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Developing and maintaining good controls

A life cycle approach

2026 Small Mines Roadshow

February/March/April 2026

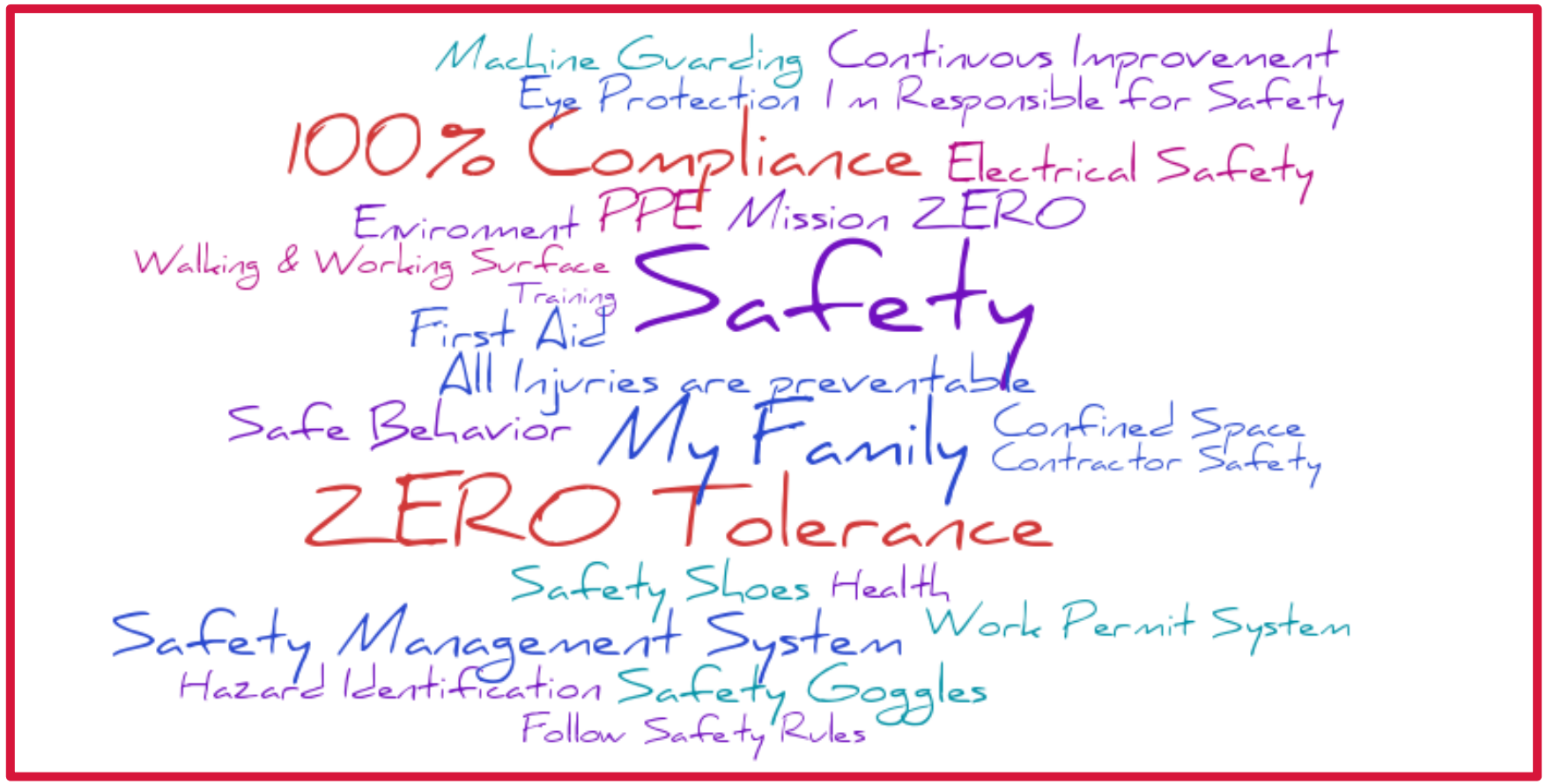
This presentation covers:

- Refresher duty of care
- Safety management system requirements
- What ‘good’ does not look like
- A life cycle approach to achieving compliance
- Maintaining leadership through controls and due diligence
- Take-home messages

Main elements of the duty of care (PCBU) Work Health and Safety Act 2011

- Safe work environment
- Safe machinery and equipment
- Safe systems of work, (RA and procedures covering people, equipment, material, work environment)
- Chemicals are used, handled and stored safely (e.g. explosives, diesel etc)
- Information, training, instruction and supervision are provided
- Adequate workplace facilities are available
- Workers' health and workplace conditions are monitored

Safety management system (SMS) responsibilities



Safety management system (SMS) responsibilities

Safe systems of work (RA and procedures covering people, equipment, material, work environment)

Mine operator – Overall responsibility for development and implementation of SMS

Supervisors – Monitor work activities, enforce safety controls, and report hazards.

Workers – Follow SMS procedures, report hazards, and participate in training

Quarry manager – Oversees (supervises) mining operations and ensures SMS procedures and controls are followed.

Health and safety representatives (HSRs) – Facilitate worker consultation and raise safety concerns.

Contractors – Comply with site SMS requirements and maintain safe practices.

Contents of a safety management system (SMS)

- Arrangements for managing risk
- Health and safety policy
- Management structure (responsibilities)
- Supervision arrangements
- Contractor management
- Training and instruction arrangements
- Incident reporting
- Inspection arrangements
- Emergency management plan
- Management of high-risk activities
- Review and monitoring arrangements

(Tier 2)

- PHMP
- PCP

(Tier 3)

- systems, procedures, plans and other controls to manage risk

Where to find the SMS contents requirements

Work Health and Safety (Mines and Petroleum Sites) Regulation 2022

Current version for 13 December 2024 to date (accessed 13 January 2026 at 8:09)

Part 3 > Division 1 > Subdivision 2 > Section 19

19 Content of safety management system

(1) The safety management system for a mine or petroleum site must be documented (a ***safety management system document***).

(2) The safety management system document for a mine or petroleum site must set out the following—

(a) the health and safety policy of the operator of the mine or petroleum site, including broad aims in relation to the safe operation of the mine or petroleum site,

(b) the arrangements for managing risks in accordance with section 14,

(c) the systems, procedures, plans and other control measures that will be used to control risks to health and safety associated with mining operations or petroleum operations at the mine or petroleum site, including the following—

(i) the principal hazard management plans for the mine or petroleum site prepared under Division 2,

(ii) the principal control plans for the mine or petroleum site,

(iii) for an underground mine—the ventilation control plan and ventilation plan prepared for the mine under Division 5, Subdivision 2,

(iv) for an underground coal mine—the matters required under Division 5, Subdivision 3,

(v) for coal mines and other mines—the matters required under Division 6.

(d) the management structure for the management of work health and safety at the mine or petroleum site, including the following—

(i) arrangements for filling temporary and permanent vacancies,

(ii) requirements relating to acting positions in the structure,

Work Health and Safety (Mines and Petroleum Sites) Regulation 2022

Current version for 13 December 2024 to date (accessed 13 January 2026 at 8:09)

(e) the arrangements between persons conducting a business or undertaking at the mine or petroleum site, for consultation, co-operation and the co-ordination of activities in relation to compliance with their duties under the WHS laws,

(f) if a contractor is working or likely to work at the mine or petroleum site—the control measures that will be used to control risks to health and safety associated with the contractor's work at the mine or petroleum site, including the following—

(i) a contractor health and safety management plan prepared by the contractor under section 26,

(ii) how the contractor health and safety management plan will be integrated with the safety management system for the mine or petroleum site,

(iii) the process for assessing health and safety policies and procedures, including competency requirements, of the contractor and integrating the policies and procedures into the safety management system,

(iv) the arrangements for monitoring and evaluating compliance by the contractor with the health and safety requirements of the safety management system,

(g) the emergency procedures and all other matters in the emergency plan for the mine or petroleum site,

(h) the procedures and conditions under which persons at the mine or petroleum site or a part of the mine or petroleum site must be withdrawn to a place of safety and to remain withdrawn as a precautionary measure where a risk to health and safety warrants the withdrawal,

(i) the arrangements for the provision of information, training and instruction required under the WHS Regulations, clause 39,

(j) the induction procedures for workers at the mine or petroleum site,

Key ingredients in developing good systems and controls

- Get the right people in the room
- Conduct site specific risk assessments
- Consult with the workforce
- Review regularly

- Work through all activities that you do
- Cover all the things that will hurt you
- Start with principal hazards
- **Don’t just get a consultant**

Principal hazard - meaning

- An activity, process, procedure, plant, structure, substance, situation or other circumstance relating to the carrying out of mining operations.
- Has a reasonable potential to result in multiple deaths in a single incident or a series of recurring incidents.

The primary safe systems of work in the SMS are …

PHMP

- ground or strata failure
- inundation or inrush of a substance
- subsidence
- roads or other vehicle operating areas
- air quality or dust or other airborne contaminants
- fire or explosion
- hazard identified by the mine operator under the WHS Regulations, Section 34

PCP

- health management plan
- mechanical engineering control plan
- electrical engineering control plan
- explosives control plan
- emergency control plan

Other principal hazards – you need to decide

- On site, are you regularly lifting equipment in the air?
  - ✓ telehandler
  - ✓ forklift
  - ✓ mobile crane
  - ✓ fixed crane
- Are workers regularly exposed to this hazard?

Without controls, this hazard could cause multiple fatalities in a single incident or multiple fatalities in reoccurring incidents.

PHMPs and PCPs

- Details the management of all aspects of risk control
- Must be supported by risk assessments
- Controls from PHMP and PCP must be implemented
- Procedures (SWMS) should use the controls developed in the PHMP and PCPs
- Not created to sit on a shelf ready for an inspection

Results of Tier 2 assessment – what good doesn't look like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Compliance priority report

Safety management systems – tier 2 quarries

July 2024 to June 2025

Figure 1: Summary assessment findings by criteria for tier 2 quarries

01	Does the Quarry Manager hold a current practising certificate, either a Tier 2 All or Conditioned for the mine?	91%
02	Does the mine have a Mine Record and does that record contain copies of the prescribed information?	81%
03	Does the Mine have an Emergency Management Plan and provisions for first aid? Has the emergency plan been tested in the past 12 months?	62%
04	(For mines that have determined a hazard IS NOT a Principal Hazard) Does the mine operator have systems, procedures, plans and other control measures to manage the hazard?	87%

System deficiencies identified

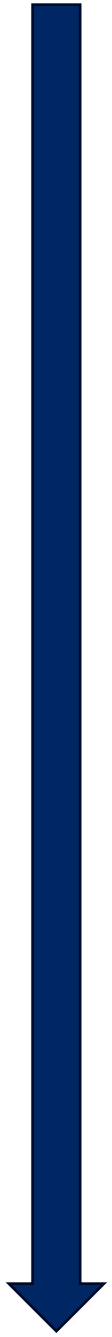
- 36 % - No risk assessments to support PHMP & PCP
- 46 % - Schedule 1 & 2 partially or not considered at all when developing PHMP & PCP
- 42 % - Health control plan did not include requirement to conduct personal dust monitoring
- 41 % - Mechanical engineering control plan did not contain sufficient procedures for maintenance and inspection of plant
- 41 % - Electrical engineering control plan did not contain sufficient procedures for maintenance and inspection of plant
- 36 % - Insufficient contractor arrangements

Other common themes identified

- No involvement of a competent person (electrician, mechanic, hygienist, shotfirer)
- Use of corporate documents with controls that do not relate to site (limited site-specific information)
- Copy and paste (site has no understanding of documents)
- No consultation with workforce
- Not reviewed every 3 years (out-of-date, inaccurate)

Developing and maintaining good controls requires a life cycle approach

Must have consultation throughout



Complete broadbrush risk assessment (BBRA) – risk register

- Can group hazards into Principal Hazard categories
- Action any immediate hazards

Determine if a principal hazard WHS(MPS) s27 exists

- "Definition" – multiple fatalities in a single event or multiple events
- Record reasons

Develop principal hazard management plans WHS(MPS)R s 28

- Completed a hazard specific risk assessment
- Reference (consider) schedule 1

Develop principal control plans WHS(MPS)R s30

- MECP, EECP, HCP, ExpCP, Emerg Plan
- Complete a risk assessment - reference (consider) schedule 2

Develop task specific procedures (SWMS) based on PHMP & PCP

- Use controls identified in PHMP * PCP to develop procedures
- Ensure workers are trained

Develop inspection arrangements WHS(MPS)R s39

- Establish frequency, competencies (train workers), checklists
- Supervision strategy (monitoring control compliance)

Develop review procedures

- Must review within 12 months of commencement of mining operations
- At least once every 3 years and after an incident

Results of Tier 2 assessment – recommendations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July 2024 to June 2025

- Ensure risk assessments are completed and implemented to support the SMS. Specifically, the PHMP and PCP require risk assessments. Ensure that subject matter experts are involved and the workers have representation and are consulted in developing and implementing the plans.
- Must consider schedule 1 requirements (PHMP)

WHS(Mine & Petroleum Sites) Regulations 2022 Schedule 1

Consider all matters outlined for each principal hazard

								With existing controls		
Matters to consider (Schedule 1 WH (Mine and Petroleum sites) 2022	**Hazards**	**Location**	**Event Cause**	**Escalation** (Likely outcome)	**Risk Rating**	**1. Current Controls**	**Type of Control** 1.Elimination, 2.Substitution, 3.-Engineering, 4.Administrative, 5.PPE	**Consequence**	**Likelihood**	**Inherent Risk Level**
Mobile plant characteristics, including stopping distances, manoeuvrability, operating speeds, driver position, driver line of sight and remote control mobile plant.	•Intersections •Adverse weather conditions •Roads •Buildings	Site Wide	•Collison between mobile plant, building, pedestrians, wild animals. •Loss of control resulting in rollover •Unplanned movement of vehicle resulting in Collison or Rollover	•Minor to Moderate injury to people •Disabling injury to people •Single or multiple fatalities •Machine or equipment damage		•Site Safety standards and mobile plant safety requirements •Plant matched to site (Fit For Purpose) •Mobile plant risk assessment (plant assessor) •OEM and Contractor consultation	3,4,5			
The effect on road conditions of expected environmental conditions during operating periods (including time of day, weather, temperature and visibility).	•Wind •Fog •Rain •Dust •Sunlig •Lighti		ant, ollover hicle ver	•Minor to Moderate injury to people •Disabling injury to people •Single or multiple fatalities •Machine or equipment damage		•Roads constructed with adequate material •Adequate Drainage •Adverse Weather TARP •Road maintenance •Daily work area inspections	3,4,5			
The impact of road design and characteristics, including grade, camber, surface, radius of curves and intersections.	•Uneven surfaces, •Washouts, •Blind spots, •Speed, •safety.	Site Wide	•Collison between plant and structure flora/ fauna, pedestrian and other vehicles. •Loss of control resulting in rollover •Unplanned movement of vehicle.	•Minor to Moderate injury to people •Disabling injury to people •Single or multiple fatalities •Machine or equipment damage		•Road and Traffic design construct guideline (small mines guide) •Risk assessment conducted when introducing new intersections, ramps roads etc •TMP's in place •20km speed limit in active quarry areas •Adequate Signage	3,4			
The impact of mine design, including banks and steep drops adjacent to vehicle operating areas.	•Unprotected edges, •Steep batters, •Unstable ground, •Poor working area and segregation,		•Mobile plant or vehicle Driving over crest or into hazardous area resulting in rollover, loss of control and/or collision	•Minor to Moderate injury to people •Disabling injury to people •Single or multiple fatalities •Machine or equipment damage		•Risk assessments conducted when commencing quarrying in new areas •Adequate berms/bunds •Stand off distances from crests established •Speed limits •ROP's and FOP's •Work area inspections •Supervision				

Results of Tier 2 assessment – recommendations


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Safety management systems – tier 2 quarries

July 2024 to June 2025

- Ensure there is an inspection process in place to verify that controls from the PHMPs and PCPs remain in place and effective.
- Ensure that the mechanical and electrical engineering control plans have been developed by appropriately qualified persons and have considered schedule 2 in the Work Health and Safety (Mines and Petroleum Sites) Regulation 2022.

Inspection checklists

Must ensure…

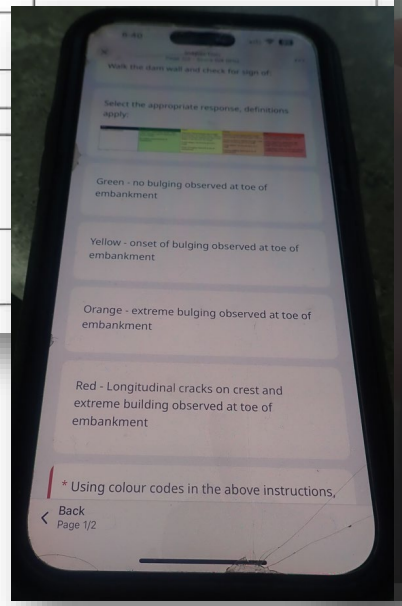
- controls are consistent with PHMP & PCP
- checklists are site specific
- adequate detail included (e.g. standards)
- people completing inspections are trained
- there is a ‘close out’ process
- focus on ‘critical controls’

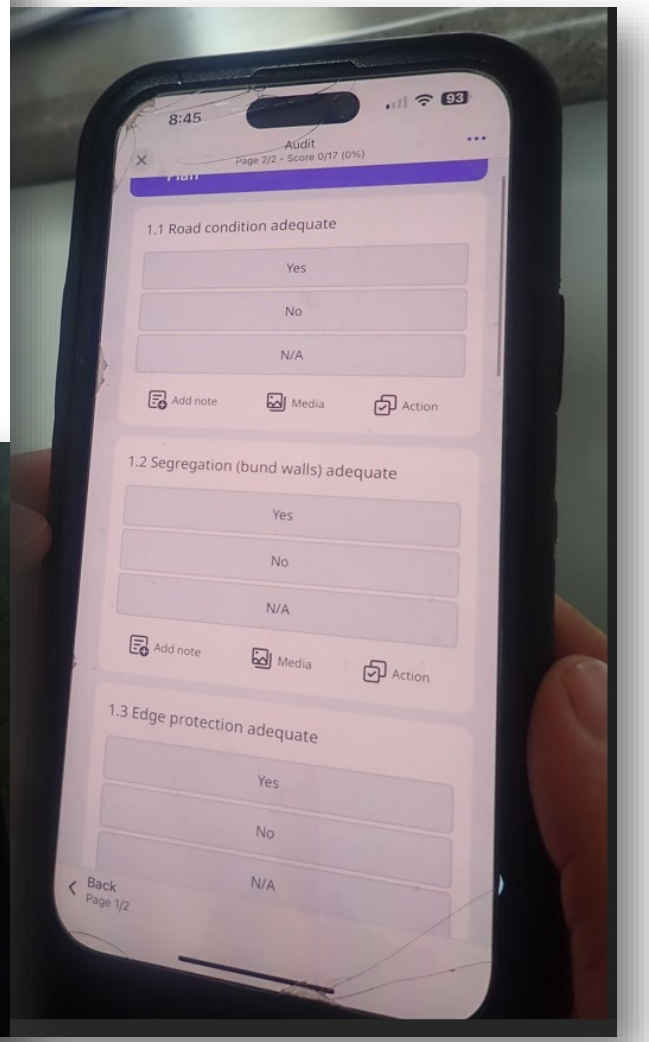
Daily Inspection Checklist

SHIFT SITE INSPECTION

Date:	29.07.25	**Time:**	7.30am
Inspected By:	J.Clarkson		
Shift:	Day / Afternoon / Night	**Signature of Inspector:**	J.Clarkson
Predicted weather conditions for the shift (check BoM):	overcast		
Measures that may need to be put in place based on predicted weather:			

Item	YES	NO	Remarks – General comments Write N/A or not inspected if applicable
Quarry access road			
Roads in safe trafficable condition i.e., no excessive loose gravel, no unsafe potholes, no unsafe corrugations, no cracking on edges	X		
All necessary signage in place and functional	X		
Safety bunding/windrows in place where necessary, adequate, intact & no lower than 1.2m	X		
Control of livestock	X		
Clear of road obstructions and debris i.e., road kill, large rocks etc.	X		
No unsafe flooding	X		
UHF call up points in place and functional	X		
Is watering required to road		X	
Quarry			
Good maintenance of haul roads in and around quarry i.e., safe trafficable condition, all road signs in place and functional, free from unsafe obstructions, clear of unsafe debris etc	X		
All vehicle operating areas in good condition in and around quarry i.e., no obstructions, clear of debris, no cracking on edges etc.	X		
Adequate drainage i.e., no areas have been scoured out after rain event etc.	X		
No unsafe flooding	X		
Stockpiles and stockpile surrounding area adequate i.e., minimal undercutting, face stable, adequate edge protection, no cracks in floor in areas were tipping above, stockpile identification signs in place, no obvious contamination etc.	X		
Bunding / edge protection adequate i.e., height and conditions satisfactory, in place where necessary, safety windrow at top of quarry, intact and no lower than 1.2 m etc.	X		





Results of Tier 2 assessment – recommendations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Safety management systems – tier 2 quarries

July 2024 to June 2025

- Ensure dust sampling has been completed and results have been used to inform the health controls plan and the PHMP for dust and airborne contaminants.
- Ensure a subject matter expert like a hygienist has been used in the development of the health control plan and the PHMP for dust and airborne contaminants.

Results of Tier 2 assessment – recommendations


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Safety management systems – tier 2 quarries

July 2024 to June 2025

- Ensure there is an agreed contractor management process in place. Furthermore, that there is agreement and it is signed off, of which sections of the mine operators and the contractors SMSs are being used.
- Ensure the emergency control plan is tested and subsequently reviewed every 12 months.

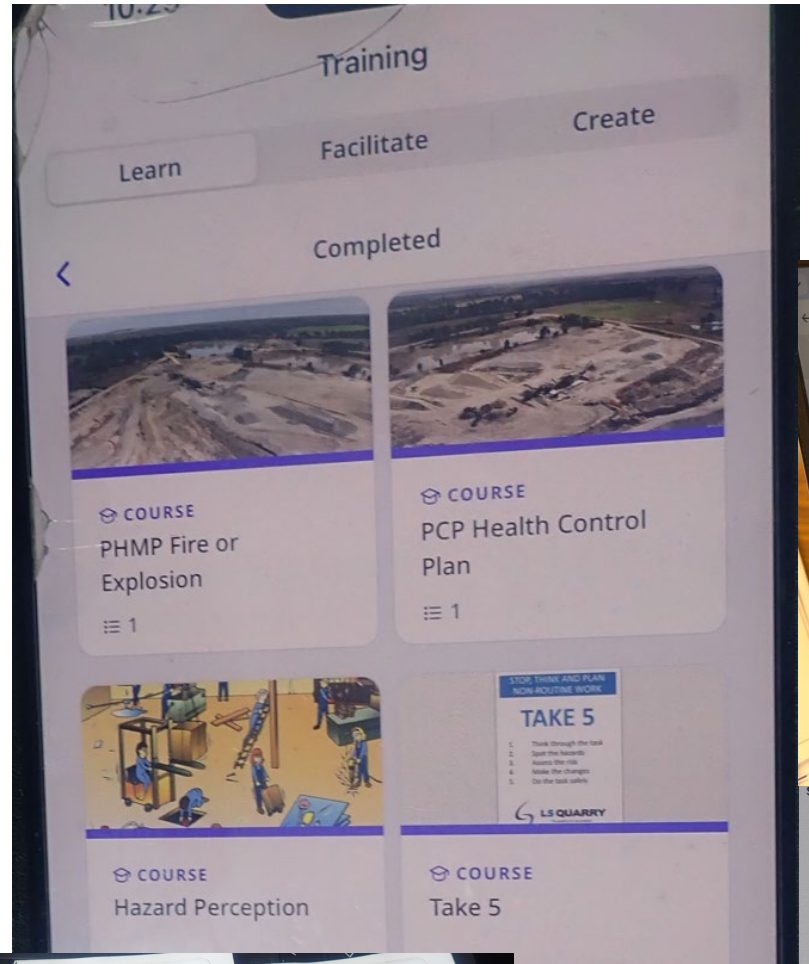
Section 19 of the WHS Act and SMS

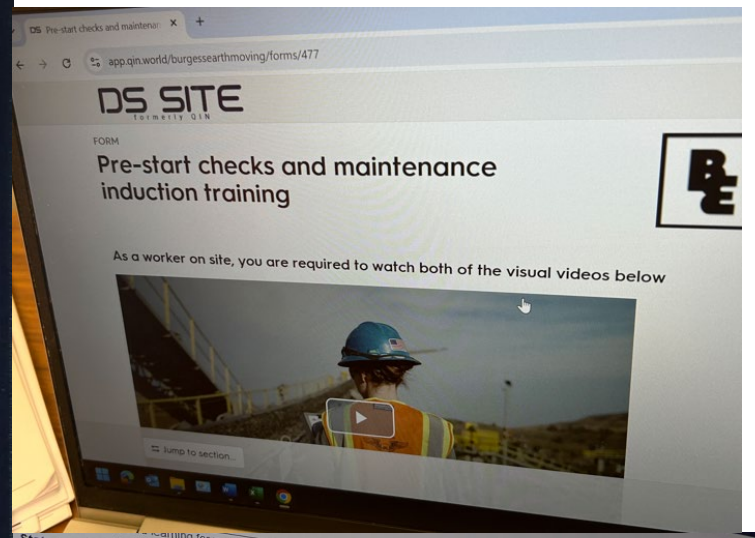
How do you ensure that your workers have been:

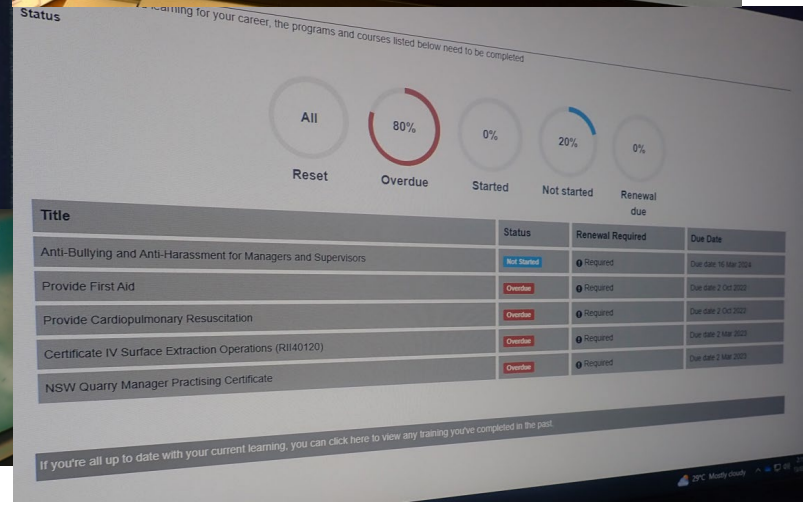
- informed ?
- trained ?
- instructed ?
- supervised ?

Examples

- PHMP & PCP summaries
- SWMS sign-off
- VOC records - prestart
- QR codes
- My/E learning
- Induction content

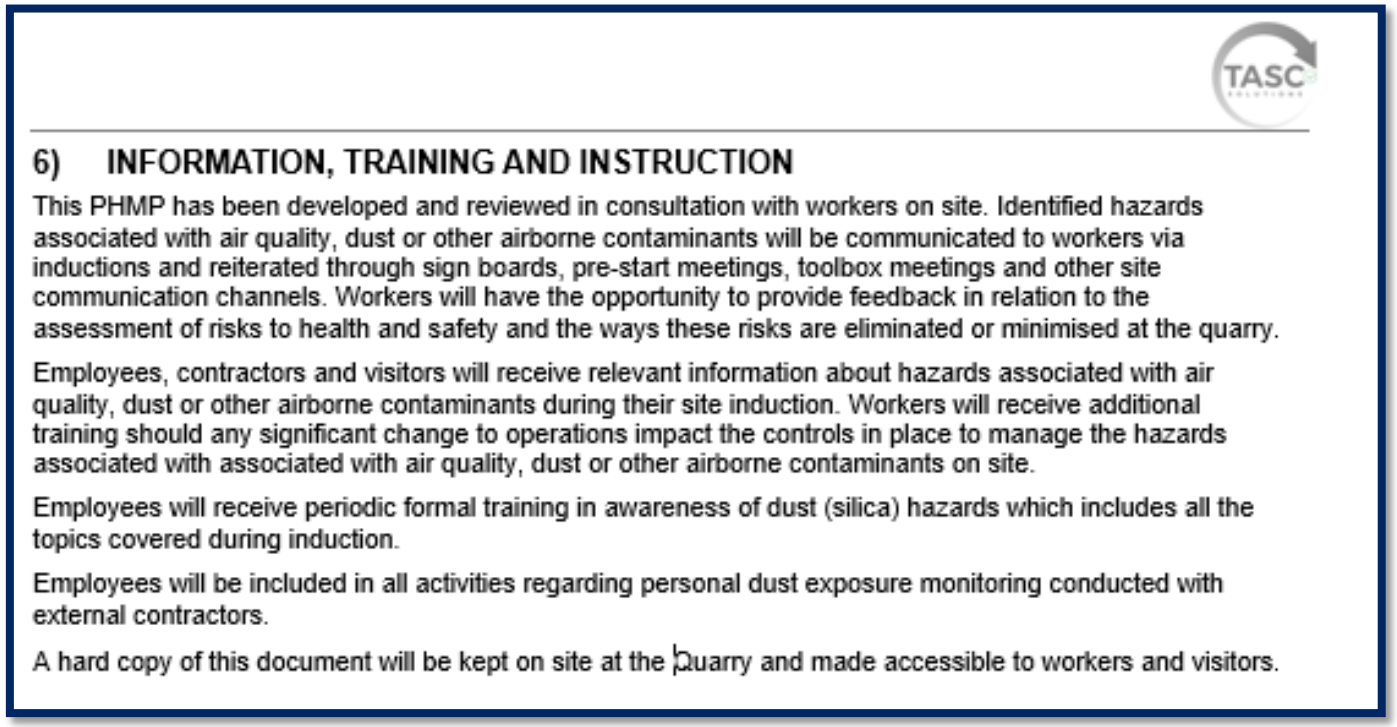






Principal hazard management plans

Must include arrangements for information, training and instruction – WHS(MPS)R section 28 (3) (g)



6) INFORMATION, TRAINING AND INSTRUCTION

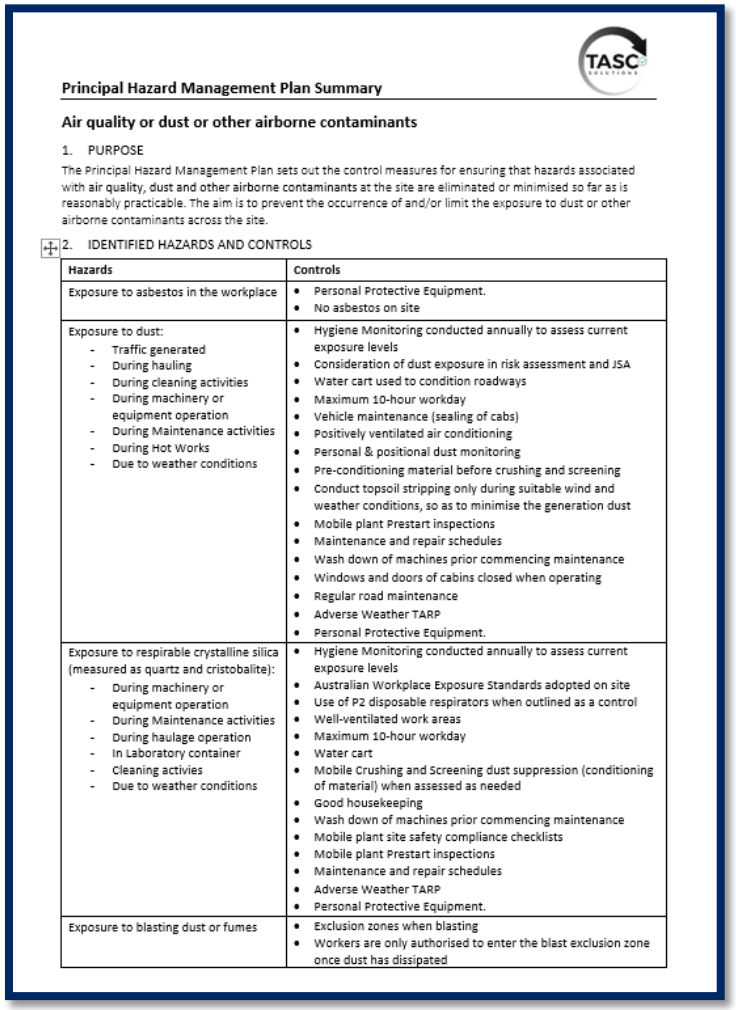
This PHMP has been developed and reviewed in consultation with workers on site. Identified hazards associated with air quality, dust or other airborne contaminants will be communicated to workers via inductions and reiterated through sign boards, pre-start meetings, toolbox meetings and other site communication channels. Workers will have the opportunity to provide feedback in relation to the assessment of risks to health and safety and the ways these risks are eliminated or minimised at the quarry.

Employees, contractors and visitors will receive relevant information about hazards associated with air quality, dust or other airborne contaminants during their site induction. Workers will receive additional training should any significant change to operations impact the controls in place to manage the hazards associated with associated with air quality, dust or other airborne contaminants on site.

Employees will receive periodic formal training in awareness of dust (silica) hazards which includes all the topics covered during induction.

Employees will be included in all activities regarding personal dust exposure monitoring conducted with external contractors.

A hard copy of this document will be kept on site at the Quarry and made accessible to workers and visitors.



Principal Hazard Management Plan Summary

Air quality or dust or other airborne contaminants

1. PURPOSE

The Principal Hazard Management Plan sets out the control measures for ensuring that hazards associated with air quality, dust and other airborne contaminants at the site are eliminated or minimised so far as is reasonably practicable. The aim is to prevent the occurrence of and/or limit the exposure to dust or other airborne contaminants across the site.

2. IDENTIFIED HAZARDS AND CONTROLS

Hazards	Controls
Exposure to asbestos in the workplace	• Personal Protective Equipment. • No asbestos on site
Exposure to dust: - Traffic generated - During hauling - During cleaning activities - During machinery or equipment operation - During Maintenance activities - During Hot Works - Due to weather conditions	• Hygiene Monitoring conducted annually to assess current exposure levels • Consideration of dust exposure in risk assessment and JSA • Water cart used to condition roadways • Maximum 10-hour workday • Vehicle maintenance (sealing of cabs) • Positively ventilated air conditioning • Personal & positional dust monitoring • Pre-conditioning material before crushing and screening • Conduct topsoil stripping only during suitable wind and weather conditions, so as to minimise the generation dust • Mobile plant Prestart inspections • Maintenance and repair schedules • Wash down of machines prior commencing maintenance • Windows and doors of cabins closed when operating • Regular road maintenance • Adverse Weather TARP • Personal Protective Equipment.
Exposure to respirable crystalline silica (measured as quartz and cristobalite): - During machinery or equipment operation - During Maintenance activities - During haulage operation - In Laboratory container - Cleaning activies - Due to weather conditions	• Hygiene Monitoring conducted annually to assess current exposure levels • Australian Workplace Exposure Standards adopted on site • Use of P2 disposable respirators when outlined as a control • Well-ventilated work areas • Maximum 10-hour workday • Water cart • Mobile Crushing and Screening dust suppression (conditioning of material) when assessed as needed • Good housekeeping • Wash down of machines prior commencing maintenance • Mobile plant site safety compliance checklists • Mobile plant Prestart inspections • Maintenance and repair schedules • Adverse Weather TARP • Personal Protective Equipment.
Exposure to blasting dust or fumes	• Exclusion zones when blasting • Workers are only authorised to enter the blast exclusion zone once dust has dissipated

Remember

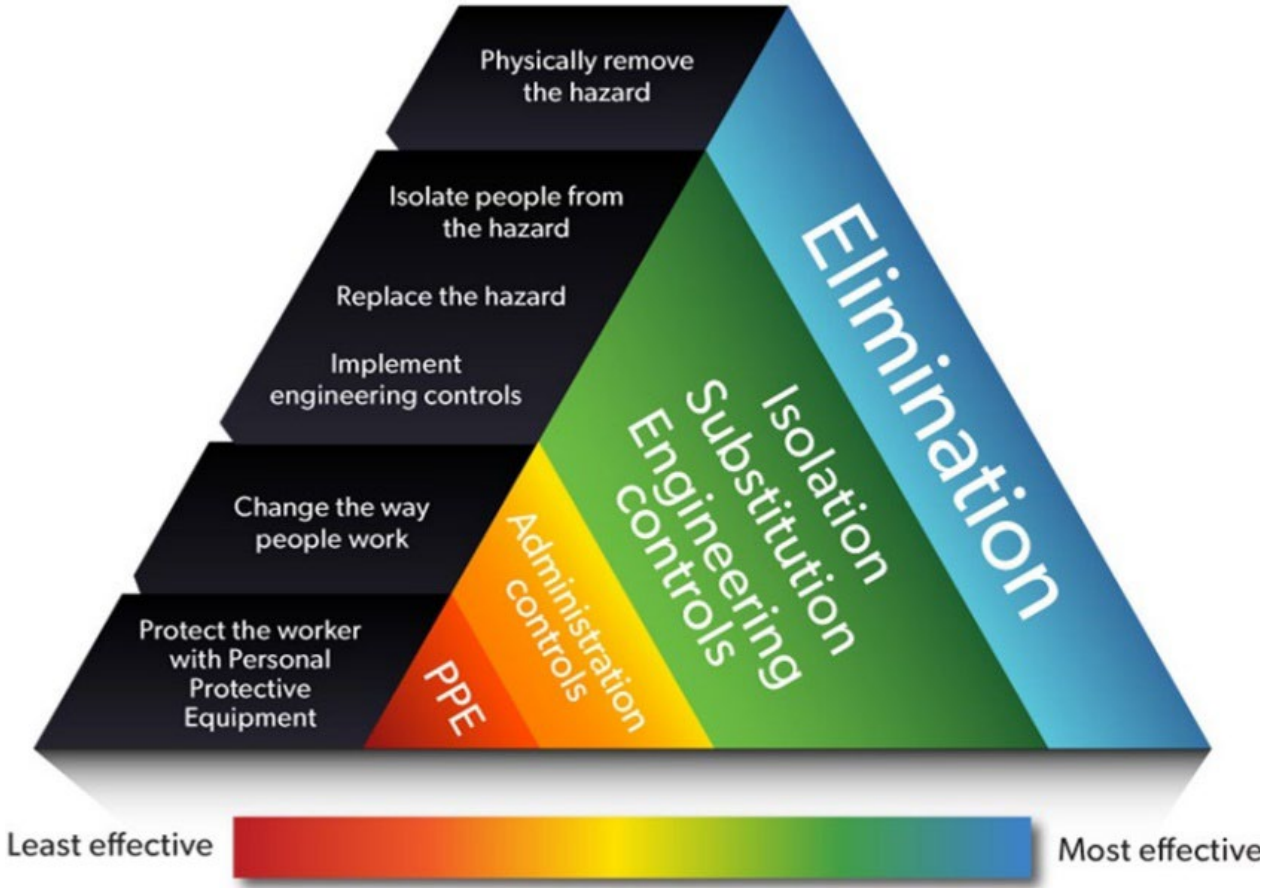
Good leadership

- is capable and available (be visible and engaged)
- is well organised and structured
- drives standards of work that are agreed to
- involves workers in decisions
- ensures that the SMS is always implemented
- ensures the mine operator is aware of what is required
- is not scared to make tough calls (stop production)

Ongoing due diligence

- Ensure all equipment is inducted to site and remains ‘fit for purpose’.
- Inspections are completed to ensure controls remain effective.
- Ensure SWMS and procedures are followed.
- Workers are trained, competent and understand expected site standards.
- Critical tasks are tracked and confirmed done.
- When new processes are being introduced to site risk assessments are completed and the SMS is updated.

Take home messages…



- Should include **a 'life cycle approach'**
- Must involve **consultation** with work force
- Must include **site specific risk assessments and controls**
- Must consider the **hierarchy of controls**
- Must include **inspection arrangements**
- Must include **instruction and training**
- Must include a **review process**
- Must include **supervision (monitoring)** arrangements to ensure controls are followed

A lifecycle approach embeds safety into every stage of quarry operations to ensure continuous improvement and compliance

Thank you