Plumbing Pipe Work and Pipefitting

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:

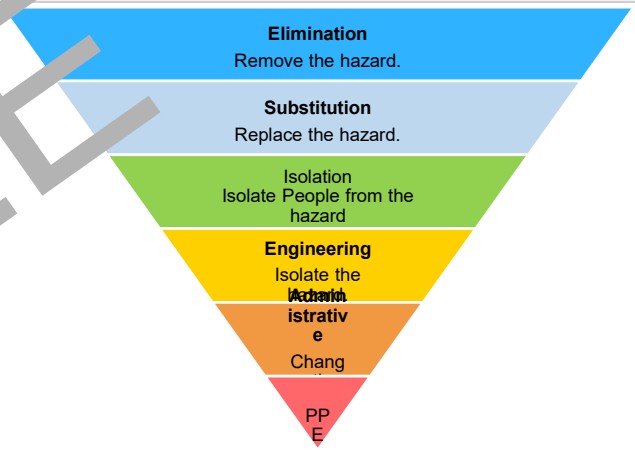
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

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, Responsibilities and Consultation	• Unclear WHS roles and responsibilities for plumbing supervision and pipefitting oversight • Inadequate WHS governance structure for managing multiple plumbing contractors and subcontractors • Limited worker consultation on risks associated with specialised pipework (e.g. chilled water, CO_2 pipe freezing, chemical soldering agents) • Failure to integrate WHS Act 2011 duties into company policies, procedures and contracts • Inadequate issue-resolution procedures for safety concerns raised about pipe systems or equipment • Poor communication and coordination between principal contractor, plumbing contractor, engineers and building owners regarding changes to design or installation methods	4A	• Establish and document a WHS governance framework that clearly allocates PCBU, officer, supervisor and worker duties in line with WHS Act 2011 and WHS Regulations • Develop an organisational WHS policy specifically referencing plumbing and pipefitting activities, endorsed and periodically reviewed by senior management • Implement formal WHS consultation arrangements, including regular toolbox talks, safety committees and consultation with Health and Safety Representatives about pipework risks • Ensure all contracts with plumbing subcontractors include WHS responsibilities, requirement to comply with company procedures and consequence management for non-compliance • Maintain documented WHS issue-resolution procedure that includes timeframes, communication methods and escalation paths for unresolved hazards relating to pipe systems • Require management review meetings to include WHS performance metrics for pipework activities (e.g. incidents, audit findings, corrective action close-out rates)	3H
2. Design, Planning and Engineering of Plumbing and Pipe Systems	• Inadequate engineering design of pipe systems leading to over-pressurisation, leaks or bursts during pressure testing and operation • Omission of isolation valves, backflow prevention and pressure relief devices in design documentation • Insufficient consideration of safe access for installation, inspection, maintenance and emergency isolation of in-wall and ceiling pipework • Poor coordination of services leading to pipe clashes, unapproved penetrations and ad-hoc on-site modifications • Failure to design for compatibility of materials (e.g. mixing metals causing corrosion, unsuitable pipework for chilled water or chemical disinfectants)	4A	• Require plumbing and pipework design to be carried out or verified by a competent designer/engineer in accordance with NCC, relevant Australian Standards (e.g. AS/NZS 3500 series) and manufacturer requirements • Implement a formal design review and sign-off process that considers constructability, WHS risks, maintenance access and emergency isolation locations • Ensure design documents clearly specify pipe materials, jointing methods, maximum design pressures, pressure testing requirements and disinfection methods • Mandate coordination of services through BIM or coordinated drawings to avoid clashes and unplanned penetrations through structural or fire-rated elements • Include in design the provision of safe working platforms, access panels and isolation points for pipe installation, testing and future maintenance • Implement a management of change (MoC) procedure for any deviation from approved designs, including WHS risk review and engineer approval • Specify controls and safety requirements for temporary systems such as CO_2 pipe freezing, temporary bypasses and flushing set-ups	2M

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	• Inadequate specification for pressure testing, disinfection and commissioning processes • Lack of design review for CO_2 pipe freezing, soldering processes and chemicals used in pipe joining			
3. Competency, Licensing and Training for Plumbing and Pipefitting	• Unlicensed or inadequately supervised workers performing regulated plumbing and drainage work • Insufficient training in safe use of pipe cutters, pipe threaders, bevelling machines, metal and PVC pipe benders and CO_2 freezing equipment • Lack of competency in chemical handling, soldering, brazing and use of fluxes and cleaning agents • Inadequate training in pressure testing, pipeline disinfecting, and interpretation of test documentation • Insufficient instruction in safe drilling techniques for in-wall pipework, including identification of services and structural elements • Poor understandi of WHS duties, risk assessment p cesses and i ident reporting requirem	4A	• Establish a comp ency anage nt system that verifies trade qualifications, plumbing licences and high-risk work ences (wh e appli le) bef allowing work on site • Maintain a tr ing matri overing sp sed tasks such as operating ductile iron pipe cutters, pipe bend PVC p slot s, pipe threaders, bevelling machines and CO_2 freezing kits • Prov k-spec training and documented procedures for chemical use in soldering and brazing, includi Sa ty Data heet (SDS) based instruction • Implen nt a uctured induction program addressing WHS Act duties, company WHS expectations, i dent orting and hazards specific to pipe installations and maintenance • Requ pervision plans for apprentices and new workers, including competency sign-off before dertaki complex tasks like pressure testing and pipeline disinfecting • C duct periodic refresher training on isolation procedures, pressure testing protocols, and emergency response relevant to plumbing systems	2M
4. Procurement and Management of Tools, Plant and Equipment	• Procurement of unsuitable or non-compliant pipe cutters, saws benders, threading and b machines • Use of poorly maintained or defective equipment (e.g. dull blades, damaged guards, leaking hoses, faulty isolation switches) • Lack of standardisation leading to multiple equipment types with varying safety features and training requirements • Inadequate control over hire equipment that may not have current inspection or service records	3H	[redacted]	2M

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	• No system to ensure compatibility of tooling with copper, PVC, ductile iron and other pipe materials • Failure to ensure pressure testing equipment (pumps, gauges, hoses) is rated and calibrated for the required pressures		[redacted]	
5. Maintenance, Inspection and Pre-Use Checks of Equipment	• Lack of systematic maintenance for pipe cutters, saws, pipe benders, threaders and bevelling machines leading to mechanical failure or injury • Inadequate inspection of guards, clamps and securing devices on pipe processing machinery • Failure to identify wear, cracks or damage in pipe support systems, stands, jacks and lifting accessories • Use of contaminated or degraded hoses and seals on pressure testing rigs resulting in sudden failure • No procedure to remove defective too from service, leading to continued unsafe use • Poor recordkeepi of inspections and repairs, preventing end analysis and early intervention	3H	[redacted]	1L
6. Hazardous Chemicals, Soldering and Fume Management	• Exposure to hazardous chemicals om fluxes, primers, solvents, dhes s and cleaning agents used for copper and PVC pipework • Inhalation of fumes and gases from soldering, brazing and heating operations on copper tubing • Incorrect storage, labelling or segregation of chemicals leading to spills, reactions or incompatible mixing • Use of non-approved chemicals for pipeline disinfecting or cleaning chilled water systems	4A	[redacted]	2M

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	• Lack of controls for work in poorly ventilated spaces where fumes from soldering or CO_2 may accumulate • Inadequate management of waste chemicals and contaminated materials		[redacted]	
7. CO_2 Pipe Freezing and Pressure Energy Management	• Uncontrolled release of high-pressure CO_2 during pipe freezing operations • Sudden failure of temporary ice plugs leading to water hammer, pipe rupture or projectile hazards • Asphyxiation risk from CO_2 accumulation in poorly ventilated or below-ground work areas • Inadequate verification of pipe condition and pressure ratings before freezing or pressure testing • Failure to manage stored energy in pipe systems during isolation, draining and depressurisation • Incorrect set-up of pressure testing fo chilled water pipes and other systems, resulting in over-pressurisation	4A	[redacted]	2M
8. Working Environment, Access, and In-Wall / Confined Spaces	• Unsafe access to wall, ceiling or underfloor location for installation and maintenance of pip ork • Uncontrolled drilling into walls or sl s causing contact with live services (electrical, gas, water, fir s) • Work in confined or restricted spaces (e.g. plant rooms, pits, ceiling cavities) with limited ventilation, lighting and egress • Unmanaged housekeeping resulting in trip hazards from offcuts, pipe lengths, tools and hoses • Inadequate planning for safe handling and laying pipework in walls and tight spaces leading to awkward postures and musculoskeletal injury	3H	[redacted]	2M

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	• Exposure to noise and vibration from pipe cutting, drilling and bevelling processes			
9. Manual Handling, Pipe Handling and Storage Systems	• Inadequate systems for manual handling of long or heavy pipes, fittings and valves leading to musculoskeletal disorders • Unsafe storage of pipes (copper, PVC, ductile iron) causing roll-away, collapse or falling objects • Lack of mechanical aids or lifting plans for handling large valves, bundles of pipe or ductile iron sections • Poorly designed pipe racks and storage areas leading to blocked access and unstable stacks • No formal process to assess manual tasks associated with operating pipe benders, cutters and threaders • Ineffective training in team lifting and handling of awkward loads in confined overhead positions	3H	[redacted]	1L
10. Isolation, Lockout and Interaction with Existing Services	• Uncontrolled release of water, chemicals or pressure when cutting into or replacing existing pipework • Accidental damage to services (electrical, gas, fire, data) when drilling or installing new pipes • Inadequate lockout-tagout processes for shared building systems during pipe maintenance or replacement of old pipes • Failure to verify zero-energy state before commencing work on chilled water pipes or other pressurised systems • Poor coordination with building management leading to unexpected plant start-up or system re-pressurisation	4A	[redacted]	2M

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	• Inaccurate or outdated as-built drawings causing misidentification of services			
11. Quality Assurance, Testing, Commissioning and Disinfection	• Incomplete or inadequate pressure testing leading to undetected leaks, future failures or water damage • Improper control of test media (water, air, inert gas) creating explosion or projectile risk during testing • Incorrect dosing or application of disinfectants causing chemical exposure or damage to pipe systems • Poor documentation of test results and commissioning checks leading to uncertainty about system integrity • Rushed commissioning and handover processes under program pressure, leading to incomplete verification of operation and safety functions • Failure to flush and clean pipework before commissioning, resulting in contamination and system performance issues	3H	[redacted]	1L
12. Contractor Management and Subcontractor Interface	• Inconsistent WHS standards between principal contractors and specialist plumbing subcontractors • Lack of pre-qualification and due diligence on subcontractors' competence in specialised work (CO_2 freezing, chilled water, disinfection) • Poor coordination between multiple plumbing contractors working on overlapping pipe systems • Inadequate review of subcontractor SWMS, risk assessments and procedures for pipe installation and maintenance • Failure to manage interfaces where plumbing works intersect with other trades (electrical, fire, HVAC, structural)	3H	[redacted]	2M

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SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
	• Limited monitoring of subcontractor compliance with site rules, PPE requirements and permit systems			
13. Emergency Preparedness and Incident Management for Pipework Activities	• Inadequate planning for emergencies stemming from pipe failures, major leaks, floods or chemical releases • Lack of clear procedures for response to CO_2 release, asphyxiation risks or fume incidents during soldering and brazing • Poorly understood evacuation routes and muster points for workers in ceiling spaces, plant rooms and confined areas • Insufficient first-aid capability for burns, chemical exposure, eye injuries and crush injuries related to pipework • Delayed or incomplete incident reporting and investigation, reducing learning and recurrence prevention • Failure to coordinate emergency procedures with building management and other PCBUs on shared worksites	3H	[redacted]	1L
14. Documentation, Records, and Continuous Improvement	• Incomplete or outdat[redacted] WHS procedures for plum[redacted]ng and pipefitting activities • Poor control of doc[redacted]s such as SWMS, risk assessments, plant manuals and test reports leading t[redacted] inconsistent practices • Lack of systematic review of incident data, inspection findings and audit results for pipework operations • Failure to track and close corrective actions arising from inspections of pipe tools, pressure tests or chemical handling • Insufficient retention of certification, licences, training records and test certificates for compliance verification • No formal process to capture worker feedback on the practicality and	3H	[redacted]	1L

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SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
	effectiveness of WHS controls for pipework			

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