Concrete Core Drilling and Scanning

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

THIS RISK ASSESSMENT IS APPROVED BY THE PCBU OF THE 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:

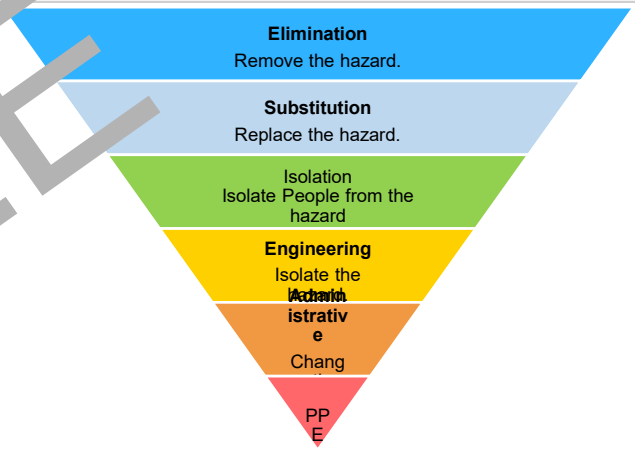
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

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
ALMOST CERTAIN	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4 ACUTE		
LIKELY	2 MODERATE	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4A ACUTE	DO NOT PROCEED
POSSIBLE	1 LOW	2 MODERATE	3 HIGH	4 ACUTE	4 ACUTE	3H HIGH	Rev before work
UNLIKELY	1 LOW	1 LOW	2 MODERATE	3 HIGH	4 ACU	2M MO RATE	Ensure control measures in place.
RARE	1 LOW	1 LOW	2 MODERATE	3 HIGH	3 H	1L LOW	Monitor and keep records.

HIERARCHY OF CONTROLS



Risk Rating & Required Action:

4A	Stop work. The risk is intolerable. E inate the hazar redesign the activity before proceeding. A Safe Work Method Statement (SWMS) or hi er-level authorisati is required.
3H	Review and approve additional c rols b ask arts. Senior supervisor sign-off needed.
2M	Ensure all nominated controls are in ace and effe ive. 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, Roles and Legal Compliance	• Lack of clarity on duties under WHS Act 2011 and WHS Regulations • No defined PCBU, officer and worker WHS responsibilities for drilling and scanning operations • Inadequate WHS policy framework for concrete core drilling and scanning activities • Failure to consult workers and HSRs on changes to drilling, cutting and scanning systems • No system to monitor compliance with relevant Australian Standards and Codes of Practice • Insufficient due diligence by officers regarding high-risk construction work obligations • Failure to manage overlapping duties with other PCBUs on shared construction sites	4A	• Establish and communicate a WHS Management System (WHSMS) aligned with WHS Act 2011, WHS Regulations and applicable Australian Standards for concrete and masonry drilling, cutting and scanning operations • Define and document WHS roles, responsibilities and authorities for officers, managers, supervisors, workers and contractors involved in core drilling and scanning works • Implement a documented WHS policy that explicitly covers concrete core drilling, diamond core drilling, masonry cutting, pavement core drilling and scanning of concrete and masonry • Embed processes for consultation, cooperation and coordination with workers, HSRs and other PCBUs where drilling or scanning interfaces with other work areas or services • Develop a legal and standards register (e.g. AS/NZS 3012, AS 1674 series, plant and electrical standards, vibration, noise standards) and review it at least annually • Require officers to demonstrate due diligence through scheduled WHS governance meetings, review of leading and lagging indicators, and documented WHS inspections of drilling and scanning activities • Integrate WHS considerations into tendering, project planning and contractor engagement for core drilling and scanning work	3H
2. Project Planning, Design Review and Service Coordination	• Inadequate review of structural drawings and design intent prior to drilling or coring • Failure to identify embedded services (electrical, hydraulic, data, fire systems) in slabs, walls, roof decks and pavements • Poor coordination with designers, engineers and building owners regarding penetrations through structural elements • Inaccurate or outdated as-built documentation leading to striking live services during drilling • Uncontrolled ad-hoc coring or drilling requests without engineering assessment • Lack of design input to avoid unnecessary penetrations or to provide pre-formed openings	4A	• Implement a formal project planning process requiring pre-start WHS and design risk review for any concrete or masonry drilling, scanning or coring activities • Require provision and review of up-to-date structural and services drawings, including as-built documentation, prior to approving drilling locations • Establish a permit-to-core/drill system that mandates sign-off by a competent person and, where required, a structural or services engineer before any penetration works • Define mandatory scanning requirements (e.g. GPR, X-ray or ferroscan) for specified slab and wall thicknesses, critical areas, roof decks and high-risk zones • Implement a change management process to reassess risks when drilling locations vary from approved plans or when site conditions differ from drawings • Require written confirmation from asset owners or principal contractors on isolation or protection of critical services in the drilling zone • Maintain a project-specific penetration register to log all core drilling and large diameter penetrations, including location, depth, services clearance and approvals	2M

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3. Structural Integrity and Engineering Controls	• Compromising structural integrity of slabs, beams, columns, walls or roof decks due to poorly planned coring • Reduction of concrete cover leading to corrosion of reinforcement and long-term structural damage • Uncontrolled drilling into pre-stressed or post-tensioned concrete causing tendon failure and catastrophic release of energy • Lack of engineering assessment for large diameter core drilling or multiple adjacent penetrations • Inadequate systems for controlling penetrations through fire rated and load-bearing elements • Unverified slab thickness leading to over-penetration into areas below (tenancies, services, voids)	4A	• Develop and enforce a structural risk assessment procedure for concrete core drilling, including a requirement for engineering review where penetrations affect major structural members or post-tensioned elements • Mandate use of certified scanning methods and competent interpreters to locate reinforcement, pre-stressing tendons and voids before drilling or cutting • Establish criteria for when structural engineering sign-off is required (e.g. penetrations within a set distance to supports, beams, edge beams or high-load areas) • Maintain standard operating rules for maximum hole diameters, edge distances and spacing between cores without further engineering review • Implement a control to prohibit coring through identified pre-stressing tendons or critical reinforcement unless specifically approved and supervised by a structural engineer • Integrate fire and structural performance requirements into the permit-to-core system, ensuring penetrations are compatible with fire stopping and load design • Ensure records of slab thickness measurements, scan outputs and engineering approvals are kept in project files for traceability and future reference	2M
4. Plant and Equipment Selection, Guarding and Maintenance	• Use of unsuitable or poorly maintained core drills, diamond drilling rigs, core cutters and masonry drills • Failure of drill stands, anchors or mounting systems leading to plant instability or collapse • Lack of guarding, interlocks or emergency stop systems on high-risk drilling and cutting equipment • Unverified electrical safety (e.g. damaged leads, lack of RCD protection) for electric drills and scanning equipment • Inadequate maintenance schedules resulting in increased vibration, overheating or mechanical failure • Use of non-rated accessories (bits, blades, extensions) for drilling through hard materials, metals and pavements • Uncontrolled use of high-pressure water systems associated with wet core drilling	4A	[redacted]	2M

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5. Hazardous Energy, Services and Isolation Management	• Inadvertent drilling into live electrical cables, gas lines, water mains or fire systems • Lack of standardised isolation and lock-out procedures for nearby plant and services • Inadequate verification of isolation status when working in operational facilities • Uncontrolled release of high-pressure fluids or gases during penetration of concealed services • Insufficient coordination with facility managers and principal contractors regarding shutdowns • Failure to manage potential stored energy in post-tensioned systems when coring near tendons	4A	[redacted]	2M
6. Access, Work at Height and Fall Protection Systems	• Inadequate planning for drilling into concrete roof decks or elevated slabs with fall risks • Use of improvised platforms or unsafe access arrangements for core drilling equipment • Uncontrolled openings created by core drilling in floors, decks or walls leading to falls of people or materials • Inadequate edge protection and void protection around drilling locations • Lack of integration between drilling operations and site fall prevention systems managed by other PCBUs	3H	[redacted]	2M
7. Dust, Silica, Slurry and Environmental Management	• Generation of respirable crystalline silica dust during dry concrete and masonry drilling or cutting	4A		2M

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	• Uncontrolled slurry from wet core drilling affecting slip risk, environment and nearby plant • Inadequate ventilation and containment when drilling in enclosed or poorly ventilated areas • Lack of systems for managing waste (core samples, slurry, contaminated water, masonry debris) • Environmental contamination from slurry discharge into drains, soil or stormwater • Inconsistent application of RPE and dust control measures across different sites and crews		[redacted]	
8. Noise, Vibration and Ergonomic Risk Management	• Prolonged exposure to high noise levels from core drilling a[redacted]asonry cutting equipment • Hand–arm vibrat[redacted] exposure from prolonged operatio[redacted] and breakers • Whole-body vibration from poorly maintained or inappropria[redacted] mounting systems • Musculoskeletal strain due to awkward postures, overhead drilling, manual handling of heavy drilling rigs and pavement cores • Inadequate rotation of tasks and rest breaks for high vibration activities	3H	[redacted]	2M
9. Competency, Training and Supervision for Drilling and Scanning	• Operators performing concrete drilling, scanning and coring without verified competency	3H	[redacted]	2M

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	• Insufficient understanding of scanning technology limitations and interpretation errors • Inadequate supervision of new or inexperienced workers on high-risk drilling and cutting tasks • Lack of refresher training on changes to procedures, plant or regulatory requirements • Over-reliance on individual experience rather than a structured competency framework • Contractor personnel not meeting the organisation's competency and licensing requirements		[redacted]	
10. Contractor, Subcontractor and Labour Hire Management	• Inconsistent WHS standards between principal contractor, subcontractors and labour hire providers • Lack of clear scope and WHS expectations for external drilling and scanning providers • Poor communicati[illegible] site-specific hazards and contr[illegible] to contractors undertaking core [illegible]ing or m[illegible] cutting • Inadequate verification of contracto[illegible] WHS systems, licences, insuranc[illegible] and training • Failure to manage overlapping duties between multiple PCBUs performing simultaneous high-risk tasks	3H	[redacted]	2M
11. Site Traffic, Access and Public Safety Management	• Uncontrolled interaction between drilling equipment, vehicles and pedestrians in and around work zones • Inadequate exclusion zones around drilling rigs, masonry cutting stations and pavement coring operations • Unmanaged public access to areas where core drilling or scanning is	3H	[redacted]	2M

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	occurring in occupied buildings or public spaces • Poor control of cords, hoses and slurry on walkways creating trip and slip hazards • Inadequate signage and barricading for works on roads, pavements and shared access routes		[redacted]	
12. Emergency Preparedness, Incident Response and First Aid	• Lack of tailored emergency procedures for service strikes, structural failure, entrapment or serious injury during drilling • Inadequate first aid resources and training relative to the risks of concrete drilling, cutting and scanning • Failure to plan for emergencies in remote or difficult-to-access drilling locations • Poor incident notificati[redacted] escalation processes[redacted]sulting in delayed response • No structured pr[redacted]ss to i[redacted] incidents and implem[redacted] corrective actions	3H	[redacted]	2M
13. Fatigue, Scheduling and Psychosocial Risk Management	• Long work hours, night shifts or compressed schedules for drilling and scanning activities leading to fatigue • Pressure to complete penetrations quickly causing risk-taking and bypassing of controls • Poor management of remote or isolated work when undertaking pavement core drilling or roof deck works • Insufficient consideration of psychosocial hazards such as high work	2M	[redacted]	1L

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	demands, low role clarity and poor support in high-risk drilling environments		[redacted]	
14. WHS Communication, Consultation and Documentation Control	• Information on drilling and scanning risks not effectively communicated to all relevant workers and contractors • Outdated procedures, permits or drawings being used for decision-making • Lack of formal consultation mechanisms to capture worker feedback on drilling systems and controls • Poor record keeping for permits, inspections, training and maintenance related to core drilling operations	2M	[redacted]	1L
15. Monitoring, Audit and Continuous Improvement of Drilling Systems	• Failure to identify emerging risks associated with new drilling and scanning technologies or methods • Inconsistent implement[illegible]of controls across different proj[illegible], crews and regions • Lack of data anal[illegible]s on i[illegible]nts, near misses and non-conformances related to core drilling and masonry cutting • Absence of formal audit and review processes to test the effectiveness of WHS controls	2M	[redacted]	1L

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

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-of-codes-of-practice

Northern Territory
Work Health and Safety (National Uniform Legislation) Act 2011
Work Health and Safety (National Uniform Legislation) Regulations 2011
Legislation NT: https://worksafe.nt.gov.au/laws-and-compliance/workplace-safety-laws
Codes of Practice NT: https://worksafe.nt.gov.au/forms-and-resources/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

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.

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

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

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

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