of the mine.
Ventilation control device (VCD)	Used to create a ventilation circuit. They consist of stoppings, overcasts or air crossings (which send air over a roadway) and other devices designed to direct or control the flow of air.
Ventilation fan	A mechanical device used to create the air flow within the mine.
Ventilation system	The whole of the system used to direct, control, push, or pull air throughout the mine.
Way-finder beacon	Escape routes out of mines can be marked with way-finder beacons which produce an audible signal and flashing lights to assist people to escape in low visibility.
Windblast	The high velocity displacement of mine airways caused by a sudden strata failure.

Explanatory note on the page numbering of references

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