

Drilling Safety

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:	

SAMPLE

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			Elimination Remove the hazard.	
LIKELY	2 MODERATE	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4A ACUTE	DO NOT PROCEED	Substitution 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.	Engineering Isolate the hazard	
RARE	1 LOW	1 LOW	2 MODERATE	3 HIGH	3 HIGH	1L LOW	Monitor and keep records.	Administrative Change	
								PPE	

Risk Rating & Required Action:	
4A	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.
3H	Review and approve additional controls before task starts. Senior supervisor sign-off needed.
2M	Ensure all nominated controls are in place and effective. Proceed with caution; monitor conditions.
1L	Proceed, following standard operating procedures. Monitor and keep records.

Consequence Scale:			
Consequence	People (injury/illness)	Project / Assets	Compliance / Reputation
Catastrophic	Fatality or permanent total disability	project shutdown	Significant regulator intervention; criminal prosecution
Major	Serious injury/illness (hospital > 5 days)	critical delay	Improvement notice; major media coverage
Moderate	Medical-treatment injury; lost-time > 1 day	moderate delay	Minor breach; adverse client comment
Minor	First-aid only, no lost time	negligible delay	Isolated non-conformance
Insignificant	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. WHS Governance, Leadership and Legal Compliance	<ul style="list-style-type: none"> Lack of senior management commitment to drilling safety and WHS Act 2011 due diligence duties Inadequate WHS policies and procedures covering all drilling activities (bench drill, pedestal drill, magnetic drill, mill drill press, radial arm drill, overhead drilling, high-torque drilling) Failure to consult workers and Health and Safety Representatives (HSRs) on drilling risks and controls No formal process to review compliance with WHS Act 2011, WHS Regulations and relevant Australian Standards (e.g. AS 4024 series for machinery safety) Conflicting production pressures leading to unsafe decisions and tolerance of shortcuts Inadequate allocation of resources (time, budget, competent people) to manage drilling risks Lack of documented responsibilities and accountability for drilling plant management and supervision 	4A	<ul style="list-style-type: none"> Establish a documented WHS management system that explicitly covers drilling operations, aligned with WHS Act 2011, WHS Regulations and AS 4500 Define and document officer due diligence obligations in relation to drilling safety, including regular reporting to the Board or senior leadership Develop a company-wide Drilling Safety Policy endorsed by senior management, covering all drilling equipment (bench drill, drill press, pedestal drill, mill, mill radial arm drill, horizontal borer, magnetic drill, high-torque and core drilling equipment) Implement a formal WHS consultation process with workers and HSRs to identify and review drilling hazards and controls at least annually and after incidents or changes Integrate drilling safety performance indicators into management KPIs (e.g. machine guarding compliance, pre-use inspection completion rates, training completion) Ensure roles and responsibilities for drilling plant procurement, maintenance, training, supervision and incident management are clearly documented in position descriptions and procedures Conduct regular internal and external WHS compliance audits that include sampling of drilling machinery and associated systems of work Establish a documented Management of Change (MoC) procedure for introducing new drilling technologies, tooling, high-torque equipment or changes to layouts and processes Require management sign-off of any deviations from standard drilling procedures following a documented risk assessment 	3H
2. Plant Procurement, Design and Suitability of Drilling Equipment	<ul style="list-style-type: none"> Purchase of drilling machines that not comply with relevant Australian Standards or have inadequate guarding (e.g. imported bench drills, drill presses, radial arm drills, mill drills, magnetic drills) Selection of drilling equipment not suited to the task, material, or workpiece size, increasing likelihood of entanglement, kickback, or workpiece ejection Lack of torque-limiting or overload protection on high-torque drilling machinery and core drilling equipment Insufficient consideration of overhead drilling tasks and ergonomic design, 	4A	<ul style="list-style-type: none"> Implement a formal plant procurement procedure requiring pre-purchase risk assessment of all drilling machinery against WHS Regulations and AS 4024 series for machinery safety Specify minimum safety features for all drilling plant, including emergency stop devices, fixed and interlocked guards, torque limiters, spindle brakes and chuck guards where applicable Require suppliers to provide declarations of conformity, risk assessments, manuals and training materials for bench drills, pedestal drills, drill presses, mill drills, magnetic drills and radial arm drills Ensure all new high-torque drilling machinery and core drilling equipment incorporate torque-limiting devices and overload protection suitable for the applications Select magnetic drills with rated holding force and fail-safe features appropriate for material thickness, position (horizontal, vertical, overhead) and environmental conditions Incorporate noise and vibration performance criteria into the selection of drilling plant and tooling, preferring low-vibration designs and balanced rotating assemblies Require integrated guarding solutions from the manufacturer for belts, pulleys, rotating spindles, chucks and moving tables, avoiding ad hoc or retrofitted guards unless designed by a competent person 	2M

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	<p>leading to fatigue and musculoskeletal disorders</p> <ul style="list-style-type: none"> • Magnetic drills with inadequate holding force for material thickness, surface condition or orientation (vertical, overhead) leading to sudden detachment • Inadequate noise and vibration performance of selected equipment, increasing long-term hearing and vibration-related health risks • Failure to specify compatible guarding for rotating parts, chucks, belts, pulleys and moving tables on drill presses and mill drills 		<ul style="list-style-type: none"> • Ensure drilling plant is selected with appropriate capacity and rigidity for the largest intended workpiece to minimise workpiece instability and clamping issues • Maintain a register of approved drilling plant types and models, including their intended uses, limitations and any specific controls 	
3. Guarding, Interlocks and Physical Safety Systems	<ul style="list-style-type: none"> • Inadequate or missing guards on rotating components (drill chucks, spindles, belts, pulleys, drive shafts) leading to entanglement of hands, clothing or hair • Interlocks on drill press guards, mill drills or magnetic drills bypassed or defeated, allowing operation with guard open • Poorly designed guards that obstruct visibility or access, encouraging operators to remove or prop guards open • Lack of chip guards or shields, resulting in ejection of hot metal or timber chips causing eye and skin injuries • Inadequate restraint or guarding for moving tables and automated feeds on mill drills, horizontal borers or radial arm drills • Failure of emergency stop devices due to poor design, location or maintenance • Unprotected nip points and crush points associated with workpiece supports, vices and clamping systems on drilling machines 	4A	<ul style="list-style-type: none"> • Design and implement a standardised guarding specification for all drilling equipment consistent with AS 4024, covering chuck guards, belt guards, spindle shrouds and table movement guards • Ensure all guards with access to moving parts are interlocked so the plant cannot start or continue to operate while the guard is open or removed, unless risk-assessed and controlled for specific maintenance modes • Prohibit the bypassing or defeating of interlocks through a documented policy, supported by regular inspections and disciplinary procedures for intentional tampering • Provide purpose-designed transparent chip shields on drill presses, pedestal drills, mill drills and radial arm drills to protect from flying chips without compromising visibility • Install appropriately designed fixed or adjustable guards on all exposed belts, pulleys, gears and mechanical drives associated with drilling machinery • Ensure all emergency stop devices are clearly identified, unobstructed, tested regularly and located within easy reach of the operator for bench, pedestal, radial arm and mill drills • Use engineered workpiece guards, vices, clamps and fixtures that eliminate or minimise hand-holding of workpieces on drills and magnetic drills, particularly for metal hole saw operations and high-torque tasks • Engage a competent person (e.g. mechanical engineer or machine safety specialist) to assess existing drilling plant guarding and design any required retrofits • Document and communicate minimum guarding requirements and verification checks as part of pre-use and periodic plant inspections 	2M
4. Plant Registration, Inspection,	<ul style="list-style-type: none"> • Absence of a centralised plant register for drilling machinery, resulting in 	3H		2M

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Maintenance and Isolation Systems	<p>untracked equipment and missed inspections</p> <ul style="list-style-type: none"> • Inadequate preventive maintenance program for drill presses, pedestal drills, mill drills, radial arm drills, horizontal borers and magnetic drills • Failure to inspect and service safety-critical components such as chucks, spindles, interlocks, emergency stops, guarding fasteners and magnetic bases • Lack of a lockout/tagout (LOTO) procedure for maintenance and repair activities on drilling plant • Use of damaged or worn drilling machines, vices, clamps or stands, leading to workpiece instability or component failure • Inconsistent pre-start inspection practices for pedestal drills, drill presses, magnetic drills and mill drills • Failure to identify and remove from service defective high-torque drilling tools and core drilling 		[REDACTED]	
5. Competency, Licensing and Training for Drilling Operations	<ul style="list-style-type: none"> • Workers operating high-torque drilling machinery, drill presses, magnetic drills and radial arm drills with inadequate competency • Insufficient training on specific hazards of overhead drilling tasks, manual drilling of screw holes and core drilling into concrete floors • Lack of understanding of correct clamping, workpiece support and tool selection when boring holes in metal or timber • No refresher training to address drift from safe procedures or new equipment introductions 	4A	[REDACTED]	2M

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	<ul style="list-style-type: none"> Supervisors lacking competency to verify safe setups and challenge unsafe drilling practices Inadequate training of contractors and temporary workers on site-specific drilling risks and systems 		[REDACTED]	
6. Workpiece Clamping, Fixturing and Stability Management	<ul style="list-style-type: none"> Workpieces not securely clamped on drill presses, pedestal drills, mill drills or radial arm drills, leading to spinning, kickback or ejection Reliance on hand-holding of materials when manually drilling screw holes or using metal hole saws Inadequate or unsuitable vices, jigs or fixtures for irregular, heavy or long workpieces Poorly supported workpieces during overhead drilling tasks and core drilling into floors, leading to sudden movement or collapse Use of worn, damaged or improvised clamping devices on drilling machines Insufficient guidance on clamping of different materials (metal, timber) and operations (pilot holes, large-diameter holes, core drills) 	4A	[REDACTED]	2M
7. Tooling, Bits, Hole Saws and Consumable Management	<ul style="list-style-type: none"> Use of incorrect drill bits, carbide tipped hole saws or core drilling tools for the material or speed, increasing risk of breakage or sudden torque reaction Use of blunt, damaged or worn drill bits and metal hole saws creating excessive force, heat and vibration Inappropriate storage and handling of sharp tooling leading to lacerations Lack of systems to match tooling to specific machines (e.g. mill drills vs handheld drills) and speed ranges 	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> Uncontrolled use of non-genuine or low-quality tooling with unpredictable failure characteristics Inadequate management of coolants and cutting fluids, causing overheating, smoke, burns or environmental contamination 		[REDACTED]	
8. Electrical, Power Supply and Magnetic Base Integrity	<ul style="list-style-type: none"> Damaged electrical cords, plugs and switches on drill presses, pedestal drills, mill drills and magnetic drills causing electric shock or fire Inadequate residual current device (RCD) protection for portable drilling equipment and magnetic drills Failure of magnetic drill bases due to insufficient power, poor surface condition, incorrect material thickness or power loss Use of multi-adaptors and overloaded power boards to operate several drilling machines simultaneously Uncontrolled use of extension leads across walkways and work areas, creating trip and electrical hazards Lack of testing and logging regime for electrically powered drilling equipment 	3H	[REDACTED]	2M
9. Layout, Housekeeping and Access Around Drilling Plant	<ul style="list-style-type: none"> Congested workspaces around drill presses, pedestal drills, mill drills and radial arm drills resulting in trip, crush or entanglement risks Poor housekeeping around drilling stations, including accumulated swarf, offcuts and spilled coolant increasing slip and trip hazards Inadequate clearance around drilling machines for safe handling of large workpieces and material flow Uncontrolled pedestrian traffic moving through active drilling areas 	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> • Insufficient lighting at drilling workstations, especially for precision work and overhead drilling tasks • Inadequate storage for materials and tooling, leading to items being stacked precariously on or near drilling machines 		[REDACTED]	
10. Ergonomics, Manual Handling and Overhead Drilling Management	<ul style="list-style-type: none"> • Sustained awkward postures during overhead drilling tasks leading to shoulder, neck and back injuries • Manual handling of heavy drilling equipment (magnetic drills, core drills, mill drill vices) without mechanical aids • Repetitive drilling of screw holes or pilot holes without ergonomic consideration, causing repetitive strain injuries • Inadequately designed work heights and benches for bench drilling, drill presses and pedestal mills leading to bending and twisting • Handling long, heavy or awkward workpieces on drilling machines without appropriate supports or team lifting 	3H	[REDACTED]	2M
11. Noise, Vibration, Dust, Fumes and Environmental Exposures	<ul style="list-style-type: none"> • Excessive noise levels from drilling in metal, use of metal hole saws and high-speed drilling machines leading to noise-induced hearing loss • Hand-arm vibration exposure from high-torque drilling machinery, core drills and magnetic drills used for prolonged periods • Generation of metal, timber and concrete dust during drilling, particularly when drilling anchors into floors or boring large holes 	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> Exposure to fumes, mist or smoke from cutting oils, coolants and heated materials during drilling and mill drilling Inadequate local exhaust ventilation or dust collection for drilling machines producing fine particulate 		[REDACTED]	
12. Fatigue, Work Scheduling and Production Pressure in Drilling Activities	<ul style="list-style-type: none"> Extended periods of repetitive drilling work leading to fatigue, inattention and increased error rates High production targets for drilling operations that encourage bypassing of guards, clamping or pre-start checks Inadequate rest breaks during intensive drilling tasks (e.g. large volumes of overhead drilling or core drilling anchors to floor) Shift work and overtime affecting alertness of operators using high-torque drilling machinery and complex mill drilling Psychosocial stress related to deadlines, impacting judgment and willingness to report issues 	3H	[REDACTED]	2M
13. Isolation of Services, Structural Integrity and Hidden Hazard Management	<ul style="list-style-type: none"> Drilling into concealed electrical, gas, water or data services when core drilling anchors into floors, walls or ceiling structures Compromising structural elements when boring large holes or drilling without engineering assessment Inadequate marking and control of exclusion zones below overhead drilling and floor drilling activities Lack of verification of substrate condition before attaching magnetic drills or drilling machines to structures 	4A	[REDACTED]	2M
14. Emergency Preparedness, Incident Response and First Aid for Drilling Operations	<ul style="list-style-type: none"> Delayed response to entanglement, amputation, eye injury or crush incidents involving drilling machines 	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> Lack of knowledge on how to safely stop and isolate drilling plant in an emergency Inadequate first aid resources and training specific to drilling-related injuries (penetrating injuries, amputations, eye injuries, burns) Failure to report and investigate near misses involving drilling machinery, resulting in repeat events 		[REDACTED]	
15. Contractor Management and Outsourced Drilling Activities	<ul style="list-style-type: none"> Contractors conducting core drilling, overhead drilling or anchor installation without alignment to the PCBU's WHS systems Inadequate verification of contractor competency, licences and equipment condition for specialised drilling tasks Poor communication between contractors and host workplace regarding simultaneous operations and drilling hazards Unclear responsibilities for safety inspection, maintenance and emergency response when contractors use their own drilling machinery 	3M	[REDACTED]	2M
16. Documentation, Records, Monitoring and Continuous Improvement	<ul style="list-style-type: none"> Incomplete or outdated documentation for drilling risk assessments, SOPs, training and maintenance Inability to demonstrate compliance with WHS Act 2011 due to poor record-keeping related to drilling activities Lack of systematic monitoring of drilling-related incidents, near misses and hazards No structured review process to update controls when new drilling technologies, materials or processes are introduced 	3H	[REDACTED]	2M

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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.