

**Refrigeration Installation**

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.	Administrative Change	
								PPE	

  

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 Management, Governance & Legal Compliance	<ul style="list-style-type: none"> <li>Lack of documented WHS management system aligned with WHS Act 2011 and WHS Regulations</li> <li>Insufficient senior management commitment to WHS for refrigeration installation activities</li> <li>Inadequate due diligence processes by officers for high-risk plant installation</li> <li>No systematic review of compliance with Australian Standards (e.g. AS/NZS 5149, AS/NZS 3000, AS 1677 where applicable)</li> <li>Poor integration of WHS obligations into contracts with builders, principal contractors and subcontractors</li> <li>Inadequate consultation, cooperation and coordination between PCBUs working on the same site</li> </ul>	4A	<ul style="list-style-type: none"> <li>Implement a certified WHS management system (e.g. ISO 45001) that specifically addresses refrigeration plant installation activities and interfaces</li> <li>Define and document officer due diligence responsibilities, including regular WHS performance reporting for refrigeration projects</li> <li>Develop and enforce a WHS legal compliance register covering WHS Act 2011, WHS Regulations, relevant Codes of Practice and refrigeration-related Australian Standards</li> <li>Embed WHS requirements into all tenders, contracts and scopes of work, including clear allocation of PCBU responsibilities and consultation arrangements</li> <li>Establish formal WHS consultation forums with principal contractor, building owner and key subcontractors, with documented minutes and action tracking</li> <li>Conduct periodic third-party or internal WHS audits focused on refrigeration installation governance and rectify non-conformance through a corrective action system</li> </ul>	3H
2. Design, Engineering & Technical Integrity of Refrigeration Systems	<ul style="list-style-type: none"> <li>Inadequate engineering design leading to structural failure of plant supports, pipe racks or equipment frames</li> <li>Incorrect selection/sizing of pressure vessels, valves, piping or safety devices</li> <li>Failure to consider refrigerant specific hazards (e.g. flammability, toxicity, high pressure, environmental impact)</li> <li>Lack of formal design verification or independent review of high-risk designs</li> <li>Insufficient integration of ventilation, gas detection, emergency shut-down and relief systems in plant rooms</li> <li>Inadequate segregation of hazardous areas for flammable refrigerants leading to ignition risk</li> <li>Design not compatible with safe access for installation, inspection, testing and maintenance</li> </ul>	4A	<ul style="list-style-type: none"> <li>Apply formal engineering design processes in line with relevant Australian Standards (e.g. AS/NZS 5149 series, AS 1210, AS 4041, AS 1677 where still referenced) and manufacturer specifications</li> <li>Ensure designs are completed and signed off by competent engineers with demonstrated refrigeration plant experience</li> <li>Implement mandatory independent design verification for pressure systems and large-scale or high-risk installations before procurement and installation</li> <li>Incorporate inherently safer design principles, including selection of safer refrigerants where reasonably practicable and minimisation of refrigerant charge</li> <li>Ensure design includes adequate ventilation, refrigerant leak detection, emergency stop/shut-down, over-pressure protection and spill/vent discharge systems</li> <li>Undertake hazardous area classification for flammable refrigerants and integrate this into layout, electrical design and equipment selection</li> <li>Design structures, pipe supports and plant layouts to provide safe access, working platforms, anchor points and clearances for installation and maintenance activities</li> </ul>	2M

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3. Project Planning, Sequencing & Interface Management	<ul style="list-style-type: none"> <li>Poor coordination between refrigeration installation and other trades leading to congestion, interference and unsafe work interfaces</li> <li>Inadequate planning of heavy lifts, plant positioning and access routes</li> <li>Changes to building design or schedule without reassessment of WHS risks for refrigeration systems</li> <li>Time pressure and compressed programs increasing likelihood of shortcuts and non-compliance</li> <li>Lack of clear definition of responsibilities between principal contractor, client and refrigeration contractor</li> <li>Inadequate control of simultaneous operations (SIMOPS), including hot works and electrical activities near refrigeration plant</li> </ul>	4A	<ul style="list-style-type: none"> <li>Develop a project-specific WHS plan for refrigeration installation that integrates with the principal contractor's construction management plan</li> <li>Use formal interface management processes to identify and manage conflicts with other trades, including scheduled coordination meetings and interface planning</li> <li>Prepare detailed installation staging plans showing crane access, lifting areas, laydown zones, temporary supports and exclusion zones</li> <li>Require formal change management and risk reassessment for design changes, scope variations or program accelerations affecting refrigeration plan</li> <li>Specify clear roles, responsibilities and escalation pathways for all PCBUs in project documentation and site instructions</li> <li>Implement SIMOPS planning and permitting for overlapping high-risk activities (e.g. hot works near refrigeration, live electrical work, confined spaces)</li> <li>Apply realistic timeframes and resourcing in project programs, with explicit prohibition on compromising safety standards to meet schedule</li> </ul>	2M
4. Contractor, Competency & Licensing Management	<ul style="list-style-type: none"> <li>Use of unlicensed or inadequately qualified refrigeration technicians or electricians</li> <li>Insufficient verification of high-risk work licences (e.g. dogging, rigging, crane operation, elevated work platform)</li> <li>Lack of competency in handling specific refrigerants (e.g. R410A, CO2, A2L or A3 flammable refrigerants)</li> <li>Inadequate induction and site-specific training for subcontracted labour</li> <li>Reliance on labour hire or temporary staff without robust WHS competence assessment</li> <li>No systematic assessment of contractor WHS performance and past incident history</li> </ul>	3H	<p>[REDACTED]</p>	2M

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5. Procurement, Supply Chain & Equipment Integrity	<ul style="list-style-type: none"> <li>• Procurement of refrigeration components, pressure vessels or valves that do not meet Australian Standards or certification requirements</li> <li>• Use of counterfeit, uncertified or incompatible parts within the refrigeration system</li> <li>• Inadequate transport and handling controls leading to damage to pressure equipment or plant</li> <li>• Lack of documentation (e.g. manufacturer data reports, test certificates, material traceability) for critical components</li> <li>• Failure to ensure compatibility between supplied equipment and design specifications (e.g. pressure ratings, refrigerant compatibility, electrical ratings)</li> <li>• Poorly managed just-in-time delivery causing rushed unloading and storage in unsafe locations</li> </ul>	3H	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M
6. Structural, Lifting & Access Systems for Plant Installation	<ul style="list-style-type: none"> <li>• Inadequate design or installation of structural supports for heavy plant, pipework and condensers</li> <li>• Failure of temporary supports, lifting points or rigging attachments during installation</li> <li>• Lack of safe permanent access (stairs, platforms, guardrails) to rooftop plant, plant rooms and elevated pipe runs</li> <li>• Uncontrolled interaction between cranes, forklifts, MEWPs and personnel in congested work areas</li> <li>• Insufficient planning for wind, load distribution and stability during heavy lifts</li> </ul>	4A	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M
7. Electrical, Controls & Automation Safety Management	<ul style="list-style-type: none"> <li>• Non-compliant electrical installations in plant rooms and hazardous areas</li> <li>• Inadequate segregation of low-voltage, extra low voltage and control circuits</li> </ul>	4A	<p>[REDACTED]</p>	2M

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	<ul style="list-style-type: none"> <li>Poor integration between refrigeration controls, safety interlocks and emergency shut-down systems</li> <li>Absence of lockout/tagout (LOTO) systems for isolation during construction, testing and commissioning</li> <li>Failure to manage arc flash and electric shock risks for large switchboards or MCCs</li> <li>Software or programming errors in control logic leading to unsafe plant operation</li> </ul>		[REDACTED]	
8. Refrigerant Selection, Handling & Leak Management Systems	<ul style="list-style-type: none"> <li>Selection of refrigerant without adequate assessment of toxicity, flammability, environmental and asphyxiation risks</li> <li>Inadequate systems for refrigerant storage, transfer, recovery and disposal</li> <li>Lack of engineered leak detection and alarm systems appropriate to refrigerant type and room configuration</li> <li>Insufficient ventilation design leading to potential build-up of refrigerant in plant rooms or low-lying spaces</li> <li>Inadequate procedures for detecting refrigerant leaks, spillage or releases during installation, pressure testing and charging</li> <li>Poor cylinder management, including unsecured storage or incompatible fittings</li> </ul>	4A	[REDACTED]	2M
9. Pressure Systems, Testing & Commissioning Controls	<ul style="list-style-type: none"> <li>Over-pressurisation of pipework or vessels during pressure testing or charging</li> <li>Use of incorrect test media, pressures or test procedures</li> <li>Failure of relief valves, bursting discs or pressure-limiting devices</li> <li>Inadequate isolation and tagging of systems during testing and</li> </ul>	4A	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>commissioning leading to uncontrolled releases</li> <li>Lack of documented commissioning procedures resulting in unsafe operating conditions at handover</li> <li>Incomplete or inaccurate pressure system documentation provided to the owner or operator</li> </ul>		[REDACTED]	
10. Plant Room, Rooftop & Site Infrastructure Safety	<ul style="list-style-type: none"> <li>Insufficient space and clearances in plant rooms for safe access, egress and equipment maintenance</li> <li>Inadequate fire detection, fire-fighting systems and emergency lighting in plant areas</li> <li>Poorly designed or maintained rooftop access, edge protection and walkways</li> <li>Lack of ventilation and temperature control that could affect both equipment reliability and worker health</li> <li>Blocked or poorly signposted emergency exits and muster points near refrigeration plant location</li> </ul>	3H	[REDACTED]	2M
11. Documentation, Labelling & Information Management	<ul style="list-style-type: none"> <li>Incomplete or inaccurate as-built drawings and plant documentation leading to unsafe for commissioning or maintenance</li> <li>Lack of clear labelling of valves, pipework, isolation points in hazardous areas</li> <li>Poor control of revisions to drawings, control logic and operating parameters</li> <li>Failure to provide clear operating and emergency procedures to the client and maintenance personnel</li> <li>Inadequate retention and accessibility of inspection, test and commissioning records</li> </ul>	3H	[REDACTED]	1L
12. Training, Induction & Competency for Operations Handover	<ul style="list-style-type: none"> <li>Client or facilities staff not adequately trained to operate and monitor complex refrigeration plant</li> </ul>	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>Lack of understanding of emergency procedures and alarm responses by on-site personnel</li> <li>Failure to address language, literacy and numeracy barriers in training materials</li> <li>Insufficient training on specific hazards such as toxic or flammable refrigerants, confined plant rooms and high-voltage equipment</li> <li>No structured refresher or competency reassessment program for ongoing operations</li> </ul>		[REDACTED]	
13. Emergency Preparedness, Response & Coordination	<ul style="list-style-type: none"> <li>Unclear or untested emergency response procedures for refrigerant leaks, fires, power failures or plant failures</li> <li>Inadequate coordination between site emergency plans and refrigeration system-specific risks</li> <li>Emergency equipment (e.g. escape sets, spill kits, first aid) not specified or not maintained</li> <li>Insufficient communication methods for alerting occupants, neighbouring businesses or emergency services during incidents</li> <li>Lack of drills or exercises involving refrigeration plant scenarios</li> </ul>	3H	[REDACTED]	1L
14. Health, Wellbeing & Fatigue Management for Project Teams	<ul style="list-style-type: none"> <li>Extended shifts, overtime and tight deadlines contributing to fatigue and reduced decision-making capacity</li> <li>Exposure to heat, cold, noise and confined work environments affecting health and concentration</li> <li>Psychosocial hazards including stress, conflict between trades and poor communication</li> <li>Inadequate systems to identify and manage workers with pre-existing medical conditions affected by plant room environments</li> </ul>	3H	[REDACTED]	2M

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			[REDACTED]	
15. Monitoring, Inspections, Audits & Continuous Improvement	<ul style="list-style-type: none"> <li>• Failure to detect emerging WHS issues in refrigeration installation projects due to inadequate monitoring</li> <li>• Inspection regimes that overlook critical elements such as pressure systems, refrigerant management or structural supports</li> <li>• Lack of analysis of incident, near miss and defect data to identify systemic weaknesses</li> <li>• No feedback loop from commissioning and early operation issues back into design, procurement and installation processes</li> </ul>	3H	<ul style="list-style-type: none"> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> <li>[REDACTED]</li> </ul>	1L

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.