

**Quarry Blasting**

Business Name:		ABN:
Business Address:		
Contact Person:	Phone:	Email:

**THIS RISK ASSESSMENT IS APPROVED BY THE PCBU ON THIS PROJECT**

Under the Work Health and Safety Regulation (WHS Regulation), a person conducting a business or undertaking (PCBU) is required to ensure that a RISK ASSESSMENT is prepared before the proposed work starts.

Full Name:		
Signature:	Title:	Date:

**CLIENT OR PRINCIPAL CONTRACTOR DETAILS**

Client:	SCOPE OF WORKS
Project Name:	
Project Address:	
Project Manager:	
Contact Phone:	
Date Risk Assessment supplied to Project Manager:	



RISK MATRIX									
LIKELIHOOD	INSIGNIFICANT	MINOR	MODERATE	MAJOR	CATASTROPHIC	SCORE	ACTION	HIERARCHY OF CONTROLS	
ALMOST CERTAIN	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4 ACUTE			<b>Elimination</b> Remove the hazard.	
LIKELY	2 MODERATE	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4A ACUTE	DO NOT PROCEED	<b>Substitution</b> Replace the hazard.	
POSSIBLE	1 LOW	2 MODERATE	3 HIGH	4 ACUTE	4 ACUTE	3H HIGH	Review before work starts.	Isolation Isolate People from the hazard	
UNLIKELY	1 LOW	1 LOW	2 MODERATE	3 HIGH	4 ACUTE	2M MODERATE	Ensure control measures in place.	<b>Engineering</b> Isolate the hazard	
RARE	1 LOW	1 LOW	2 MODERATE	3 HIGH	3 HIGH	1L LOW	Monitor and keep records.	<b>Administrative</b> Change	
								<b>PPE</b>	

  

Risk Rating & Required Action:	
<b>4A</b>	Stop work. The risk is intolerable. Eliminate the hazard or redesign the activity before proceeding. A Safe Work Method Statement (SWMS) or higher-level authorisation is required.
<b>3H</b>	Review and approve additional controls for the task parts. Senior supervisor sign-off needed.
<b>2M</b>	Ensure all nominated controls are in place and effective. Proceed with caution; monitor conditions.
<b>1L</b>	Proceed, following standard operating procedures. Monitor and keep records.

  

Consequence Scale:			
Consequence	People (injury/illness)	Project / Assets	Compliance / Reputation
<b>Catastrophic</b>	Fatality or permanent total disability	project shutdown	Significant regulator intervention; criminal prosecution
<b>Major</b>	Serious injury/illness (hospital > 5 days)	critical delay	Improvement notice; major media coverage
<b>Moderate</b>	Medical-treatment injury; lost-time > 1 day	moderate delay	Minor breach; adverse client comment
<b>Minor</b>	First-aid only, no lost time	negligible delay	Isolated non-conformance
<b>Insignificant</b>	No injury	no schedule impact	Deviation caught and corrected on site

  

**Notes on Hierarchy of Controls:**  
Remember to apply controls in the preferred order shown by the coloured pyramid:

1. **Eliminate**
2. **Substitute**
3. **Isolate**
4. **Engineering**
5. **Administrative**
6. **PPE**

Always document **why** a lower-order control is accepted if elimination or substitution is not reasonably practicable.

*aligned with Safe Work Australia's Managing the risk of fatigue at work (2023) and ISO 45001:2018 clauses 6–8.*

JOB STEP	POTENTIAL HAZARDS	IR	CONTROL MEASURES	RR
SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
1. Regulatory Compliance & Blast Governance	<ul style="list-style-type: none"> <li>• Non-compliance with WHS Act 2011, WHS Regulations and relevant Australian Standards for explosives and blasting</li> <li>• Inadequate understanding of legal duties by PCBUs, officers and supervisors</li> <li>• Failure to maintain current blasting licences and authorisations for shotfirers and explosives handlers</li> <li>• Lack of formal system to track and implement changes in legislation, codes of practice and Australian Standards</li> <li>• Insufficient governance over contractor blasting activities and shared duties in a multi-PCBU environment</li> <li>• Inadequate recordkeeping of blast designs, risk assessments, misfire investigations and incident reports</li> <li>• Poor integration of blasting requirements into site WHS Management System and contractor management processes</li> </ul>	4A	<ul style="list-style-type: none"> <li>• Establish and maintain a formal legal register covering WHS Act 2011, WHS Regulations, Explosives legislation and relevant Australian Standards and codes of practice for quarry blasting</li> <li>• Define and document blasting governance structure including PCBU, officer and supervisor responsibilities and reporting lines</li> <li>• Implement a licence and competency management system to verify and monitor currency of shotfirer licences, security clearances and explosives handling qualifications</li> <li>• Embed legislative requirements for blasting into site WHS procedures, blasting procedures and contractor management standards</li> <li>• Conduct periodic compliance audits against internal blasting procedures, legal requirements and industry best practice, with documented corrective actions</li> <li>• Ensure all blasting related risk assessments and blast plans are reviewed and approved by competent personnel and retained for statutory periods</li> <li>• Integrate contractor blasting activities into the site WHS Management System, including clear allocation of shared responsibilities and consultation arrangements</li> <li>• Provide targeted training for managers and supervisors on their due diligence obligations relating to blasting control</li> <li>• Implement a controlled document management system to manage updates to blasting policies, standards and procedures</li> </ul>	3H
2. Blast Design & Geological Assessment Systems	<ul style="list-style-type: none"> <li>• Inadequate or outdated blast design leading to excessive fragmentation, flyrock, airblast overpressure or poor rock fragmentation</li> <li>• Insufficient geological and technical assessment of blast rock surfaces, joints, bedding planes and faults</li> <li>• Poor integration of geotechnical data into blast patterns and loading plans</li> <li>• Inadequate design review and approval process by a competent blasting engineer or shotfirer</li> <li>• Failure to account for proximity to public roads, neighbouring properties, utilities and environmentally sensitive areas</li> </ul>	4A	<ul style="list-style-type: none"> <li>• Implement a formal blast design procedure requiring use of competent and authorised blasting personnel and, where necessary, external blasting engineers</li> <li>• Require documented geotechnical assessments of quarry faces, including mapping of discontinuities, bedding, weathering and potential instability zones prior to design</li> <li>• Establish a standardised blast design template that incorporates burden, spacing, hole depth, charge weights, delay timing and exclusion distances</li> <li>• Introduce a formal review and approval process for every blast plan, including sign-off by a competent shotfirer and quarry manager</li> <li>• Mandate use of accurate survey systems (e.g. GPS, total station, laser scanning) to locate holes and confirm collar positions against design</li> <li>• Incorporate vibration and airblast prediction modelling and site-specific scaled distance calculations into design procedures</li> <li>• Maintain a blast performance database (fragmentation, throw, toe, vibration, flyrock) and require post-blast reviews to refine future designs</li> </ul>	2M

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	<ul style="list-style-type: none"> <li>Lack of formal process for learning from previous blast performance, incidents and near misses</li> <li>Inaccurate borehole survey data or collar coordinates due to inadequate survey systems</li> </ul>		<ul style="list-style-type: none"> <li>Include risk assessment for off-site receptors, underground services, structures and overhead utilities in all blast plans</li> <li>Ensure change management processes cover modifications to blast designs, hole layouts or charge patterns after initial approval</li> </ul>	
3. Explosives Procurement, Storage & Security Management	<ul style="list-style-type: none"> <li>Inadequate vetting of explosives suppliers and transport providers</li> <li>Non-compliant storage facilities or magazines for explosives, detonators and initiating systems</li> <li>Poor segregation of detonators and bulk explosives leading to increased risk of unintended initiation</li> <li>Insufficient control of keys, access codes and security arrangements for explosives magazines</li> <li>Inaccurate inventory control and stock reconciliation increasing risk of loss or theft</li> <li>Failure to follow Australian explosives legislation and standards for transport, storage and security</li> <li>Lack of emergency arrangements for explosives-related security issues or fire incidents</li> </ul>	4A	<ul style="list-style-type: none"> <li>Implement an approved supplier program for explosives and blasting accessories, requiring evidence of compliance with explosives transport and storage legislation</li> <li>Design and maintain explosive magazines in accordance with relevant Australian standards and regulatory requirements, including zoning and separation distances</li> <li>Establish written procedures for segregation, storage, inventory management and issuance of explosives and detonators</li> <li>Introduce a secure access control system for magazines (keys, locks, codes) with strictly limited authorised personnel and a documented key register</li> <li>Implement a robust inventory reconciliation system with daily and batch-based counts, investigation of discrepancies and mandatory reporting of losses</li> <li>Conduct regular security assessments of explosives storage and transport arrangements, including CCTV, zoning and alarm systems where appropriate</li> <li>Develop and test emergency response procedures for explosives security breaches, fire in magazine areas and unauthorised access</li> <li>Ensure explosives transport is covered under contractor management arrangements, including verification of DG transport licences and vehicle compliance</li> <li>Provide specific training for authorised personnel on explosives security, storage protocols and legal obligations</li> </ul>	2M
4. Contractor & Shotfirer Competency Management	<ul style="list-style-type: none"> <li>Engagement of blasting contractor or shotfirers without appropriate licences, experience or verification of competency</li> <li>Inadequate induction of contractors to site-specific hazards, quarry faces and blast rock conditions</li> <li>Lack of clear allocation of roles and responsibilities between principal contractor, quarry operator and blasting contractor</li> <li>Insufficient supervision or oversight of contractor blasting activities by the quarry operator</li> </ul>	3H	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M

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	<ul style="list-style-type: none"> <li>Failure to verify ongoing competency and performance of shotfirers and blast crews</li> <li>Inadequate management of subcontractors and labour hire personnel involved in blasting</li> </ul>		[REDACTED]	
5. Blast Planning, Authorisation & Change Management	<ul style="list-style-type: none"> <li>Lack of formalised blast planning process leading to inconsistent risk assessment and control selection</li> <li>Inadequate review of weather conditions, blast timing and surrounding activities prior to authorisation</li> <li>Poor communication of planned blast parameters and exclusion zones to all affected parties</li> <li>Uncontrolled changes to blast design timing or sequencing after authorisation</li> <li>Failure to coordinate blasting activities with other quarry operations and neighbouring sites</li> </ul>	4A	[REDACTED]	2M
6. Exclusion Zones, Access Control & Public Interface	<ul style="list-style-type: none"> <li>Inadequate determination of exclusion zones for workers, mobile and public areas during blasting</li> <li>Uncontrolled access to active blasting areas by workers, contractors or visitors</li> <li>Insufficient controls to prevent public access via roads, easements, walking tracks or adjoining properties</li> <li>Failure to manage nearby public road closures, traffic control and notification requirements</li> <li>Inadequate warning systems (sirens, signage, guards) to prevent people entering blast zones</li> </ul>	4A	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>Poorly defined responsibilities for securing blast areas and clearance prior to firing</li> </ul>		[REDACTED]	
7. Ground Control, Bench Stability & Blast Rock Surface Management	<ul style="list-style-type: none"> <li>Unstable quarry faces, benches and blast rock surfaces creating risk of rockfalls, slope failure and bench collapse</li> <li>Inadequate geotechnical assessment and monitoring of highwalls and blast-damaged rock surfaces</li> <li>Poorly managed scaling and clean-up leading to loose rock above working areas and access roads</li> <li>Failure to control worker access to hazardous blast rock surfaces after firing</li> <li>Inadequate design or maintenance of catch berms and protective bunds behind blasting faces</li> <li>Progressive deterioration of rock mass due to repeated blasting without systematic review</li> </ul>	4A	[REDACTED]	2M
8. Drill & Blast Interface and Equipment Management	<ul style="list-style-type: none"> <li>Poor coordination between drilling and blasting functions leading to incorrect hole positions, depths or diameters</li> <li>Inadequate control of drill pattern quality and compliance with blast design</li> <li>Use of unsuitable or poorly maintained drilling equipment impacting hole integrity and safety</li> <li>Failure to identify and manage intersecting old workings, voids or water-bearing zones during drilling</li> <li>Inadequate separation of drilling, loading and stemming operations from other quarry traffic</li> </ul>	3H	[REDACTED]	2M

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			[REDACTED]	
9. Misfire, Flyrock & Unplanned Initiation Management	<ul style="list-style-type: none"> <li>Inadequate systems for identifying, managing and investigating misfires</li> <li>Insufficient controls to manage flyrock risk from blast rock surfaces and unexpected projection distances</li> <li>Poor quality control over explosives loading and initiation systems increasing risk of unplanned initiation</li> <li>Inadequate procedures for dealing with lightning, electrical storms and electromagnetic interference during blasting</li> <li>Lack of clear authority and process for declaring a misfire zone safe and re-opening it to work</li> </ul>	4A	[REDACTED]	2M
10. Dust, Fumes, Noise & Vibration Management	<ul style="list-style-type: none"> <li>Excessive blasting fumes impacting workers or neighbouring properties due to poor design or adverse weather</li> <li>Inadequate control of dust generated dust obscuring visibility and impacting respiratory health</li> <li>Non-compliance with noise and vibration limits affecting nearby residents, structures and services</li> <li>Lack of monitoring systems for vibration, airblast and fume events</li> <li>Insufficient integration of environmental and community constraints into blast timing and design</li> </ul>	3H	[REDACTED]	2M

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11. Traffic, Mobile Plant & Interface with Blasting Areas	<ul style="list-style-type: none"> <li>Interaction between heavy mobile plant and blasting activities on active benches and haul roads</li> <li>Inadequate traffic management around areas of active blast preparation and post-blast mucking</li> <li>Poor coordination between loading, hauling and blasting schedules leading to plant encroaching on blast zones</li> <li>Insufficient controls for visitor and light vehicle access near blast rock surfaces and active blasting sites</li> </ul>	3H	[REDACTED]	2M
12. Communication, Consultation & Training Systems	<ul style="list-style-type: none"> <li>Inadequate communication of blasting risks, schedules and control measures to workers, contractors and visitors</li> <li>Limited worker consultation on blasting-related hazards and access to procedures</li> <li>Insufficient training on site-specific blasting risks, blast rock surface hazards and emergency responses</li> <li>Reliance on informal communication channels for critical blasting information</li> </ul>	3H	[REDACTED]	2M
13. Emergency Preparedness & Incident Management for Blasting	<ul style="list-style-type: none"> <li>Lack of integrated emergency response planning for blasting incidents, misfires or slope failures</li> <li>Inadequate drills and training for responders dealing with explosives-related emergencies</li> </ul>	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>Poor coordination with external emergency services regarding blasting-specific hazards</li> <li>Insufficient investigation and learning processes following blasting incidents or near misses</li> </ul>		<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	
14. Documentation, Records & Continuous Improvement	<ul style="list-style-type: none"> <li>Incomplete or inaccurate documentation of blast plans, risk assessments, performance data and incidents</li> <li>Failure to retain statutory records for blasting activities and explosives management</li> <li>Lack of systematic review of blasting performance data to drive improvements</li> <li>Inconsistent application of lessons learned across different quarry sites or contractors</li> </ul>	2M	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	1L

SAMPLE

**EMERGENCY RESPONSE – CALL 000 FOR EMERGENCIES**

Ensure to have an Emergency Management Plan in place as well as adequate numbers of trained first aid staff with easy access to fully stocked first aid kits, rescue equipment, material safety data sheets, adequate access to emergency communication equipment and fire-fighting equipment suitable for all classes of fire and ignition sources.

**LEGISLATIVE REFERENCES**

RELEVANT LEGISLATION AND CODES OF PRACTICE. DELETE THE LEGISLATIVE REFERENCES FOR ANY STATE THAT ARE NOT APPLICABLE

**Queensland & Australian Capital Territory**

Work Health and Safety Act 2011  
 Work Health and Safety Regulations 2011  
 Legislation QLD: <https://www.worksafe.qld.gov.au/laws-and-compliance/work-health-and-safety-laws>  
 Codes of Practice QLD: <https://www.worksafe.qld.gov.au/laws-and-compliance/codes-of-practice>  
 Legislation ACT: <https://www.worksafe.act.gov.au/laws-and-compliance/acts-and-regulations>  
 Codes of Practice ACT: <https://www.worksafe.act.gov.au/laws-and-compliance/codes-of-practice>

**Victoria**

Occupational Health and Safety Act 2004  
 Occupational Health and Safety Regulations 2017  
 Legislation VIC: <https://www.worksafe.vic.gov.au/occupational-health-and-safety-act-and-regulations>  
 Codes of Practice VIC: <https://www.worksafe.vic.gov.au/compliance-codes-and-codes-practice>

**New South Wales**

Work Health and Safety Act 2011  
 Work Health and Safety Regulations 2025  
 Legislation NSW: <https://www.safework.nsw.gov.au/legal-obligations/legislation>  
 Codes of Practice NSW: <https://www.safework.nsw.gov.au/resource-library/list-codes-of-practice>

**Western Australia**

Work Health and Safety Act 2020  
 Work Health and Safety Regulations 2022  
 Legislation Western Australia: <https://www.commerce.wa.gov.au/worksafe/legislation>  
 Codes of Practice WA: <https://www.commerce.wa.gov.au/worksafe/codes-practice>

**Northern Territory**

Work Health and Safety (National Uniform Legislation) Act 2011  
 Work Health and Safety (National Uniform Legislation) Regulation 2011  
 Legislation NT: <https://worksafe.nt.gov.au/laws-and-compliance/workplace-safety-laws>  
 Codes of Practice NT: <https://worksafe.nt.gov.au/laws-and-compliance/codes-of-practice>

**Safe Work Australia Links**

Law and Regulation (All States): <https://www.safeworkaustralia.gov.au/law-and-regulation>  
 Model Codes of Practice: <https://www.safeworkaustralia.gov.au/resources-publications/model-codes-of-practice>

**South Australia**

Work Health and Safety Act 2012 (SA)  
 Work Health and Safety Regulations 2012 (SA)  
 Legislation for SA: <https://www.safework.sa.gov.au/resources/legislation>  
 Codes of Practice for SA: <https://www.safework.sa.gov.au/workplaces/codes-of-practice#COPs>

**Model Codes of Practice**

- Managing noise and preventing hearing loss at work
- Confined spaces
- Labelling of workplace hazardous chemicals
- Managing risks of hazardous chemicals in the workplace
- Welding processes
- First aid in the workplace
- Managing the risk of falls at workplaces
- Hazardous manual tasks
- Managing the risk of falls in housing construction
- Managing electrical risks in the workplace
- Demolition work
- Excavation work
- Work health and safety consultation, cooperation and coordination
- Managing the work environment and facilities
- How to manage work health and safety risks
- Managing risks of plant in the workplace
- Construction work

**Tasmania**

Work Health and Safety Act 2012  
 Work Health and Safety (Transitional and Consequential Provisions) Act 2012  
 Work Health and Safety Regulations 2012  
 Work Health and Safety (Transitional) Regulations 2012  
 Legislation for TAS: <https://worksafe.tas.gov.au/topics/laws-and-compliance/acts-and-regulations>  
 Codes of Practice for TAS: <https://worksafe.tas.gov.au/topics/laws-and-compliance/codes-of-practice>

Details of permits, licenses or access required by regulatory bodies (add or delete as required):

- Permits from local council
- Authorisation to commence work
- Any required documents.