1 JUNE 2025

MCA Fatality Prevention Project

What is the MCA Fatality Prevention Project?

The scope of the Fatality Prevention Project:

- Understand the causes of fatalities and potential fatality events
- Provide education and resources
- Engage with the Regulators to ensure consistent taxonomy of incidents and supportive regulation for mining in practice

In November 2020, the MCA engaged InterSafe to analyse industry data to determine the root cause and causal factors of fatal and potentially fatal incidents.

InterSafe analysed fatalities between 1999 and 2019 using publicly available information. In the same report InterSafe also analysed 2758 high- potential incidents (HPI's) between 2015 and 2019 provided by MCA member companies.

Fatality Prevention Project Working Group representation

Gravitational Energy

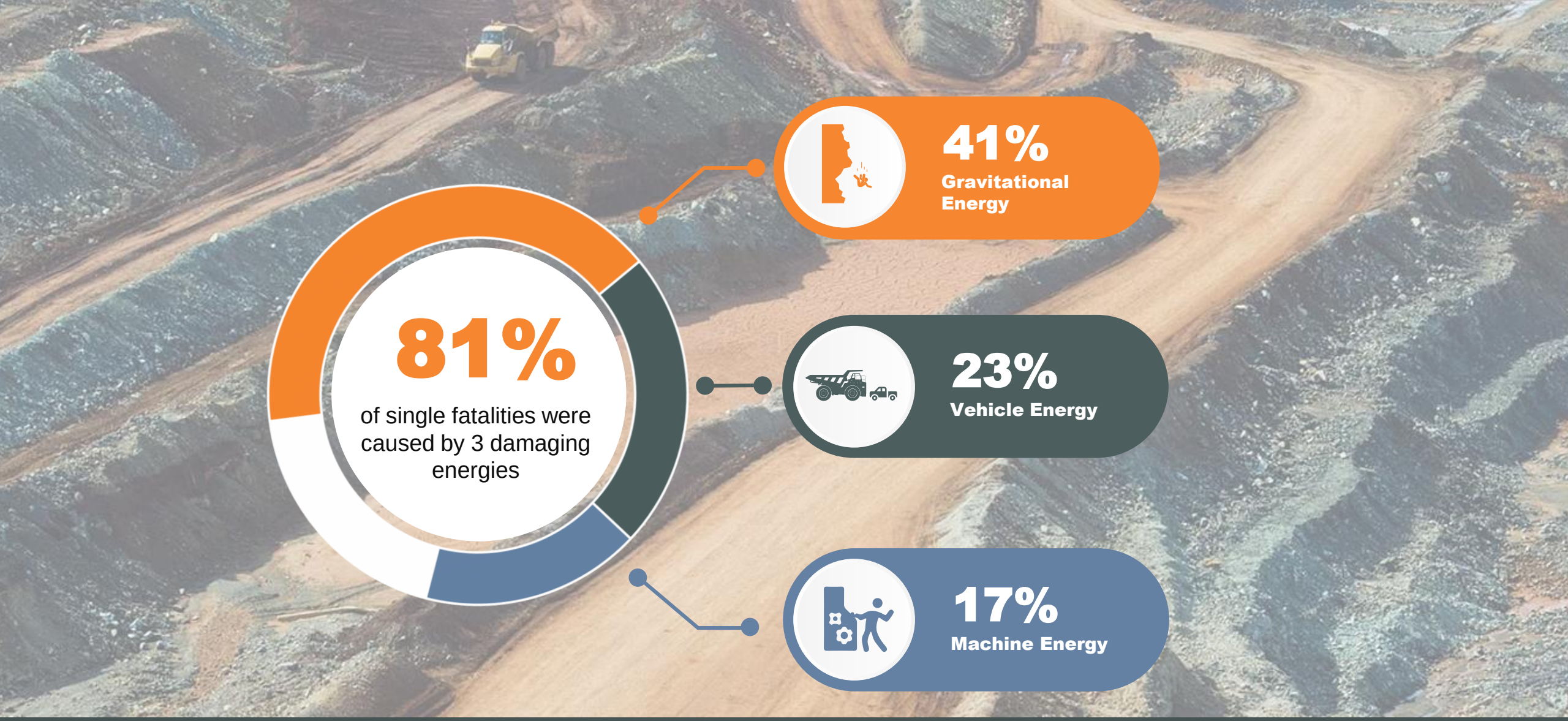
A person falling or an object falling from a height on to a person

Vehicular Energy

A vehicle striking the environment, vehicle to vehicle interactions and vehicles interacting with persons

Machine Energy

The powered movement of parts, components or attachments of a machine which entangles, strikes, or crushes a person



Industry focus | Prioritising management of these damaging energy types to reduce the risk of fatal incidents in the Australian mining industry

Gravitational Energy Analysis

SURFACE

45%

of all gravitational energy fatalities occurred in surface operations

Falling Object
22

Fall of Person
13

UNDERGROUND

55%

of all gravitational energy fatalities occurred in underground operations

Falling Object
33

Fall of Person
09

Tasks attributed to gravitational fatalities

Rockfall during drilling and charging a face or from highwall — 33

Object falling during lifting process — 8

Object falling from fixed or mobile plant component — 10

From fixed plant like a conveyor, walkway or into a tank — 6

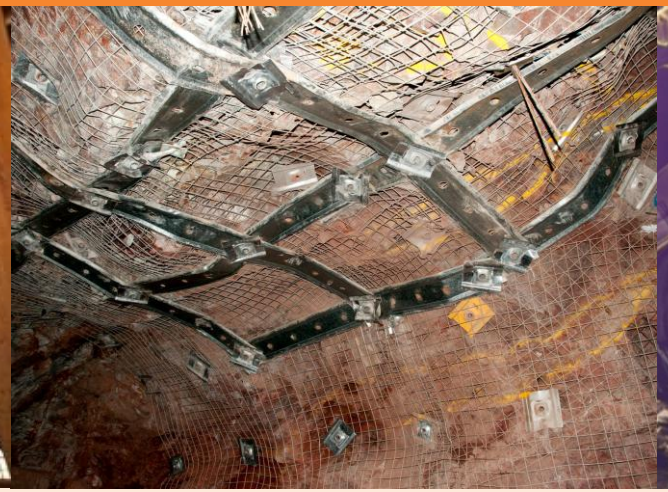
From elevated mobile or temporary work platform — 6

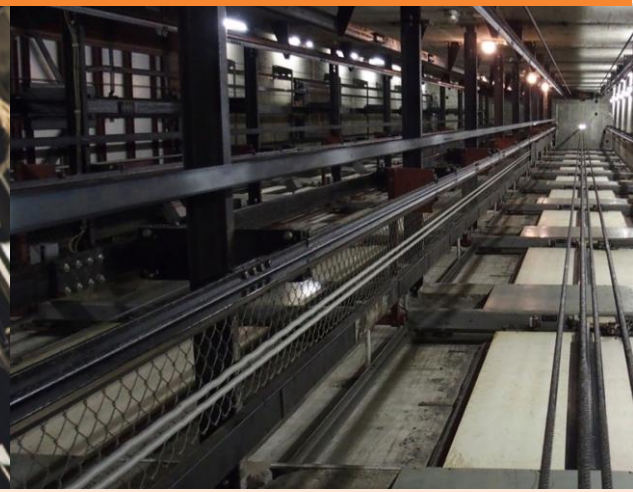
Through discontinuous ground like a shaft, ore pass or sump — 8

Other object fatalities were from stored/ stacked materials (2), structural collapse (1) and trench collapse (1)

Other fall from height fatalities were falling from highwall (1) and insufficient information (1)

Considerations for managing gravitational risks



Structural inspection and maintenance

Ongoing inspections and maintenance to all shafts, fixed work platforms and height access systems to manage the risk of falls, but also mange risks of falling objects or components (such as kickboards and guards)

Appropriate ground support

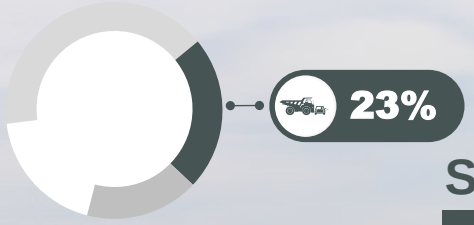
Design standards for ground support to be followed that provide increased level in confidence of ground and stope stability

Permanent access platforms and walkways

Utilising permanently installed access platforms and walkways as opposed to temporary scaffolds or work platforms enhances safety and efficiency within the operational environment

Secure shaft access systems

Implementing engineered work platforms designed to securely attach to shaft infrastructure, facilitating safe and efficient work operations within underground shafts



Vehicular Energy Analysis

SURFACE

72%

of all vehicular energy fatalities occurred in surface operations

- Vehicle to environment **18**
- Vehicle to person **06**
- Vehicle to vehicle **06**

UNDERGROUND

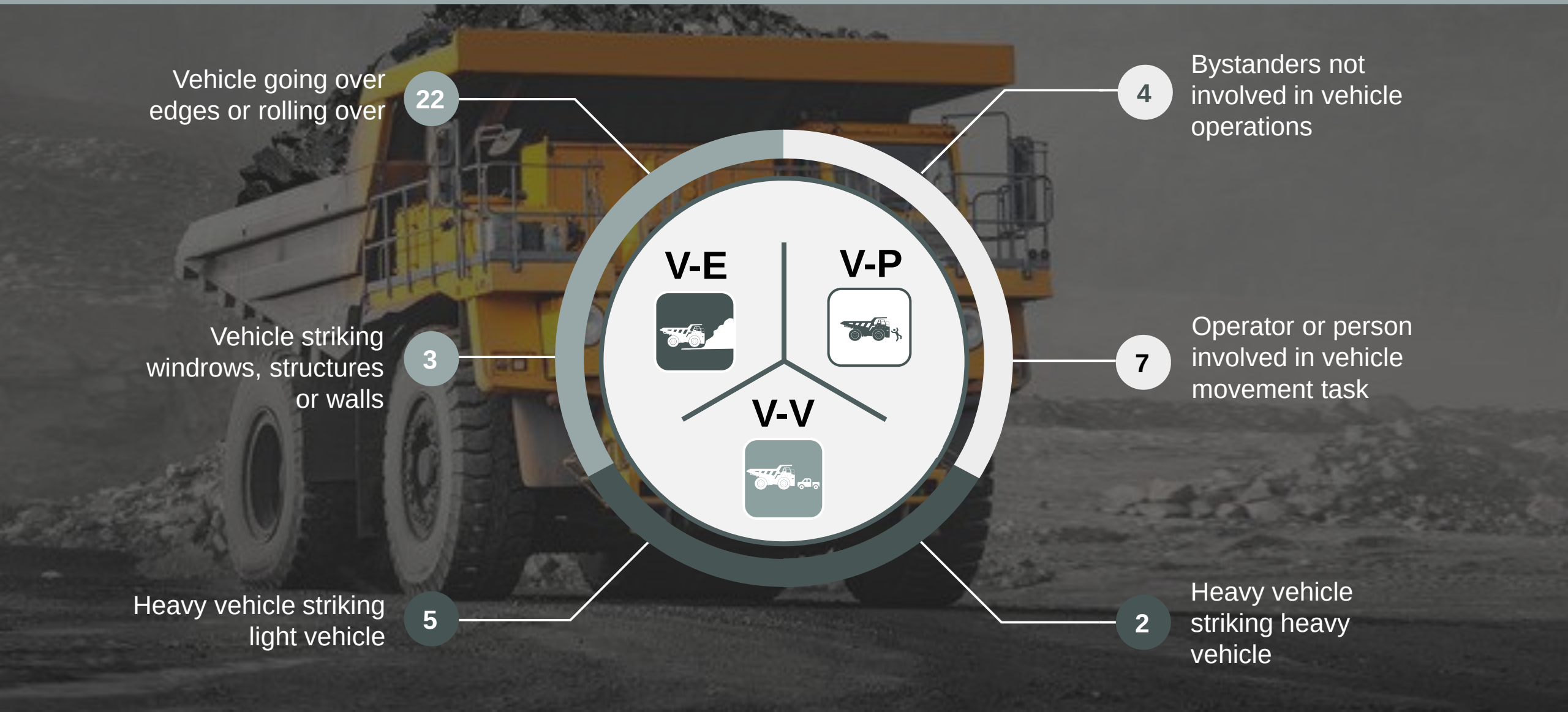
28%

of all vehicular energy fatalities occurred in underground operations

- Vehicle to environment **07**
- Vehicle to person **04**
- Vehicle to vehicle **01**

There was one vehicle to person fatality where the location was unknown

Tasks attributed to vehicle fatalities



Vehicle going over edges or rolling over **22**

Vehicle striking windrows, structures or walls **3**

Heavy vehicle striking light vehicle **5**

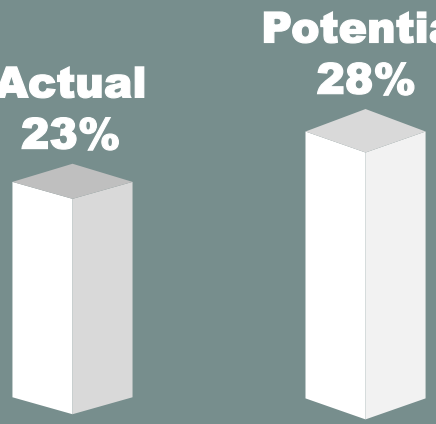
4 Bystanders not involved in vehicle operations

7 Operator or person involved in vehicle movement task

2 Heavy vehicle striking heavy vehicle

Comparison of actual fatalities and potential fatalities

Vehicular Energy



Observation

The data indicates the perception of risk and what is causing fatalities correlates. However, there are varied risk perceptions across the three types of vehicle interactions

Vehicle to environment: The data indicates the number of vehicle to environment high potential incidents reported (35.7%) and the number of actual fatalities (58.1%) do not correlate. The low percentage of potentially fatal incidents when compared to actual fatalities highlights the necessity for increased understanding and reporting of potentially fatal vehicle to environment risks and an increased focus on ensuring controls are in place, maintained, effective and reviewed

Vehicle to vehicle: The data indicates the number of vehicle to vehicle high potential incidents reported (39.5%) and actual fatalities (16.3%) do not correlate. The number of fatal and potentially fatal incidents highlights the necessity for ongoing fatal risk management and to ensure controls are in place, maintained, effective and reviewed

Vehicle to person: The data indicates the perception of risk (11.7%) and actual fatalities (25.6%) do not correlate. The low percentage of potentially fatal incidents when compared to actual fatalities highlights the necessity for increased understanding and reporting of potentially fatal vehicle to person risks and an increased focus on ensuring controls are in place, maintained, effective and reviewed

Considerations for managing vehicle risks

Windrow design

A windrow should be constructed with adequate height and should be at an appropriate depth based on vehicle movements and speeds

Autonomous vehicle

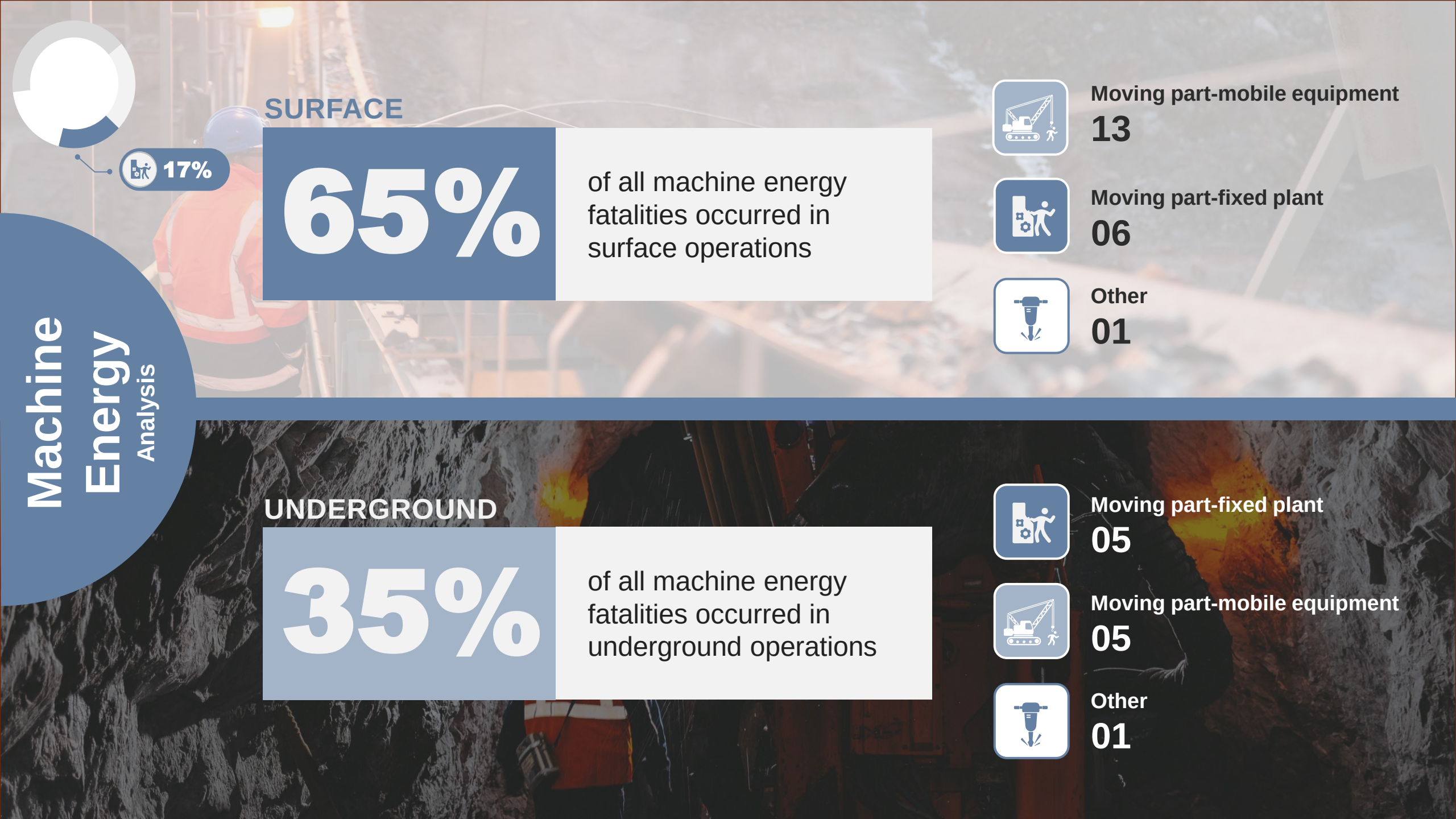
Autonomous mining equipment technology that allows workers to operate equipment from a safe location

Intersection design

Design intersections with principles that minimise collision points. Maximise visibility by minimizing blind spots, typically using 90° intersections. Prioritise visibility and removing visibility impediments

Proximity detection

A system designed to alert vehicle operators to a nearby person that automatically slows and stops the vehicle upon detection. Ideally, it prevents movement when a person is within the exclusion zone



Machine Energy Analysis

SURFACE

65%

of all machine energy fatalities occurred in surface operations

- Moving part-mobile equipment **13**
- Moving part-fixed plant **06**
- Other **01**

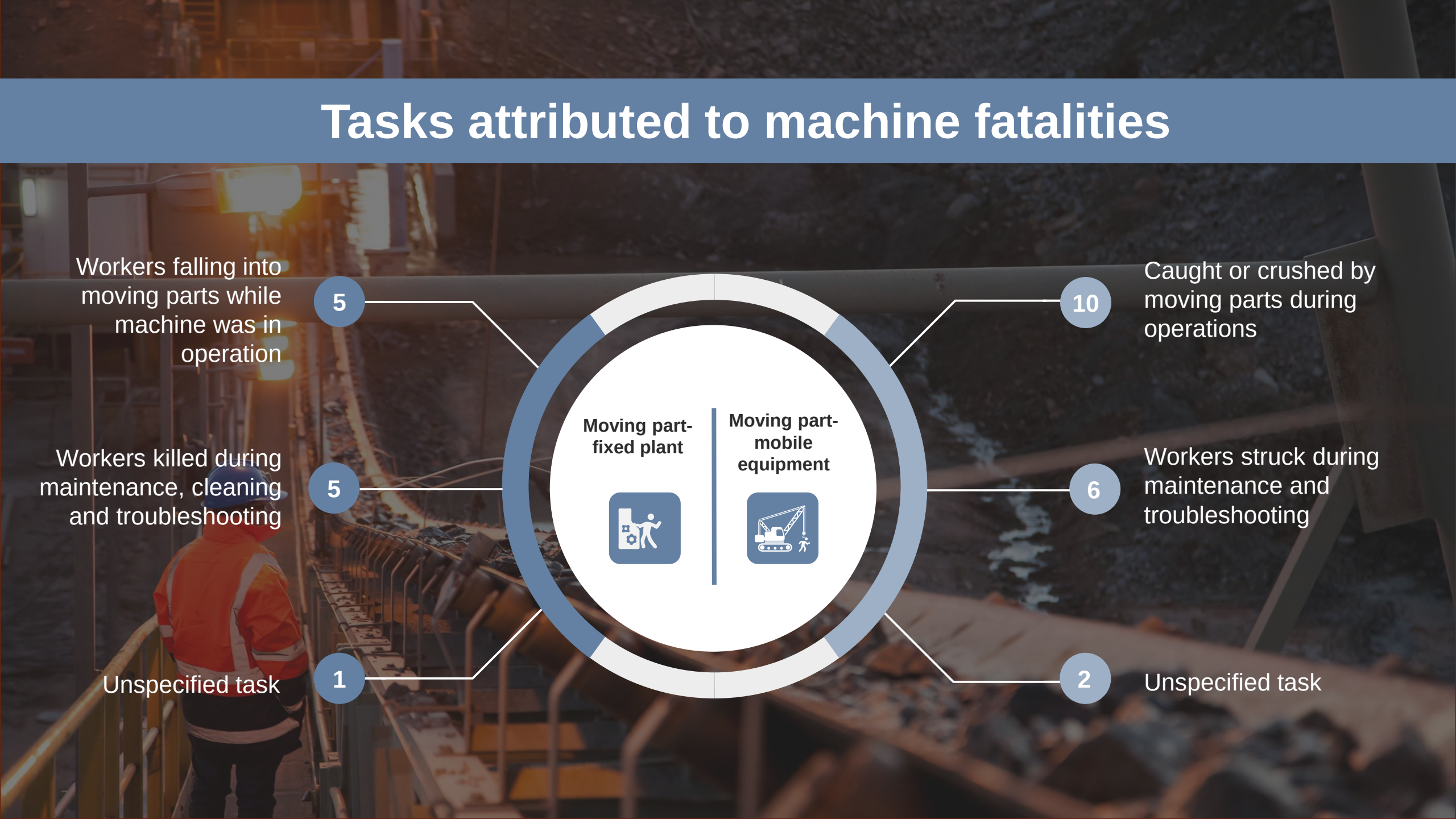
UNDERGROUND

35%

of all machine energy fatalities occurred in underground operations

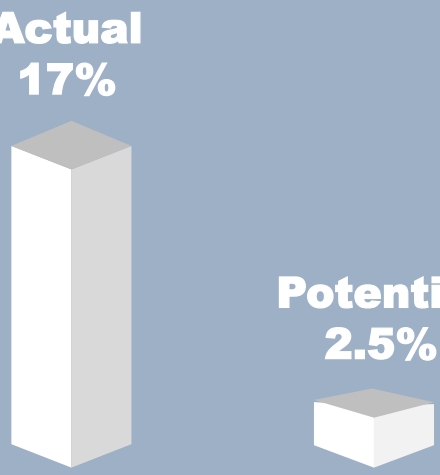
- Moving part-fixed plant **05**
- Moving part-mobile equipment **05**
- Other **01**

Tasks attributed to machine fatalities



Comparison of actual fatalities and potential fatalities

Machine Energy



Observation

There is misalignment when comparing the number of high potential incidents with actual fatalities. The low percentage of potentially fatal incidents highlights the necessity for increased understanding and reporting of potentially fatal machine risks and an increased focus on ensuring controls are in place, maintained, effective and reviewed

Actual fatalities involving machine energy were predominantly associated with the movement of parts on stationary mobile equipment (58%)

Potential fatalities involving fixed plant primarily occur during maintenance and repair (46%) compared to actual fatalities which were more common during non-maintenance tasks (55%)

Considerations for managing machine risks

Remote sensing equipment

Remote or wireless equipment like cameras, wireless dial gauge indicators, and wireless pressure transducers etc. can be used for live inspections, maintenance, and troubleshooting tasks. It will ensure the person undertaking the maintenance task remains outside of the danger area

Using enclosed personnel hoists

Ensure that all shear and crush zones between hoist cars and fixed structures are inaccessible to a person or parts of their body and suitable guards are in place on personnel hoists to prevent any body part from protruding from the hoist during operations. All persons must be prohibited from being in, or transported in, kibbles, buckets or other conveyances not specifically designed to transport people

Remote drill string breaking or threading

Implementing technology to allow breaking and threading of drill strings, without a person having to touch the drill string, will address significant hazards associated with drill rigs. Where autonomous drill threading cannot be undertaken, manual breaking/threading of drill strings should be undertaken with a significantly lowered speed of rotation and provide a hands-free emergency isolation switch accessible by the offsider

Interlocked guarding to reduce drill rotation

When manual breaking/threading is necessary, turntable guarding should be interlocked to reduce rotation speed to the minimum required for the task when the guard is open. Additionally, the offsider must have a "hands-free" emergency stop to halt rotation immediately

Nothing you do today will be as important as returning home to your loved ones

CALL TO ACTION

*This is an opportunity for our industry to learn from the **187 people** within this study who lost their lives while at work*

Realigning industry perceptions:

Understanding the causes of fatalities will allow industry to realign its focus to priority areas such as gravitational energy, vehicular energy, and machine energy

Educational reinforcement:

Educating our leaders and workforce to highlight the fatal risks associated with the three energies, will empower diligence and collaboration to reduce fatalities

Enhanced reporting and investigation:

Prioritise the reporting of incidents involving gravity, vehicles, and machines to ensure a comprehensive understanding of risks, so appropriate controls can be identified, implemented and effective

Resourcing tomorrow

Australian Mining

For further information on the fatality research undertaken by the Minerals Council of Australia visit https://minerals.org.au/fatalityprevention