

# FOR CEO'S & BUSINESS LEADERS IN COAL MINING - UNDERGROUND



## INSURANCE RISK REPORT.



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## 1. ABOUT LMI GROUP

LMI Group is an independent company specialising in risk assessment for the general insurance and wider business communities. The LMI RiskCoach research team has over 1,000 years combined experience in assisting businesses following losses. Using this enormous bank of knowledge the team has developed RiskCoach to assist businesses and their insurance advisers understand the specific risks in up to 14 classes of general insurance for their industry / occupation before a claim occurs. LMI believe that insurance should be considered as protection and not a cost. The cost of insurance, called a premium, is the cost of transferring the risk from the shareholders and their families to an insurer.

Should you have any questions about this report please discuss them with your insurance adviser or email [expert@LMIGroup.com](mailto:expert@LMIGroup.com) enclosing a copy of your report. If you need claims assistance, please email [claims@LMIGroup.com](mailto:claims@LMIGroup.com) for expert assistance.

## 2. PURPOSE OF THIS REPORT

The Insurance Risk Report has been designed to assist you in identifying significant exposures to a business operating in your industry. Contained within this report is a Hazard Index graph which considers both the likelihood and severity of losses over 14 insurable classes of insurance for your industry and rates them accordingly. This graph is complemented with a number of explanations giving rise to the factors considered when providing the rating. If it is not already included in this report, you may request your Insurance Professional to provide you with a list of significant exposures relevant to your industry. These exposures are useful to highlight the most likely and severe risks to your industry and potentially your business and to get you thinking about other areas that may be at risk.

**Please note:** These ratings have been developed using historical claims and loss data for a general business operating in this field. It is recommended that additional factors specific to your business be taken into account when assessing this information such as location and crime rates.

### 3. HAZARD ASSESSMENT

Identifying hazards in the workplace involves finding things and situations that could potentially cause harm to the organisation. The following chart is a graphical representation of the likelihood and severity of a loss occurring within any of the classes of insurance listed in the chart.

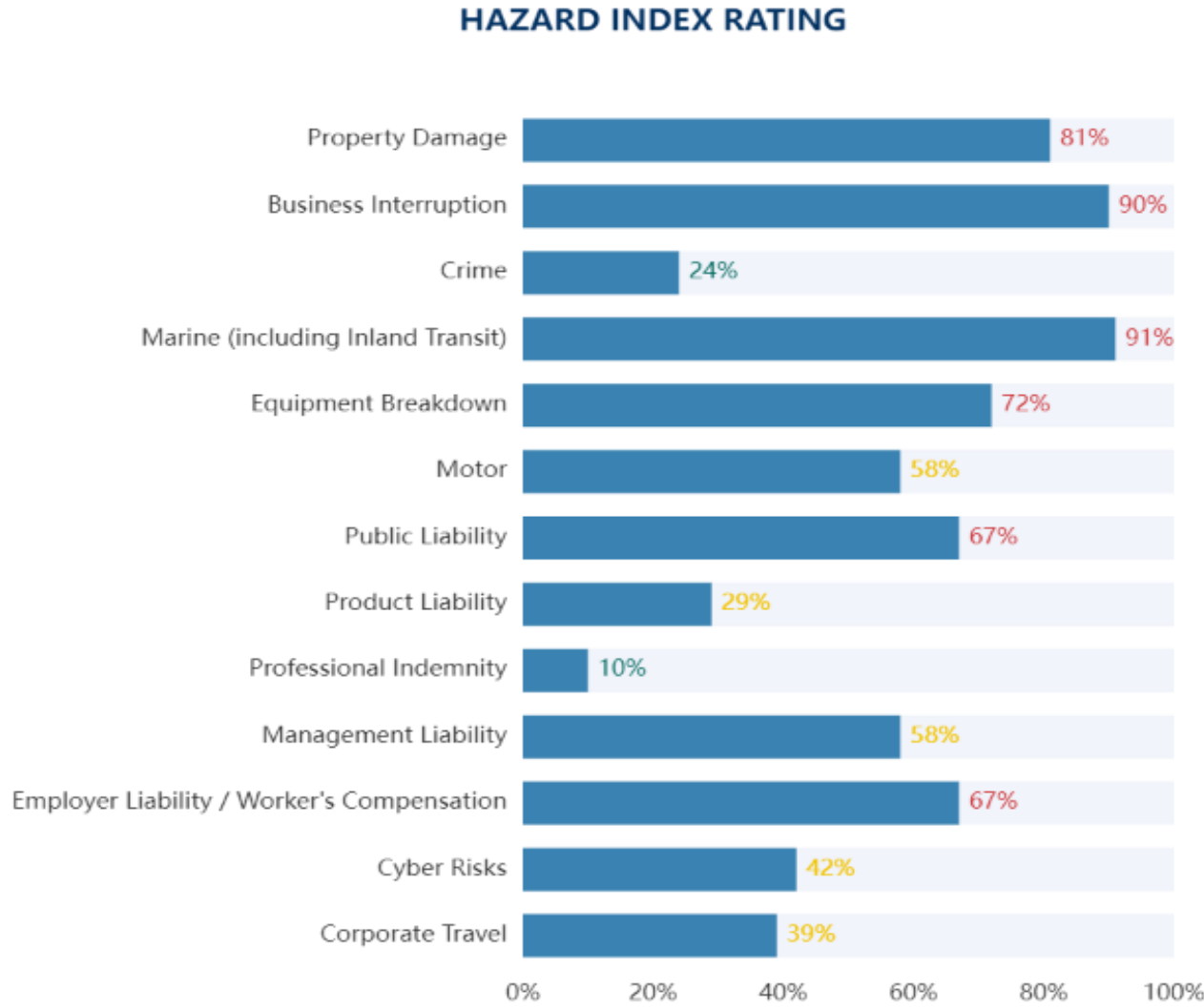


Fig 1: Hazard Index

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## PROPERTY DAMAGE

81%

CLASSES OF INSURANCE

### RISK SUMMARY

Both open cut and underground mining methods are used for black coal production. In common with other mining operations, capital investment is substantial. Sub-surface mining equipment, heavy earth moving equipment, crushing mills and beneficiating facilities are all heavy areas of investment for underground mines. Mines contain many pieces of expensive mobile equipment, both above and below the surface. Major exposures include collapse of mines, overburden, flooding, underground fires (which can be hard to fight due to access issues) and the use of explosives for blasting. Even a limited fire can do extensive damage to underground structures warping metal supports or beams resulting in collapse of tunnels and damaging ventilation, mine shaft lifts or underground machinery. Electrical faults, welding/hotwork during repair works and overheating machinery (e.g. conveyor systems) are common causes of fires. Explosives should be stored in approved magazines and should be transported to the work site only as needed. Flooding is often a problem in mines and may arise from many sources, both aboveground and below ground. Collapse of underground mine sections may mean that part of the mine is deemed unsafe or it may be impossible to "reinstate" the section or recover machinery trapped by the collapse. Above ground structures include lifts, shafts, ventilation machinery, office buildings, administration blocks, worker facilities, changing rooms, equipment rooms, boiler houses, rail carriage terminals, mine shaft infrastructure, explosive storage facilities, outbuildings, workshops and garages. These may be damaged by weather perils, floods, impacts, explosions or fire. Faulty machinery and electrical equipment, careless repair work/hotwork and welding and accidents during refuelling operations on heavy machinery are possible causes of loss. Open cut coal mines also require substantial capital investment into large-scale conveying systems, draglines, earthmoving equipment, excavators and dredges, coal washing plants, screening plants, milling and crushing equipment, administration buildings, accommodation blocks and the like and have significant values at risk. Collapse of rock walls, overburden, flooding and the use of explosives for blasting are possible sources of loss. Spontaneous combustion can be a problem with coal stockpiles. Mines may also own or lease port terminals, railway infrastructure and could own rolling stock for which a special policy will be required. Property policies will generally require substantial modifications to address or clarify standard exclusions such as mining property below the surface, flooding, property in the course of processing and specific property exclusions for particular types of infrastructure (bridges, railway lines, docks/wharves, dams, roadways and so on. In some cases, separate policies may be required. Port terminals, railway infrastructure and rolling stock for

example will require special (separate) policies, whilst mobile plant and machinery will generally have a separate mobile machinery policy.

## BUSINESS INTERRUPTION

90%

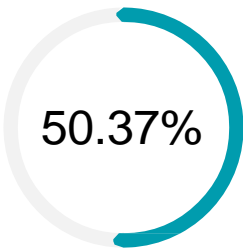
### CLASSES OF INSURANCE

#### RISK SUMMARY

Substantial Business Interruption exposure due to the presence of custom-made machinery. In the event of a significant accident, reinstatement of machinery and infrastructure is the only option. The time required to replace key items of machinery must be established; being specialised, lengthy interruptions should be anticipated. Ventilation and water-removal systems are a vital part of the underground mining operation, for example, even though they are not directly associated with the mining process. In the absence of ventilation, dangerous concentrations of dust and gases accumulate, for example, and miners must be evacuated to the surface. Production will cease until such time as the ventilation can be repaired and the accumulated gases cleared. Major mining accidents e.g. collapse of tunnels could create an extended interruption or may even result in closure of that section of the mine or the entire mine due to safety concerns. A long indemnity period should be considered. Stockpiling may help mitigate against a short term interruption, but stock is unlikely to be sufficient for an extended interruption e.g. the need to reconstruct a major railway bridge. Other sources of interruption include loss or damage to transport links, port blockage (for black coal exports) and loss or damage occurring at a major customer's premises. Some coal mines, for example, supply exclusively to the power or steel industry.

#### INDICATIVE RATE OF INSURABLE GROSS PROFIT

The Indicative Rate of Gross Profit Percentage shown below is provided as a guide to assist you in determining the adequacy of your Business Interruption sum insured / declared value. To test the adequacy of your insurance, simply apply the rate to your business's Annual turnover figure. The result of the calculation will reflect an indicative Insurable Gross Profit value for a 12-month period based on your industry's average.



Rate (%)

Country: Australia

How to apply the rate

Turnover x Rate = Indicative Sum Insured (up to 12 months)

In the event you're electing to set a maximum Indemnity Period (period of cover) greater than 12-months the *Insurable Gross Profit* value needs to be proportionately increased. That is, a multiplier needs to be applied to the result. For example, if you have chosen an 18-month (1.5 year) indemnity period, multiply the results by 1.5, for 24 months (2 year) multiply by 2 etc. This process only applies to indemnity periods greater than 12-months. In the event you opt to insure for a period of less than 12-months no multiplier is to be applied to the 12-month Insurable Gross Profit value.

**Please note:** The results of the calculation are to be used as a **guide only** providing a quick adequacy check your insurances. The rates have been developed though the averaging of data gained though industry analysis. While the results provide a confidence check it is important to note that no two businesses are identical and just as importantly no two insurance policies are the same. As such, we always recommended that a professional analysis and calculation be conducted using your most recent financial statements. Should you wish to learn more about Business Interruption, please visit our free resource available at: [www.biexplained.com](http://www.biexplained.com).

## CRIME

24%

### CLASSES OF INSURANCE

Theft, Money, Surety / Fidelity

### RISK SUMMARY

Exposure for this product line is low. Equipment at the facility will be unlikely to be attractive to thieves, with the exception of general/power tools and laptop computers (if any) and there will be little or no cash on the premises; generally this is limited to petty cash although payroll arrangements should be investigated. Security regarding explosives is an important consideration.

## MARINE (INCLUDING INLAND TRANSIT)

### CLASSES OF INSURANCE

91%

Marine Cargo, Goods in Transit, Marine Consequential Loss, Commercial Hull, Carriers Insurance, Marine Liabilities

### RISK SUMMARY

Black coal is exported and in bulk quantities. Black coal can spontaneously combust and coal dust may create an explosion potential. Claims for weight loss may be the result of changes in moisture content rather than real loss and this aspect should be addressed through pre and post shipment surveys. Chartering or even ownership of ocean going vessels is possible and these aspects may mean a commercial hull policy or charterer's liability policy may be required. Local shipments from the mine to local purchasers or to port terminals in preparation for transit are not a significant risk. The short duration and smaller quantities involved make the issues associated with international shipments unlikely to present themselves. Damage is unlikely to occur to the load and removal of debris/clean-up may be the main issue. Other commodities which could be moved by the insured include explosives. The way in which explosives are transported, quantities, security measures and the conditions of the vehicles transporting the explosives are important aspects to consider. Exclusions relating to dangerous goods cartage should be carefully reviewed. Regular transportation of heavy quarrying and mining equipment could occur, and the insured could regularly ship plant and machinery components as part of the maintenance and servicing program on the facility. It is possible that coal could be dredged from lake or sea deposits in which case the insured could own several dredges and support craft. Coal could also be transported by barges; a hull cover may be required. Chartering or even ownership of ocean going vessels is possible for export shipments and these aspects will mean a commercial hull policy or charterer's liability policy may be required. Bulk ore shipments are abrasive, dense and can create stability problems unless they are carefully loaded. Loading and unloading a bulker is time-consuming and dangerous. Occasionally loading errors are made that cause a ship to capsize or break in half at the pier, or whilst at sea (where overloaded). Key aspects to consider include the age of the fleet utilised to ship the ore and reputation of the shipping line utilised. The underwriter will be interested in establishing the Class status of the vessels including dates of last surveys and the Classification Society which performs vessel surveys. If the insured under consideration owns or operates Port Facilities, please refer to the separate write up in Risk Coach (ANZSIC code 5212 – Port and Water Transport Terminal Operations).



## EQUIPMENT BREAKDOWN

72%

### CLASSES OF INSURANCE

Machinery Breakdown, Engineering, Mobile Machinery, Computers, Electronic Equipment, Machinery Business Interruption

### RISK SUMMARY

There is a significant machinery exposure based on the reliance on underground mining machinery, ventilation systems, pumps and water extraction systems, lighting systems, mobile machinery, conveyor systems, and excavators, crushing plant and so on which are all subject to heavy and often continuous use. Machinery at port facilities for coal handling must also be considered. Values of plant and machinery, and mobile machinery, are likely to be high and some items may be custom made or imported. More complex/specialist or extensive repairs of foreign built machines could necessitate flying in overseas specialists/mechanics; this could significantly increase repair costs. Machinery business interruption cover should be considered; breakdown of an item of key production machinery could result in a significant loss of production capacity.

## MOTOR

58%

### CLASSES OF INSURANCE

Commercial Motor, Earthmoving Equipment, Motor Fleet, Heavy Motor

### RISK SUMMARY

Coal mines will transport coal directly from the open cut mine to the receiver (e.g. power station) or to a port terminal for export. Shipments will usually utilise rail or heavy road vehicles, but the use of specialised conveyor systems is also utilised from transport where the mine is a captive for a particular user (e.g. a power station, steel manufacturer or aluminium smelter). The insured will utilise their own vehicles for ore transport and some of these will be large and specialised dumper vehicles with capacity of up to 240 tonnes. Both fleet sizes and values will be significant. The fleet schedule will often also contain large numbers of unregistered mobile plant and machinery such as excavators, bulldozers and other earthmoving equipment; preferably these items should be insured separately under mobile machinery policies. Clean-up costs could be substantial in the event of an accident involving cartage of coal. Pollution liability/clean-up costs and in some cases cover for dangerous goods will be required.

## PUBLIC LIABILITY

67%

### CLASSES OF INSURANCE

Public Liability, Advertising Liability, Environmental Liability, Liquor Liability

### RISK SUMMARY

The Public Liability exposure will be significant. Although there will be relatively few visitors to mine sites, ore processing facilities or dedicated port facilities, these are hazardous areas based on the presence of explosives, heavy machinery and equipment, loading and discharging operations, regular traffic, railway lines/trains, cranes and hoists, conveyor systems, stockpiles and the mine itself (rock falls, roof collapses, unstable stockpiles, explosives etc). The insured is likely to employ a variety of sub-contractors who could offer blasting services, transport services, repair and maintenance services and so on; injury to sub-contracted workers could result in public liability claims from the injured worker or Worker's Compensation authorities. Additionally, there is a considerable risk of trespassers being injured in both underground and open cut mine sites, on railway lines owned or operated by the insured, in transport facilities and in storage or port terminal operations. Trespassers may wander into the mine or fall into access shafts/holes, drown in dams, fall into settling ponds or injure themselves on machinery or tailings piles in the absence of strong access controls at the facility. The size of the facilities generally makes them difficult to adequately secure. The potential for damage to adjacent third party property should also be investigated. Damage to structures or buildings owned by third parties could occur due to subsidence whilst the storage of explosives creates a significant risk to third parties. Damage to ships or port structures are possible during loading/unloading operations. Claim amounts could be considerable and the legal complexity involved in claims between the mine and contractors could result in extended litigation and significant defence costs, even if the matter is eventually held in favour of the insured. Abandoned mines create a significant residual exposure, whilst there are a number of significant environmental issues to consider with mining operations including waste water and surface run-off.

## PRODUCT LIABILITY

29%

### CLASSES OF INSURANCE

Product Liability, Product Recall, Product Guarantee, Extortion, Kidnap and Ransom

### RISK SUMMARY

The potential exposure for this occupation is relatively low, since, although burning the wrong grade of coal or coke in some manufacturing processes can result in damage to the end product or machinery, coal sampling is usually performed by both the mining operation and receiver on a regular basis and in some cases the coal is sold locally to power stations or steel manufacturers who will themselves own, or part own, the mine. Little coal is sold to retail customers, whilst minimal processing of the coal from the form extracted from the ground occurs.

## PROFESSIONAL INDEMNITY

10%

### CLASSES OF INSURANCE

### RISK SUMMARY

There may for example be a contract requirement that the insured has professional indemnity cover but for the most part this occupation is unlikely to have a professional indemnity cover requirement.

## MANAGEMENT LIABILITY

58%

### CLASSES OF INSURANCE

Directors and Officers Liability, Employment Practices Liability, Statutory Liability, Crime, Cyber / Internet Liability, Taxation, Trustees

### RISK SUMMARY

Management Liability Insurance is typically designed to meet the specific needs of small to medium-sized companies, as these businesses often have unique risk profiles and face different challenges compared to larger organisations. However, some larger organisations may also benefit

from Management Liability Insurance coverage, depending on their risk exposures and needs. The following section features potential risk exposures for the industry underwriter/adviser to consider.

Moderate exposure to statutory liability, employment practices, directors and officers, cyber, crime and taxation which increase with the size and complexity of the operation and number of employees. Examples of possible claims / exposures under each insurance class may include:

- Statutory Liability - breaches of legislation and non-compliance - e.g., occupational health and safety laws, legislation related to mine safety, environmental protection, mining permits/ decommissioning/closure, financial market misconduct, etc. Non-existence of adequate compliance and control measures can be an issue (if applicable). Mining businesses are exposed to hundreds of pieces of legislation and the cost for a business of a simple regulatory breach /investigation can be considerable.
- Employment Practice Liability – allegations of unfair/wrongful dismissal, workplace harassment, bullying, sexual harassment, discrimination (e.g., age, racial, sexual, religious, disability, etc.), failure to maintain a safe workplace / working environment, hazardous manual activities, unsafe plant , machinery and systems, lack of training and supervision, breach of contract / employment contracts etc., Other issues may include - possible presence of part-time/ casual, trainees or seasonal staff, long working hours , gender imbalances in the workplace, the employment of women in non-traditional areas, presence of employees from non-English speaking backgrounds , duties which require working in close physical proximity, negative workplace culture, inadequate level of supervision etc. Hidden costs of employment practice liability related problems include – negative publicity, damage to reputation and goodwill, loss of productivity, increased stress for both the employer and employee.
- Directors and officers - false, misleading & deceptive conduct, not acting in the best interest of shareholders, breach of trust, misappropriation of company funds / trade secrets, errors and omissions in financial reports, mixing personal and business assets, unfair treatment of shareholders, unfair trading activities, breach of intellectual property rights, unfair competition, insolvent trading, breach of contract, failing to provide a safe plant and systems of work, failing to provide adequate training and supervision, environmental breach/prosecution, etc.

Increased regulations have heightened the operating risk for businesses of all sizes.

Furthermore, with a fast-changing regulatory environment, directors are often unaware of their full legal responsibilities. Directors and officers have duties and obligations, for which they are personally responsible, some of which may carry unlimited personal liability.

- Cyber/Internet Liability - breach of privacy/security, inadvertent transmission of a computer virus, deletion or theft of data following a hacking, damage to network, system or website, copyright infringement, publishing of a defamatory statement, cyber extortion / ransom demand. Inadequate privacy/security compliance through procedures and systems, poor management of large volumes of personal/corporate data are other common issues. These incidents can result in financial losses, reputational damage, and legal and regulatory consequences for the business.

- Crime - employee or third-party crime, including theft of money and property, fraud by internal collusion, employee fraud by collusion with suppliers, theft by contractors/consultants, fraudulent funds transfer, counterfeit fraud, forgery, credit card fraud, social engineering fraud etc. Higher exposure for businesses with inadequate controls in place. Adequate security at the premises and internal control measures are essential to manage such risks.
- Taxation - Non-compliance with taxation legislation / not meeting certain tax obligations, failure to keep records, poor accounting and monetary management, mistakes while filing tax returns of the business, asset misappropriation (physical and financial) etc. Potential costs for such breaches include e.g., taxation and government audit investigation costs, penalties for breaches of taxation legislation.
- Trustees - inappropriate investment strategy, failure to monitor fund performance, failure to prevent fraud, failure to insure trust property, conflict of interest, incorrect advice, incorrect payments etc. Other common issues may include - failure by trustees to discharge their obligations to the required standard, not acting in accordance with the trust deed and common law and legislation, lack of or no established governance & risk management framework etc.

The range of lawsuits being pursued against business owners/operators by employees, shareholders, regulators, creditors, customers or others are on the rise and the cost to a business for a simple regulatory investigation can be substantial. Even the most trivial of cases can cost a great deal of money and time to defend.

It is important to recognise that insurance coverage and limits offered in the market can vary between insurers. Therefore, businesses need to carefully review and compare policy coverage to decide suitability for their business operation.

## EMPLOYER LIABILITY / WORKER'S COMPENSATION

67%

CLASSES OF INSURANCE

### RISK SUMMARY

Coal mines have a significant Workers' Compensation exposure. Employee numbers could be high and this contributes to this rating, as does the fact that most operations will also own transport infrastructure (e.g. railways, bulk shipping terminals and storage facilities each of which present their own particular hazards). The main issues for this industry are:

- The mine conditions themselves e.g. potential roof collapse, accumulations of water or explosive gases;
- Use of explosives;
- Use of heavy machinery and equipment;
- Traffic accidents;

- Falls from heights;
- Crush injuries e.g. from railway carriages, mine cars, heavy machinery or collapses;
- Exposure to airborne dust/silica dust - health risks arise through inhalation of dusts containing crystalline silica may include. e.g. silicosis, chronic obstructive pulmonary disease (including chronic bronchitis and emphysema), lung cancer, renal disease etc. Silicosis can result from exposure to silica dust over many years, but very high short-term exposures can cause it to develop rapidly;
- Inadequate - dust control, fit testing of respiratory protective equipment, health monitoring of workers (if applicable);
- Entrapment in conveyor systems and the like;
- Repair and maintenance operations including use of machine tools and welding;
- Port terminal operations;
- Electric shocks;
- Failure of personnel lift machinery;
- High levels of noise;
- Slips, trips and falls and
- The possibility of being trapped underground.

A strict safety program, engineering controls and the use of personal protective equipment will help control, but not eliminate these hazards.

## CYBER RISKS

42%

### CLASSES OF INSURANCE

#### RISK SUMMARY

- The mining industry is both a geopolitical and an economic target - e.g. politically motivated disruptive or destructive cyber-attacks. Targeted cyber-attack by informal activists. A range of malicious actors who have specific intent to target the sector. Attack by environmental conscious activists - such attacks may result in disruption of mining operator's activities, expose confidential information, create communications disruption and serious business interruption;
- Government-led cyber-attacks/Cyber espionage targeting - commercially sensitive intelligence for contract negotiations, exploration data/intelligence, research data, production/mineral processing methods, chemical formulas, ore reserves/production data, new resource deposits/locations etc.;
- Loss of data and replacement cost following a cyber-attack to (e.g. mine monitoring systems, unified reporting applications/databases, central reporting databases etc.);
- Businesses may have older, unsecure operational technology/systems - due to initial high capital investment and long lifetime of mining projects there will be lower rates of

technological changes in the industry. Also, due to the nature of some projects standards and equipment upgrades are deemed unnecessary for continued production;

- Cyber-attack to computerised processing machinery/computer infrastructure/autonomous mining operation/equipment and subsequent business interruption;
- Extra expenses following a cyber incident;
- Cyber extortion/ransom demand – locking of business computer systems through ransomware attacks and demand of a release fee/encrypt sensitive documents and demand ransom;
- Lack of security measures including a combination of technology (e.g. IT security) and physical security at the premises.

## CORPORATE TRAVEL

39%

### CLASSES OF INSURANCE

#### RISK SUMMARY

Exposure will vary considerably depending on the various factors including - number of persons travelling in any given year, the frequency of travel, staff designations, the numbers travelling together (accumulation), destinations (local/overseas), reasons for travel / nature of work undertaken, issues/risks/hazards, that can affect an employee's health, safety and security whilst travelling, transport mode, staff's fitness to travel /work abroad, previous travel experience, specific health risks at the destination, availability of reliable emergency services etc. Therefore, given hazard rating to be further assessed, considering the above factors in mind. Other main risks for this industry category may include:

- Some travel staff may perform hazardous activities (sometimes remote locations/unsafe worksite/s) which may require a high level of physicality and use of heavy equipment.
- Developing countries/remote locations - non-availability of appropriate medical services, transport challenges with access during a medical emergency / evacuation difficulty / reduced access to adequate infrastructure for medical attention.
- Health and safety issues / concerns - contagious disease, insect-borne diseases, human influenza, swine flu or bird flu, virus/ Infectious disease outbreak, there are many unknown health threats as well.
- Environmental issues/concerns - extreme climate conditions, natural disasters, threat from potentially venomous animals and insects, allergies, technology failing.
- Security and related issues/concerns in some locations/countries – terrorist attacks, civil unrest/war, kidnap and ransom, harassment etc.
- Fly-in-fly-out jobs, long distance road travel - road accidents are a common cause of death and injury of both local and overseas travellers
- Also refer to Employer Liability/Worker's compensation.

## 4. WANT MORE CERTAINTY AROUND YOUR BUSINESS RISK...REACH OUT

4Sight Risk Partners was built out of a single truth – that no two clients' business are the same, yet all should feel confident to manage their business with knowledge and certainty around risk.

4Sight Risk Partners collective strength, choice, and value, along with Insurance Advisernet's network, is our greatest asset. 4Sight Risk Partners are able to give our clients confidence and greater clarity around risk and insurance, despite its complexity, as we continue to provide trusted advice and advocate for them as their valued business partner.

Our clients have qualified risk profiles and quantified risk appetite, as we help manage their risk profiles. We do this via 4Sight Risk Partners 'ARTA' framework.

To find out more go to [www.4sightrisk.com.au](http://www.4sightrisk.com.au) or reach out.



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