



Government of **Western Australia**  
Department of **Mines, Industry Regulation and Safety**  
**Resources Safety**

## **Quarry systems audit – guide**

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1 Adelaide Terrace, East Perth WA 6004  
Postal address: Mineral House, 100 Plain Street, East Perth WA 6004  
Telephone: (08) 9358 8002  
ResourcesSafety@dmirs.wa.gov.au  
[www.dmirs.wa.gov.au](http://www.dmirs.wa.gov.au)

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## **Introduction**

This document was reformatted in November 2015. At this time no material changes were made to the content of the guide, which was originally published in June 2003 under the title *Quarry systems HIF audit*.

*Note: The Safety Regulation System (SRS) has replaced the AXTAT system and all reporting is done online through SRS.*

# 1 Management Systems

## Management Systems

Point	Standard	Guideline
1.1	There is a written policy statement which sets out the Safety and Health Policy of the organisation.	<p><b>Intent:</b> To verify the existence of a policy statement.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Policy statement. A single copy of the statement displayed in a prominent position will be sufficient to confirm compliance with this standard.</p>
1.2	An up to date organisation chart is available.	<p><b>Intent:</b> To verify the existence of a chart which reflects the current management hierarchy of the organisation.</p> <p><b>Personnel:</b> Senior managers, line managers.</p> <p><b>Method:</b> Organisation chart. A single chart is not necessary; compliance may be established by viewing a series of individual charts which reflect the overall management structure.</p>
1.3	Senior managers accept their responsibilities, with regard to Safety and Health.	<p><b>Intent:</b> To verify that senior managers are prepared to accept their levels of authority to act independently and their levels of responsibility with respect to S&amp;H matters.</p> <p><b>Personnel:</b> Senior managers.</p> <p><b>Method:</b> Written response accepting the delegation of responsibility for S&amp;H matters.</p>

1.4	Site management staff encourage employees to systematically improve work processes to enhance Safety and Health.	<p><b>Intent:</b></p> <p>To verify that a system exists for the work force to undertake the translation of ideals relating to improvements in S&amp;H into concrete improvements in working processes and practices.</p> <p><b>Personnel:</b></p> <p>Line Managers, S&amp;H professionals, S&amp;H representatives, employees.</p> <p><b>Method:</b></p> <p>Safety Committee minutes. Specific S&amp;H programs in discrete areas of the organisation. Suggestion schemes. Process or work-practice hazard analyses. Work force training and education programs. Reports on introduction of new equipment or processes. Direct interviews with line managers, S&amp;H professionals, S&amp;H representatives, employees. The auditor should assess the genuineness and effectiveness of any encouragement which is given to the members of the work force to influence S&amp;H performance in their own workplaces. Examples of active encouragement and concrete achievement, rather than vague "motherhood" statements by managers are required in order to demonstrate compliance.</p>
1.5	Employees exhibit an understanding of the organisation's Safety and Health objectives.	<p><b>Intent:</b></p> <p>As stated</p> <p><b>Personnel:</b></p> <p>Safety Representatives and employees.</p> <p><b>Method:</b></p> <p>Interview employees to assess if they know and understand the key elements/objectives of the Safety and Health Plan. To assess if employees understand their role in achieving safety objectives.</p>
1.6	There is a formal program to monitor occupational health hazards that have been identified.	<p><b>Intent:</b></p> <p>To verify the existence of a formal program.</p> <p><b>Personnel:</b></p> <p>Senior managers, line managers, safety &amp; health professionals, employees.</p> <p><b>Method:</b></p> <p>Verify the existenance of occupational health assessment reports. Examples are noise reports and hazardous substance risk assessments under Reg 7.8 and 7.27.</p>

1.7	Contractors employed in the enterprise are required to comply with the principal employer's Safety and Health Policy.	<p><b>Intent:</b></p> <p>To verify that all contractors are subject to the safety and health policies of the Principal employer and that the policies are enforced.</p> <p><b>Personnel:</b></p> <p>Operating, maintenance and administration management. Staff responsible for Induction; members of Safety and Health Committee</p> <p><b>Method:</b></p> <p>Contract and policy documents.</p>
1.8	Personal protective equipment is available to all employees at no cost.	<p><b>Intent:</b></p> <p>As stated.</p> <p><b>Personnel:</b></p> <p>Supervisors, warehouse staff, employees and contractors, Safety Professionals.</p> <p><b>Method:</b></p> <p>Check warehouse records for supplies issued; speak to the S&amp;H Representative.</p>
1.9	There is a system for the repair of reported equipment and plant faults.	<p><b>Intent:</b></p> <p>To verify that a procedure or system is in place to fix breakdowns of plant and that a breakdown reporting system is in operation.</p> <p><b>Personnel:</b></p> <p>Plant operators and maintenance crews, and the corresponding supervisors.</p> <p><b>Method:</b></p> <p>Communications both direct and by paperwork exist to advise maintenance of faults and breakdowns. Check maintenance records randomly to confirm that operators comments are noted and attended to.</p>
1.10	Formal procedures are in place to investigate accidents, occurrences and property damage.	<p><b>Intent:</b></p> <p>To verify that formal procedures exist to investigate accidents, occurrences and property damage.</p> <p><b>Personnel:</b></p> <p>Mine Manager, Maintenance Manager and Contractor senior representatives. Safety and Health reps, supervisors and employees .</p> <p><b>Method:</b></p> <p>Investigation reports and procedures.</p>

1.11	There is an induction and training process at the enterprise.	<p><b>Intent:</b> To verify that there is a induction and training process on site.</p> <p><b>Personnel:</b> Senior management, line managers and employees.</p> <p><b>Method:</b> Verify that the mine has an induction and training process available for personnel working on the mine. Confirm by interview with management and employees that induction and training taken place. Examine mine induction and training records to confirm the process occurs.</p>
1.12	Safety and Health meetings are held.	<p><b>Intent:</b> To verify that safety and health meetings are held at the mine.</p> <p><b>Personnel:</b> Senior management, employees and contractors.</p> <p><b>Method:</b> Confirm by interviews or questionnaire that Safety &amp; Health meetings are held at the mine. Sight minutes of meetings.</p>
1.13	Communications are available between the mine and outside emergency services.	<p><b>Intent:</b> To verify that the mine has developed communications with external emergency service providers.</p> <p><b>Personnel:</b> Senior Managers.</p> <p><b>Method:</b> Confirm by sighting policy and protocols.</p>
1.14	Management carries out its statutory responsibilities in respect of the recording and reporting of occurrences and potentially serious occurrences.	<p><b>Intent:</b> To ensure that recording and reporting of occurrences and potentially serious occurrences are recorded and reported in an accurate and timely manner as required in Section 78 and 79 of MSI Act and Regulations.</p> <p><b>Personnel:</b> Senior Managers, OH &amp; S Personnel.</p> <p><b>Method:</b> Notice of Accident record files, Mine Record Book.</p>

1.15	Management carried out its statutory responsibilities in respect of the registration, inspection and maintenance of Classified Plant.	<p><b>Intent:</b> To verify the existence of a classified machinery management system.</p> <p><b>Personnel:</b> Senior Maintenance Managers.</p> <p><b>Method:</b> Data Base/Record of Plant, inspections and maintenance schedules.</p>
1.16	Management carried out its statutory responsibilities in respect of the licensing of its electrical installation.	<p><b>Intent:</b> To verify the appointment of the Electrical Supervisor and licensing of all electrical installations requiring such.</p> <p><b>Personnel:</b> Electrical Supervisor, Electrical Engineer.</p> <p><b>Method:</b> Electrical Log Book, High voltage installation submissions and EnergySafety communications.</p>
1.17	Management carries out its statutory responsibilities in respect of the recording of lost time injuries to workers.	<p><b>Intent:</b> To ensure accurate and timely reporting of lost time injuries as required by Reg. 3.42 of MSIA Regulations.</p> <p><b>Personnel:</b> Senior Managers, OH &amp; S Personnel.</p> <p><b>Method:</b> Monthly Status Report Form files.</p>
1.18	Management has caused a noise report to be compiled.	<p><b>Intent:</b> To verify control noise exposure has been assessed.</p> <p><b>Personnel:</b> Senior Managers, S &amp; H professionals.</p> <p><b>Method:</b> Noise Report notification, noise control plan (current).</p>
1.19	Management maintains a database recording each employee's training history.	<p><b>Intent:</b> To ensure employers are maintaining training records for employees.</p> <p><b>Personnel:</b> Senior Managers, Training Personnel.</p> <p><b>Method:</b> Training records.</p>



## 2 Explosives Storage

### Explosives Storage

Point	Standard	Guideline
2.1	Magazine of greater than 250kg capacity is licensed by Chief Inspector of Explosives.	<p><b>Intent:</b> To verify that any transportable magazines is designed to AS2188.</p> <p><b>Personnel:</b> Manager superintendent etc.</p> <p><b>Method:</b> Obtain confirmation that the magazine conforms by viewing the manufacturers specifications or similar documentation. Most transportable magazines in use are Irvine &amp; Evans or D&amp;F Engineering manufactured and are designed to comply with AS 2188 and as such are of an approved design.</p>
2.2	The magazine is located at least 50 metres away from any entrance to any underground mine.	<p><b>Intent:</b> To verify compliance with MSIA regulation 4.37.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect the magazine location and obtain a location plan for the written report.</p>
2.3	Explosives magazine is in excess of 10 m from any detonator magazine.	<p><b>Intent:</b> To verify that explosive and detonator magazines are segregated by a distance of at least 10 metres.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect the magazine location and measure the separation distances between magazines as required. Obtain a magazine location plan for the written report.</p>
2.4	Magazine is kept locked except when stock movement is occurring.	<p><b>Intent:</b> To verify that the magazines are kept locked and secure.</p> <p><b>Personnel:</b> Personnel who use explosives.</p> <p><b>Method:</b> Inspect magazine and check that it is locked interview personnel.</p>

2.5	Incompatible explosive products are not stored together.	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187 and 2188.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect the magazine to ensure detonators are segregated from detonating fuse and explosives.</p>
2.6	Incompatible explosive products are not stored together. No additional unauthorised materials are stored in the magazine.	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187 and 2188.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect the magazine</p>
2.7	No explosives are stored loose in the magazine.	<p><b>Intent:</b> To verify that magazine usage complies with AS 2187 and 2188.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect the magazine</p>
2.8	A responsible person has been appointed to control the magazine.	<p><b>Intent:</b> To verify compliance with MSIA regulation 8.6.</p> <p><b>Personnel:</b> Manager and the appointee.</p> <p><b>Method:</b> Interview the manager and appointee in regard to an appointment.</p>
2.9	Prominent "EXPLOSIVES" sign displayed on magazine.	<p><b>Intent:</b> To verify compliance with MSIA regulation 4.10 re signage.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect the magazine location.</p>

### 3 Blasting Practices

#### Blasting Practices

Point	Standard	Guideline
3.1	Blasts are planned and designed to ensure good blast results ie good fragmentation, displacement of muck pile and looseness.	<p><b>Intent:</b> To verify that blast parameters such as burden, spacing instantaneous charge, and stemming requirements are predetermined and documented.</p> <p><b>Personnel:</b> Blasting engineer, pit planning engineer etc.</p> <p><b>Method:</b> Interview persons responsible for blast planning and view a sample of blast records.</p>
3.2	Drilling patterns are laid out accurately.	<p><b>Intent:</b> To verify that blast patterns are marked out in accordance with the design</p> <p><b>Personnel:</b> Shot firer and drilling crews.</p> <p><b>Method:</b> View a sample of blast records and plans. Inspect current shots in progress to observe the pattern layout. Interview the persons responsible for marking up the pattern.</p>
3.3	Occurrences such as any accident or damage to property by fly rock (or close call) are recorded.	<p><b>Intent:</b> To verify that records of blasting mishaps are detailed.</p> <p><b>Personnel:</b> Surveyors and blast engineer etc.</p> <p><b>Method:</b> Inspect the blast records that are kept.</p>
3.4	Where noise, airblast and/or ground vibration are a problem, complaints are recorded.	<p><b>Intent:</b> To verify that records of blasting and complaints are detailed.</p> <p><b>Personnel:</b> Surveyors and blast engineer etc.</p> <p><b>Method:</b> Inspect the records that are kept.</p>

3.5	Drilling is not carried out on a bench face until it has been checked for misfires.	<p><b>Intent:</b> To verify compliance with MSIA regulation 8.22.1</p> <p><b>Personnel:</b> Drilling personnel.</p> <p><b>Method:</b> Interview drilling personnel, inspect current drilling and view procedures.</p>
3.6	All means of entry to the place of blasting are securely guarded against entry by persons, or warning notices are erected to prevent entry.	<p><b>Intent:</b> To verify compliance with MSIA regulation 8.26.</p> <p><b>Personnel:</b> Mine personnel in general.</p> <p><b>Method:</b> Interview mine personnel. View written procedures.</p>
3.7	Any charge in a designated blast which has not been fired or has not exploded is treated as misfire.	<p><b>Intent:</b> To verify compliance with MSIA regulation 8.24.</p> <p><b>Personnel:</b> Charging personnel in general.</p> <p><b>Method:</b> Interview charging personnel. View written procedures and inspect misfire record book.</p>
3.8	A sufficient depth of each blasthole is left uncharged to permit adequate stemming.	<p><b>Intent:</b> To verify that good charging practices are used.</p> <p><b>Personnel:</b> Charging personnel.</p> <p><b>Method:</b> Interview charging personnel. View written procedures and inspect charging in progress.</p>
3.9	The depth and condition of blastholes are checked prior to charging	<p><b>Intent:</b> To verify that drill holes are checked prior to charging for correct depth, blockages temperature etc as applicable.</p> <p><b>Personnel:</b> Charging personnel in general.</p> <p><b>Method:</b> Interview charging personnel. View written procedures and inspect charging in progress.</p>

## 4 Isolation & Tagging

### Isolation & Tagging

Point	Standard	Guideline
4.1	OUT OF SERVICE tags are used to warn against the use of plant which is unsafe to be used or which may be damaged if it is used.	<p><b>Intent:</b> To verify that OUT OF SERVICE tags are being used when required.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Observe the presence of tags in the workplace and that any defective equipment found has been tagged. Rubbish bins can also reveal evidence.</p>
4.2	DANGER tags are used to prohibit the use of plant on which an employee is undertaking work.	<p><b>Intent:</b> To verify that DANGER tags are being used when required.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> View procedures. Observe the presence of DANGER tags in the workplace and ensure that any employees observed undertaking work have placed tags.</p>
4.3	Each employee removes his own DANGER tag after completing the work and prior to leaving the worksite at the end of the shift.	<p><b>Intent:</b> To emphasize that display of a DANGER tag means that person is now working on the plant (and his safety will be jeopardized).</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> View procedures. Observe that the dates and times of tags placed in the workplace are current, and interview any person seen to remove more than one tag. Where possible check the current tag placement against workers present.</p>

4.4	OUT OF SERVICE tags are attached prior to removing DANGER tags when work on plant is not completed.	<p><b>Intent:</b></p> <p>Employees are required to remove their DANGER tag prior to leaving the worksite, and a mechanism is required to prevent the use of equipment which is unsafe. OUT OF SERVICE tags are used for this purpose.</p> <p><b>Personnel:</b></p> <p>Management and employees.</p> <p><b>Method:</b></p> <p>Review the procedures and enquire practice adopted by employees. The significance of the words 'prior to' is to eliminate an unprotected period.</p>
4.5	The effectiveness of devices used to isolate plant is proved prior to attaching DANGER or OUT OF SERVICE tags.	<p><b>Intent:</b></p> <p>To verify as far as is practicable that the plant is isolated from the respective energy sources. Accidents have occurred as a result of switching the wrong isolating device, incorrect labelling, and isolating mechanism failures.</p> <p><b>Personnel:</b></p> <p>Employees.</p> <p><b>Method:</b></p> <p>Discuss with employees currently undertaking work, and assess the method adopted for proving that the isolation is effective. This may be accomplished by visual inspection, opening drain valves, attempting to start the equipment, observing indicators, use of test instruments or other appropriate means.</p>

## 5 Tipping On Stockpiles

### Tipping On Stockpiles

Point	Standard	Guideline
5.1	The design is such that potential instability of the dump is minimised.	<p><b>Intent:</b> To verify compliance with MSIR 13.5(1)(a) for new and expanding structures. Waste dumps and heap leach dumps etc must last forever and constitute far greater volume than mineralised material, for which physical properties should be known from mine feasibility and planning studies.</p> <p><b>Personnel:</b> Geotechnical engineers, mine planning engineers, geologists, Quarry Manager.</p> <p><b>Method:</b> View technical and design documentation.</p>
5.2	Day and night where applicable effective route marking is provided for approach to tipping areas.	<p><b>Intent:</b> To verify compliance with MSIR 13.5(3) for all existing structures.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Visually inspect facility for adequacy. Look for route and dumping area demarcation and provision for night dumping.</p>
5.3	There is a rising, or at least flat, grade towards the dump edge.	<p><b>Intent:</b> To verify that driving hazards are properly managed.</p> <p><b>Personnel:</b> Quarry Manager and operators.</p> <p><b>Method:</b> Visual inspection of dump surface. Should be in dozer/grader procedures. Interview personnel.</p>
5.4	There is control of dust generation	<p><b>Intent:</b> To verify that possible dust generation within the operation is properly managed. Prevailing winds should not carry dump dust over haulroads, pit or plant operations, offices, workshops, camp, towns, public roads, etc. Material with special dust problems may require constant watering with sprays.</p> <p><b>Personnel:</b> Geologists, mine planning engineers, environmental engineers, ventilation officer, Quarry Manager.</p> <p><b>Method:</b> View technical and design documentation and plans.</p>

## 6 Emergency Plan

### Emergency Plan

Point	Standard	Guideline
6.1	The operation has prepared an emergency plan.	<p><b>Intent:</b> To verify that an emergency plan has been prepared for the site. As is required by MSIR 4.30.</p> <p><b>Personnel:</b> A senior manager</p> <p><b>Method:</b> View the Emergency Plan document.</p>
6.2	The emergency plan is known by the quarry personnel.	<p><b>Intent:</b> To verify that personnel are aware of their responsibilities and actions in an emergency.</p> <p><b>Personnel:</b> Managers, rescue team officials, supervisors etc.</p> <p><b>Method:</b> Question mine personnel as to their responsibilities in an emergency, and the detail of the plan.</p>
6.3	The emergency plan identifies the types of incidents which may affect the enterprise.	<p><b>Intent:</b> To verify that possible incidents likely to result in an emergency have been identified. For specific U/G requirements refer to MSIR 4.36(1).</p> <p><b>Personnel:</b> A senior manager.</p> <p><b>Method:</b> View the emergency plan documentation.</p>
6.4	On-site first aid services and facilities are available at the enterprise.	<p><b>Intent:</b> To verify that immediate first aid is available so as to stabilise accident victims prior to the arrival of off site or remote resources. Minimum requirements are laid down under MSIR 4.24 and 4.25.</p> <p><b>Personnel:</b> First aid personnel.</p> <p><b>Method:</b> View 1st aid facilities and equipment. Check training records.</p>



6.5	On-site fire fighting resources, include trained personnel.	<p><b>Intent:</b> To verify that fire fighting equipment is provided and that site personnel are trained to use the fire fighting equipment. In compliance with MSIR 4.30(2)(c).</p> <p><b>Personnel:</b> Mine emergency team coordinator. Employees.</p> <p><b>Method:</b> View fire fighting equipment and training records.</p>
6.6	The emergency plan includes a means of visitor control.	<p><b>Intent:</b> To verify the existence of a system to account for all persons after an evacuation.</p> <p><b>Personnel:</b> Manager.</p> <p><b>Method:</b> View the emergency plan.</p>

## 7 Occupational Health

### Occupational Health

Point	Standard	Guideline
7.1	Occupational health hazards have been identified.	<p><b>Intent:</b> To verify that the occupational health hazards at the site have been identified.</p> <p><b>Personnel:</b> Manager.</p> <p><b>Method:</b> View documentation. Determine if the health hazards of atmospheric contaminants, noise, chemicals (where applicable) are present and have been recognized.</p>
7.2	Control measures are in place to reduce occupational health hazards identified.	<p><b>Intent:</b> To verify that measures have been implemented to reduce those hazards.</p> <p><b>Personnel:</b> Manager, employees.</p> <p><b>Method:</b> Interview manager and selection of employees. Inspect quarry for those measures which have been put into place eg.dust suppression systems, noise enclosures etc.</p>
7.3	Control measures in place to reduce the occupational health hazards are effective.	<p><b>Intent:</b> To verify that actions taken to reduce the hazards do, in fact, work.</p> <p><b>Personnel:</b> Manager, employees.</p> <p><b>Method:</b> Inspect the measures implemented and gauge their effectiveness. View any records which show “before” and “after” results.</p>
7.4	Employees have been educated in the occupational health hazards identified.	<p><b>Intent:</b> To verify that employees are provided with information in respect of the health hazards present at the quarry.</p> <p><b>Personnel:</b> Manager, employees.</p> <p><b>Method:</b> Interview manager and selection of employees. View literature used in the educational program.</p>

7.5	The exposure of employees to the occupational health hazards identified has been evaluated.	<p><b>Intent:</b> To verify that the employees' exposure to the health hazards has been quantified.</p> <p><b>Personnel:</b> Manager, employees.</p> <p><b>Method:</b> Interview manager and selection of employees. View results of monitoring programs or assessments eg noise report, contaminant monitoring.</p>
7.6	Where necessary employees wear appropriate personal protective equipment to reduce exposure to occupational health hazards identified.	<p><b>Intent:</b> To verify that PPE is worn by employees where it is necessary to reduce occupational exposure to the health hazards.</p> <p><b>Personnel:</b> Manager, employees.</p> <p><b>Method:</b> Interview manager and selection of employees. View range of PPE made available. Do field observation of selected employees to determine if PPE is being worn (where it appropriate that it be worn).</p>

## 8 Mobile Plant

### Mobile Plant

Point	Standard	Guideline
8.1	There is a system of maintenance for mobile plant.	<p><b>Intent:</b> To verify that mobile plant is subject to a system of maintenance.</p> <p><b>Personnel:</b> Maintenance supervisor, and mobile plant operators.</p> <p><b>Method:</b> View maintenance program.</p>
8.2	A competent person is appointed to supervise maintenance.	<p><b>Intent:</b> To verify that a competent person supervises mobile plant maintenance.</p> <p><b>Personnel:</b> Maintenance supervisor.</p> <p><b>Method:</b> Interview maintenance supervisor.</p>
8.3	Records are kept for maintenance of mobile plant.	<p><b>Intent:</b> To verify that details of maintenance work carried out is recorded and retained.</p> <p><b>Personnel:</b> Maintenance supervisor.</p> <p><b>Method:</b> Interview maintenance supervisor, and view maintenance records.</p>
8.4	Records are kept for maintenance of mobile plant.	<p><b>Intent:</b> To verify that details of maintenance work carried out is recorded and retained.</p> <p><b>Personnel:</b> Maintenance supervisor.</p> <p><b>Method:</b> Interview maintenance supervisor, and view maintenance records.</p>
8.5	The faults are rectified in an acceptable time frame.	<p><b>Intent:</b> To verify that faults are rectified in a reasonable time frame.</p> <p><b>Personnel:</b> Maintenance supervisor, and mobile plant operators.</p> <p><b>Method:</b> View sample of records. Interview operators.</p>

8.6	There is a document to show that pre-start checks are carried out for mobile plant.	<p><b>Intent:</b> To verify that there are pre-start checklists for mobile plant.</p> <p><b>Personnel:</b> Maintenance supervisor, and mobile plant operators.</p> <p><b>Method:</b> View mobile plant checklist documentation.</p>
8.7	Mobile plant operators are trained and assessed for competency.	<p><b>Intent:</b> To verify that operators are trained and assessed for competency on each type of mobile plant that the operator is required to operate.</p> <p><b>Personnel:</b> Manager, mobile plant operators.</p> <p><b>Method:</b> Interview manager, mobile plant operators. View sample of training records.</p>
8.8	ROPS, where necessary, is provided.	<p><b>Intent:</b> To verify that items of mobile earthmoving plant are fitted with ROPS.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> View earthmoving plant and inspect sample of ROPS structures.</p>
8.9	Mobile plant inspected in operation, appeared to be in satisfactory condition.	<p><b>Intent:</b> To verify that the mobile plant at the quarry is in a sound condition.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> View sample of the mobile plant on site and assess condition.</p>
8.10	Radio communication from mobile plant is provided.	<p><b>Intent:</b> To verify that mobile plant is provided with radio communication.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> View sample of mobile plant and check for installation of radio communication facility.</p>

8.11	There is a system to make checks and approve short term contractor's mobile plant.	<p><b>Intent:</b> To verify that there is a system in place to check the condition of a contractor's mobile plant and approve of its use at the quarry.</p> <p><b>Personnel:</b> Manager, maintenance supervisor.</p> <p><b>Method:</b> View procedure documentation and records.</p>
8.12	The haul roads are maintained in satisfactory condition.	<p><b>Intent:</b> To verify that haul and access roads are maintained in a sound condition.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> View condition of haul and access roads and determine if they are regularly graded, watered, repaired, etc.</p>

## 9 Workshop

### Workshop

Point	Standard	Guideline
9.1	A workshop facility is provided for the maintenance of fixed and mobile plant.	<p><b>Intent:</b> To verify that there is a building provided for use as a workshop facility.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> View workshop.</p>
9.2	The facility is appropriate for the types of tasks undertaken.	<p><b>Intent:</b> To verify that the workshop is appropriate in respect of construction, size, layout, and equipment for the task required at the workshop.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect workshop.</p>
9.3	The workshop facility is maintained in a tidy condition.	<p><b>Intent:</b> To verify that there is attention to housekeeping in the workshop.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect workshop.</p>
9.4	Signs are provided to warn of possible eye, hearing and other hazards.	<p><b>Intent:</b> To verify that signage is displayed to warn persons of hazards associated with the use of various power tools eg. Angle grinders, drills etc.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect workshop for display of safety signs.</p>
9.5	Fire control equipment is available at the workshop.	<p><b>Intent:</b> To verify that fire control equipment eg. fire extinguishers, is located about the workshop.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect workshop for extinguishers.</p>

9.6	Machinery is maintained on a regular basis.	<p><b>Intent:</b> To verify that the workshop machinery and equipment maintenance is carried out.</p> <p><b>Personnel:</b> Workshop supervisor and personnel.</p> <p><b>Method:</b> Check maintenance records. Interview supervisor and personnel to determine how often maintenance is done.</p>
9.7	Electrical tools and equipment at the workshop is periodically checked and tagged.	<p><b>Intent:</b> To verify that quarterly inspection and tagging of electrical tools and equipment is carried out.</p> <p><b>Personnel:</b> Workshop supervisor, personnel, electrician.</p> <p><b>Method:</b> View records, and inspect a sample of power tools to see that tagging is attached and is current.</p>
9.8	Electrical welding machines are maintained in safe condition.	<p><b>Intent:</b> To verify that electric welding machines are regularly tested and inspected eg. leads, accessories, earth leakage circuit etc.</p> <p><b>Personnel:</b> Workshop supervisor, personnel, electrician.</p> <p><b>Method:</b> Check maintenance records. Interview above mentioned personnel.</p>
9.9	High pressure gas cylinders are restrained.	<p><b>Intent:</b> To verify that cylinders containing high pressure gases are secured during transport and storage ( AS 2030.1, sections 10.5 and 10.6 )</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect storage and transport arrangements.</p>
9.10	High pressure gas hoses and gauges are free from damage.	<p><b>Intent:</b> To verify that the high pressure gas hoses and gauges are in good condition.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect hoses and gauges.</p>



9.11	Proper material handling equipment is provided for the tasks undertaken.	<p><b>Intent:</b> To verify that suitable equipment is provided to enable maintainers to safely carry out their tasks.</p> <p><b>Personnel:</b> Workshop supervisor, maintenance personnel.</p> <p><b>Method:</b> Interview supervisor and maintenance personnel. View selection of materials handling equipment e.g. jacks, lifting devices, tyre cage etc.</p>
9.12	Adequate lighting is available for work to be carried out at the workshop.	<p><b>Intent:</b> To verify that the work areas in the workshop are illuminated.</p> <p><b>Personnel:</b> Workshop personnel.</p> <p><b>Method:</b> Inspect workshop for lighting and interview workshop personnel.</p>

## 10 Fixed Plant

### Fixed Plant

Point	Standard	Guideline
10.1	Fixed plant drives and moving parts are suitably guarded.	<p><b>Intent:</b> To verify that fixed plant drives and moving parts are equipped with guards or barriers.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect fixed plant guarding.</p>
10.2	Fixed plant has walkways and platforms.	<p><b>Intent:</b> To verify that walkways and platforms are installed at the fixed plant where access is required.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect fixed plant walkways and platforms.</p>
10.3	The walkways and platforms provide access to major items for both operation and maintenance.	<p><b>Intent:</b> To verify that walkways and platforms are installed at the fixed plant where access is required.</p> <p><b>Personnel:</b> Fixed plant operators and maintenance personnel.</p> <p><b>Method:</b> Interview plant operators and maintenance personnel to determine if they have difficulty accessing plant items for routine operation and maintenance.</p>
10.4	Guard railing is provided for walkways and platforms.	<p><b>Intent:</b> To verify that platforms and walkways are equipped with guard railings.</p> <p><b>Personnel:</b> N/A</p> <p><b>Method:</b> Inspect walkways and platforms for guard railing installation.</p>

10.5	Items of fixed plant have a primary isolator.	<p><b>Intent:</b></p> <p>To verify that the major items of fixed plant can be electrically isolated via a primary isolator.</p> <p><b>Personnel:</b></p> <p>N/A</p> <p><b>Method:</b></p> <p>Inspect primary isolation facility eg. switch room, MCC, etc.</p>
10.6	The items of fixed plant have a local isolator.	<p><b>Intent:</b></p> <p>To verify that local isolators are available at items of fixed plant.</p> <p><b>Personnel:</b></p> <p>N/A</p> <p><b>Method:</b></p> <p>Inspect plant for installation of local isolators.</p>
10.7	The isolation switches are labelled.	<p><b>Intent:</b></p> <p>To verify that isolation switches are clearly labelled and identified as to which item of fixed plant it applies.</p> <p><b>Personnel:</b></p> <p>N/A</p> <p><b>Method:</b></p> <p>View selection of isolation switches and determine if they are clearly labelled.</p>
10.8	The isolation switches have provision for securing isolation tags.	<p><b>Intent:</b></p> <p>To verify that the isolation switches have a means by which an isolation tag can be securely fixed.</p> <p><b>Personnel:</b></p> <p>N/A</p> <p><b>Method:</b></p> <p>View selection of isolation switches and determine their suitability for tags to be securely attached.</p>
10.9	The hazards associated with the manual cleaning of fixed plant have been identified.	<p><b>Intent:</b></p> <p>To verify that the hazards associated with the manual cleaning of the fixed plant have been determined.</p> <p><b>Personnel:</b></p> <p>Manager, fixed plant supervisor, plant operators.</p> <p><b>Method:</b></p> <p>View hazard identification documentation eg. Job Safety Analysis, and determine if cleaning of the plant has been addressed.</p>

10.10

Procedures for the manual cleaning of fixed plant ensure that where a hazard exists the plant directly involved is stopped.

**Intent:**

To verify that there are procedures in place that address fixed plant cleaning and that those procedures call for that section of the plant, where a hazard exists, is shut down.

**Personnel:**

Manager, fixed plant supervisor, plant operators.

**Method:**

View procedures and interview plant operators.