Pressure Vessel Safety			
Business Name:		ABN:	
Business Address:			
Contact Person:	Phone:	Email:	

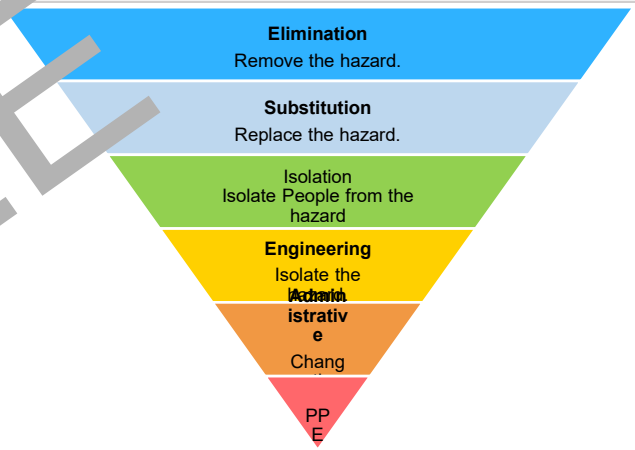
THIS RISK ASSESSMENT IS APPROVED BY THE PCBU OF THE PROJECT		
Under the Work Health and Safety Regulation (WHS Regulation), a person conducting a business or undertaking (PCBU) is required to ensure that a RISK ASSESSMENT is prepared before the proposed work starts.		
Full Name:		
Signature:	Title:	Date:

CLIENT OR PRINCIPAL CONTRACTOR DETAILS	SCOPE OF WORKS
Client:	
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. Governance, WHS Duties and Legal Compliance	• Lack of senior management accountability for pressure vessel safety obligations under WHS Act 2011 and WHS Regulations • Failure to identify and register pressure equipment that meets the definition of registrable plant • Inadequate understanding of Australian Standards for pressure equipment (e.g. AS 1210, AS 4343, AS 3788) leading to non-compliant systems • No formal process for verifying supplier and contractor compliance with WHS and pressure vessel legislation • Insufficient allocation of resources (budget, competent personnel, time) to manage pressure vessel risks • Inadequate consultation mechanisms with workers and Health and Safety Representatives regarding pressure vessel issues	4A	• Establish a documented Pressure Vessel Safety Management Standard endorsed by senior management, reflecting WHS Act 2011 duties of PCBUs, officers and workers • Undertake a legal obligations register specific to pressure equipment, including plant registration, design verification and inspection requirements under WHS Regulations • Adopt and reference relevant Australian Standards (e.g. AS 1210, AS/NZS 3788, AS 4343, AS 1200) in all design, procurement, operation and maintenance procedures • Implement a governance framework that assigns clear roles, responsibilities and authorities for pressure vessel management, including an appointed Pressure Equipment Responsible Person • Develop and maintain contractor and supplier prequalification process that requires evidence of design verification, certifications, and compliance with relevant pressure equipment standards • Implement structured WHS consultation arrangements (HSR meetings, toolbox talks, safety committees) with standing agenda items for pressure vessel risks and incidents • Conduct periodic internal WHS audits against the organisation's pressure vessel standard and regulatory requirements, with corrective actions tracked to close-out	3H
2. Pressure Vessel Design, Engineering and Verification	• Use of non-compliant or poorly engineered designs that do not meet relevant design codes or safety factors • Inadequate design verification or third-party review for pressure vessels and pressurised systems • Insufficient consideration of fatigue, pressure scenarios, temperature extremes, corrosion, fatigue and cyclic loading in the design • Design changes and modifications not controlled or re-verified by a competent engineer • Inadequate specification of materials, welding procedures and non-destructive examination for pressure boundaries • Failure to properly rate and select flanges, gaskets, valves and fittings for the system design pressure and temperature	4A	• Mandate that all new pressure vessels and pressurised systems are designed to relevant Australian Standards and design codes (e.g. AS 1210, AS 4041) by suitably qualified engineers • Implement a formal design control procedure including design inputs, calculations, drawings, and design reviews with sign-off by a Chartered Professional Engineer where applicable • Require independent design verification by an external competent person for high and extreme risk pressure equipment as per WHS Regulations and AS/NZS 3788 • Include scenario-based design assessments covering over-pressure events, rapid decompression, thermal expansion, and credible external impact or fire exposure • Specify minimum material requirements, corrosion allowances, fatigue design life, and welding qualifications within engineering standards and procurement specifications • Standardise the use of appropriately pressure-rated valves, flanges, gauges and fittings with traceable certification and markings • Ensure all designs provide safe access, isolation points, venting, drains, and provisions for lock-out/tag-out and depressurisation prior to opening systems • Implement a Management of Change (MoC) process that requires engineering review and re-verification of all modifications to pressure vessels and associated pipework	2M

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	• Lack of design for safe access, isolation, depressurisation and maintenance of pressured systems			
3. Plant Procurement, Commissioning and Registration	• Procurement of second-hand or imported pressure vessels without adequate documentation or certification • Failure to obtain design registration and item registration for registrable pressure equipment • Inadequate factory acceptance testing and site acceptance testing prior to placing equipment into service • Insufficient verification of pressure relief devices, gauges, controls and safety systems during commissioning • Poor integration of new vessels into existing systems, causing over-pressure, incompatible materials or control conflicts • Lack of commissioning records, as-built documentation and maintenance baseline data	4A	• Develop procurement specifications that require compliance certificates, design verification reports, material test certificates and inspection records for pressure vessels and accessories • Confirm that all registrable pressure vessels have approved design registration numbers and that item registration is completed with the regulator before use where required • Establish a formal commissioning procedure covering pressure testing, leak testing, functional testing of safety valves, interlocks and control and verifying set points • Require documented factory acceptance testing (FAT) and site acceptance testing (SAT) for critical pressure equipment with sign-off by a competent person • Ensure technical review of system integration, including pressure rating checks, compatibility of media and materials and verification of control system logic and trip settings • Capture and store commissioning reports, calibration data, pressure test certificates and ‘as-built’ drawings in a central asset management system • Prevent operation of new pressure vessels until all commissioning and registration requirements are met and authorised in writing by the Pressure Equipment Responsible Person	2M
4. Pressure Relief, Safeguarding and Instrumentation Systems	• Inadequate or incorrectly sized pressure relief valves leading to catastrophic vessel failure • Relief devices not set correctly, not tested, or isolated from the system by closed valves • Pressure gauges and transmitters out of calibration, giving misleading readings to operators • Bypassing or defeating safety interlocks, trips and alarms on pressurised systems • Poor design or routing of relief discharge lines, causing exposure of personnel to vented media or noise • Failure of instrumentation due to vibration, corrosion, contamination or incorrect installation	4A	[redacted]	2M

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			[redacted]	
5. Operations Management and Pressure System Controls	• Unclear operating limits for pressure, temperature and flow leading to operation outside safe design envelope • Lack of standard operating procedures (SOPs) for starting, stopping and handling pressurised equipment • Relying solely on operator judgement without systemised controls, trends or alarms • Inadequate systems for managing simultaneous operations around pressure vessels (hot work, lifting, confined space etc.) • Poor communication between control room and field operators leading to inconsistent control of pressured systems • Fatigue, workload or staffing issues contributing to poor operational decisions under pressure	4A	[redacted]	2M
6. Worker Competency, Training and Authorisation	• Operators and m[redacted]tainers lacking competency in pre[redacted]ure ves[redacted] principles, hazards a[redacted]e limits • Inadequate training on site-specifi[redacted] pressurised systems, emergenc[redacted] response and isolation requ[redacted]ments • Unauthorised or inexperienced personnel performing adjustments on relief valves, regulators or controls • Insufficient understanding of the hazards of stored energy, rapid depressurisation and fluid release • Poor awareness of the risks of working around pressurised systems, including noise, projectiles and jetting • No structured system for verifying and maintaining competency over time	3H	[redacted]	2M

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7. Inspection, Testing and Preventative Maintenance Systems	• Degradation of pressure boundaries due to corrosion, erosion, fatigue or mechanical damage going undetected • Overdue or missed statutory inspections and tests required by regulations and standards • Unplanned failures due to lack of structured preventative maintenance for valves, gauges and control systems • Use of inappropriate inspection techniques or unqualified inspectors resulting in false assurance • Poor record keeping for inspection findings, wall thickness measurements, defect assessments and repairs • Operating vessels beyond design life without fitness-for-service assessments	4A	[redacted]	2M
8. Management of Change (MoC) for Pressurised Systems	• Unauthorised modifications to pressur vessels, pipework, reli systems or controls • Process changes (temperat pressure, media) wi view of design limits and safeguarding • Temporary repairs or clamps b ming permanent without engine assessment • Installation of additional connections, gauges or branches that compromise integrity or relief capacity • Software or control system changes affecting pressure control loops or trips without testing • Lack of updating drawings, procedures and training following system changes	3H	[redacted]	2M
9. Isolation, Depressurisation and	• Failure to fully isolate and depressurise vessels and lines before opening,	4A		2M

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Opening Pressurised Systems	leading to sudden release of stored energy • Inadequate lock-out/tag-out systems for pressurised equipment, including remote or automatic sources of pressure • Residual pressure pockets trapped between isolation points or in dead legs • Poorly controlled line-breaking activities when dealing with pressurised or previously pressurised systems • Lack of clear ownership and supervision of isolation plans for complex systems • Unrecognised hazards from contents (flammable, toxic, cryogenic or high-temperature media) during depressurisation		[redacted]	
10. Working Around Pressurised Systems and Physical Layout	• Personnel exposed to blast, projectil… or jetting in the event of a pressure vessel or line failure • Inadequate separation di…ces between pressurised …quipment and occupied buildings … walkways • Crowded layouts …king i… …cult… evacuate during loss … containment over-pressure events • Insufficient guarding or …rie… …round high-pressure lines, hoses and fittings in areas with pedestrian access • Falling objects, vehicle impacts or mechanical damage striking pressurised systems • Noise, vibration and thermal radiation from pressure equipment affecting nearby workers	3H	[redacted]	2M
11. Pressure Testing, Commissioning and Temporary Pressurisation	• Catastrophic failure of equipment during hydrostatic or pneumatic testing due to defects or over-pressurisation	4A	[redacted]	2M

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	• Use of compressed air or gas for testing when water or lower-energy methods are reasonably practicable • Inadequate test procedures, supervision or exclusion zones during pressure testing • Inaccurate or uncalibrated test gauges leading to unsafe pressures being applied • Temporary hoses, caps, plugs and fittings not adequately rated or secured for test pressures • Poor communication between testing personnel and operations, resulting in inadvertent pressurisation of connected systems		[redacted]	
12. Integrity Management, Corrosion and Life-Cycle Planning	• Uncontrolled corrosion, fouling or erosion internally or externally degrading vessel integrity • Inadequate protective coatings, insulation systems or cathodic protecti on pressure equipment • Corrosion under ins tion (CUI) not identified or manag systematically • No structured life cle pl g, resulting in ageing pr re vessels remaining in service beyond safe lim • Lack of risk review whe conditions change (e.g. new product, temperature, contaminants) • Inadequate spares strategy leading to use of substandard or incompatible replacement components	3H	[redacted]	2M
13. Emergency Preparedness, Response and Incident Management	• Delayed or ineffective response to pressure vessel failures, leaks or ruptures • Workers not knowing how to safely isolate or evacuate during pressurised system emergencies	3H	[redacted]	2M

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	• Inadequate integration of pressure vessel scenarios into site emergency plans and drills • Poor coordination with emergency services, leading to inappropriate interventions around pressurised equipment • Failure to investigate near misses and minor leaks that could indicate systemic issues • Lack of contingency plans for loss of critical pressurised services (steam, air, gas) affecting other safety systems		[redacted]	
14. Documentation, Information Management and Labelling	• Operators and maintainers working from outdated or inaccurate drawings, P&IDs and manuals • Inadequate labelling of pressure vessels, lines, isolation valves and flow direction leading to errors • Loss of historical data on design, inspections, repairs and modifications • Technical information [redacted] accessible during [redacted] or maintenance [redacted] • Language or [redacted] preventing workers [redacted] critical pressure safety information • Inconsistent or missing [redacted] indicating maximum allowable working pressure, contents and hazards	3H	[redacted]	1L
15. Auditing, Review and Continuous Improvement	• Systemic weaknesses in pressure vessel management not identified or corrected • Complacency developing over time as systems age without incident • Failure to incorporate learnings from internal incidents or external industry events	3H	[redacted]	1L

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	• Key performance indicators not reflecting actual pressure system risks and performance • Inadequate follow-up and close-out of actions from audits, inspections and incident investigations		[redacted]	

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