

**Piling Operations**

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 before task starts. 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. WHS Governance, Roles and Consultation	<ul style="list-style-type: none"> <li>Lack of clear WHS responsibilities for piling operations under the WHS Act 2011 leading to gaps in supervision, approvals and oversight</li> <li>Inadequate consultation with workers and health and safety representatives (HSRs) on piling methods, equipment and change management</li> <li>Poor integration of piling contractor's WHS management system with principal contractor's project WHS plan</li> <li>No formal process for managing multiple PCBUs on site (principal contractor, piling subcontractor, geotechnical engineer, crane provider, traffic management provider)</li> <li>Insufficient WHS objectives and performance indicators specific to piling works (e.g. strike incidents, noise, vibration complaints, near misses)</li> <li>Failure to apply hierarchy of control at a systems level when selecting piling methods and equipment</li> </ul>	High	<ul style="list-style-type: none"> <li>Develop and implement a project-specific WHS management plan that includes a dedicated section for piling operations, referencing WHS Act 2011 and WHS Regulations 2011 duties and relevant Codes of Practice</li> <li>Define and document WHS roles, responsibilities and delegated authorities for principal contractor, piling contractor, supervisors, engineers, and plant operators, including who can approve method changes and high-risk work</li> <li>Establish a formal consultation and communication procedure with workers and HSRs for piling activities, including regular pre-starts, toolbox talks and issue-resolution processes</li> <li>Implement a documented process for cooperation and coordination between PCBUs (e.g. interface agreements, coordination meetings, shared register) covering piling sequencing, exclusion zones, logistics and emergency arrangements</li> <li>Set measurable performance indicators for piling operations (e.g. number of risk reviews conducted, correct actions closed out, vibration/noise exceedances, near misses) and review these at management meetings</li> <li>Require that piling methodologies and system changes are assessed and signed off using a formal risk assessment process that applies the hierarchy of control at the design and system level</li> <li>Manage that any change to piling method, equipment configuration, tie-back system or work sequencing triggers a documented management-of-change (MoC) process with risk review and consultation</li> <li>Ensure the WHS governance framework requires periodic independent audits or inspections of piling activities by a competent WHS advisor or engineer</li> </ul>	Medium
2. Design, Engineering and Geotechnical Governance	<ul style="list-style-type: none"> <li>Inadequate geotechnical investigation and interpretation leading to unforeseen ground conditions, pile refusal, excessive settlement or instability</li> <li>Incomplete or ambiguous design and tie-back design documentation creating scope gaps and unsafe workarounds on site</li> <li>Lack of engineering sign-off for pile driving procedures, helical pile torque criteria and tie-back load testing requirements</li> <li>Design not considering constructability constraints (plant reach, overhead services, adjacent structures, vibration/noise limits)</li> <li>Failure to account for interaction between new piles, existing foundations</li> </ul>	High	<ul style="list-style-type: none"> <li>Require a site-specific geotechnical investigation and report prepared and endorsed by a suitably qualified geotechnical engineer, including parameters for driven piles, helical piles and tie-back anchors</li> <li>Implement a formal design management procedure requiring coordination between structural, geotechnical and temporary works engineers for all piled foundation and tie-back systems</li> <li>Ensure all piling designs, including helical pile specifications, pylon driving details, tie-back anchorage and testing regimes, are signed off by a registered professional engineer with appropriate discipline and jurisdictional registration where applicable</li> <li>Develop and maintain a design register for piling and tie-back systems that tracks revisions, assumptions, design loads, limits on plant size and installation tolerances</li> <li>Specify clear engineering acceptance criteria in design documentation, including pile capacity verification methods (static load tests, dynamic testing, torque correlation), allowable deflection, verticality, embedment depth and tie-back proof/lock-off loads</li> <li>Require a documented constructability review for piling works prior to mobilisation, involving the principal contractor, piling contractor, design engineers and WHS personnel</li> <li>Include in the design phase a vibration and noise assessment for piling methods (impact driving vs pre-drilling vs helical piling) and integrate any imposed limits and monitoring requirements into the project WHS and environmental plans</li> </ul>	Medium

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	<p>and temporary works (e.g. retaining systems, shoring, anchors)</p> <ul style="list-style-type: none"> <li>No defined acceptance criteria for pile capacity, verticality, alignment, depth, and tie-back tensioning</li> <li>Insufficient engineering assessment of vibration and noise impacts on neighbouring structures and sensitive receptors</li> </ul>		<ul style="list-style-type: none"> <li>Mandate that any field design change (e.g. pile length variation, change of equipment, altered tie-back layout) follows a formal engineering change process with written approval before implementation</li> </ul>	
3. Planning, Approvals and Coordination of Piling Operations	<ul style="list-style-type: none"> <li>Piling activities commencing without formal approval of method statements, risk assessments and lift studies</li> <li>Inadequate planning for interactions between piling rigs, cranes, concrete deliveries, reinforcement installation and other trades</li> <li>Lack of planning for site access, ground bearing capacity, working platforms and rig positioning</li> <li>Failure to obtain or comply with statutory approvals, environmental conditions, vibration/noise permits and local council requirements</li> <li>Insufficient planning for works near underground and overhead services, rail corridors, roads or waterways</li> <li>No formal schedule integration leading to piling works conflicting with excavation, formwork, or demolition activities</li> </ul>		<ul style="list-style-type: none"> <li>Develop a project specific piling management plan or method statement that covers all piling types on the project (bored piles, driven piles, vibratory tie-backs) and have it reviewed and approved by the principal contractor and competent engineering</li> <li>Implement a piling process requiring coordination workshops between the piling contractor, principal contractor, crane provider and key subcontractors to sequence works and identify interface risks before mobilisation</li> <li>Require formal approval of working platform designs (including factor of safety and allowable bearing pressure) by a geotechnical engineer, and link access and plant configuration to this design</li> <li>Ensure all required permits and approvals for piling operations (environmental licences, out-of-hours work approvals, road occupancy permits, rail access, vibration and noise permits) are obtained, documented and conditions integrated into the construction program</li> <li>Develop and maintain a services management plan that includes desktop and physical verification of underground and overhead services, establishment of exclusion zones and specific controls around high-risk services</li> <li>Integrate piling and tie-back activities into the master construction program and conduct regular look-ahead planning (e.g. 2–4 weeks) to identify clashes with excavation, formwork, material deliveries and adjacent construction zones</li> <li>Use a formal interface risk register to document and manage risks arising from concurrent activities (e.g. excavation next to operating piling rig, structural steel erection near tie-back stressing)</li> <li>Establish a permit-to-work system for high-risk aspects associated with piling (e.g. work near live traffic, within rail corridors, near high-voltage lines), with clear prerequisites and sign-off requirements</li> </ul>	Medium
4. Contractor and Supplier Selection and Management	<ul style="list-style-type: none"> <li>Engagement of piling contractors or plant suppliers without adequate WHS capability, licences or technical competence</li> <li>Reliance on informal arrangements and hire agreements that do not specify WHS roles, standards or performance expectations</li> <li>Inadequate review of contractors' historical safety performance, incident</li> </ul>	High	<p>[REDACTED]</p> <p>[REDACTED]</p>	Medium

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	<p>trends and compliance with WHS legislation</p> <ul style="list-style-type: none"> <li>• Use of labour hire or short-term workers without appropriate vetting for piling competencies</li> <li>• Poor oversight of specialist subcontractors performing tie-back installation, grouting or pile testing</li> </ul>		[REDACTED]	
5. Competency, Training and Supervision	<ul style="list-style-type: none"> <li>• Plant operators and rig crews lacking formal competency or verification of competency for piling and tie-back systems</li> <li>• Supervisors unfamiliar with specific risks and control measures associated with helical piling, tie-backing, pre-drilling, and tie-back stressing</li> <li>• Inadequate induction processes that do not address site-specific potential hazards (vibration, noise, ground instability, falling objects, services)</li> <li>• Lack of training for workers on emergency procedures, stop-work authority and incident reporting related to piling</li> <li>• Insufficient supervision of inexperienced workers or new-to-site personnel during critical piling activities and testing</li> <li>• No structured refresher training or competency reassessment for</li> </ul>	High	[REDACTED]	Medium

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	infrequently used piling techniques or equipment		[REDACTED]	
6. Plant and Equipment Selection, Certification and Maintenance	<ul style="list-style-type: none"> <li>• Use of piling rigs, helical pile drivers, cranes or tie-back stressing equipment that are not fit for purpose or inadequately sized for design loads and site conditions</li> <li>• Lack of evidence of inspection, maintenance, and certification for piling rigs, lifting equipment, and pressure systems</li> <li>• Non-compliance of plant safety systems (e.g. emergency stops, guarding, slew restrictors, load indicators) with Australian Standards and WHS Regulations</li> <li>• Improvised modifications to piling equipment, leads, hammers, augers or tie-back systems without approval</li> <li>• Use of inappropriate or damaged attachments and lifting gear for handling piles, casings and reinforcement cages</li> </ul>	High	[REDACTED]	Medium
7. Ground Conditions, Working Platforms and Site Stability Management	<ul style="list-style-type: none"> <li>• Unverified or inadequately designed working platforms leading to piling rig or crane instability, overturning or ground failure</li> <li>• Uncontrolled changes in ground conditions due to weather, excavation, groundwater or adjacent works undermining piling operations</li> </ul>	High	[REDACTED]	Medium

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	<ul style="list-style-type: none"> <li>• Insufficient separation between piling activities and excavations, retaining structures, temporary shoring or adjacent buildings</li> <li>• Lack of a systematic process to manage working platform inspections, deterioration and repairs</li> <li>• Unmanaged spoil piles, stockpiles and materials loading causing additional ground loading and instability</li> </ul>		<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	
8. Safe Systems of Work, Procedures and Documentation	<ul style="list-style-type: none"> <li>• Absence of formal documented procedures for different piling systems (helical, driven, bored, tie-back installation and stressing)</li> <li>• Inconsistent application of risk controls between shifts and crews due to lack of standardisation</li> <li>• Critical steps in pile installation, testing or tie-back stressing not formally captured, leading to omissions or shortcuts</li> <li>• Outdated or generic documentation not reflecting current site conditions, plant or design changes</li> <li>• Reliance on verbal instructions for complex operations without written guidance or permits</li> </ul>	High	<p>[REDACTED]</p>	Medium

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9. Traffic, Pedestrian and Exclusion Zone Management	<ul style="list-style-type: none"> <li>Interaction between piling plant (rigs, cranes, delivery trucks) and pedestrians, other workers or public road users</li> <li>Inadequate exclusion zones around operating piling rigs, swinging loads and pile-driving hammers</li> <li>Poorly controlled access to high-risk areas such as tie-back stressing zones and pile testing setups</li> <li>Vehicle movements across or near working platforms causing instability or congestion</li> <li>Insufficient signage and delineation leading to unauthorised entry into piling work zones</li> </ul>	High	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	Medium
10. Environmental, Noise and Vibration Management	<ul style="list-style-type: none"> <li>Excessive noise from pile driving, hammer operation and plant movements impacting workers and nearby communities</li> <li>Ground vibration from piling activities adversely affecting adjacent structures, underground services and sensitive equipment</li> <li>Generation of spoil, slurry or contaminated groundwater without appropriate handling and disposal systems</li> <li>Failure to monitor and respond to environmental conditions and licence limits for noise, vibration and working hours</li> </ul>	High	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	Medium

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			[REDACTED]	
11. Tie-Back and Anchoring System Management	<ul style="list-style-type: none"> <li>• Inadequately controlled tie-back installation, grouting and stressing leading to structural instability or sudden anchor failure</li> <li>• Lack of clear procedure and documentation for tie-back testing, proof loading and lock-off</li> <li>• Uncontrolled accidental tie-back reaction zones where stored energy and failure risks are present</li> <li>• Failure to monitor long-term performance of tie-backs and anchors where they form part of permanent or critical temporary works</li> </ul>	High	[REDACTED]	Medium
12. Emergency Preparedness, Incident Management and Continuous Improvement	<ul style="list-style-type: none"> <li>• Inadequate emergency response planning for piling-specific scenarios such as plant overturn, struck-by incidents, ground collapse or tie-back failure</li> </ul>	High	[REDACTED]	Medium

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	<ul style="list-style-type: none"> <li>Lack of clear protocols for rescue from depth or difficult access areas created by piling and excavation activities</li> <li>Under-reporting of incidents, near misses and unsafe conditions in piling operations, reducing learning opportunities</li> <li>No systematic analysis of piling-related incidents and audit findings to drive system improvements</li> </ul>		<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	

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/factsheets-and-resources/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.