

**Control Room Safety**

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. Governance, WHS Duties and Safety Leadership for Control Rooms	<ul style="list-style-type: none"> <li>Lack of clear allocation of WHS duties for control room operations under WHS Act 2011 (PCBU, officers, workers, others)</li> <li>Inadequate WHS policy coverage for 24/7 control room, navigation and machine room controller operations</li> <li>Insufficient safety leadership and visible commitment from senior management to safe control room practices</li> <li>Conflicting production and safety priorities leading to risk-taking in alarm response and process control</li> <li>Failure to consult, cooperate and coordinate with other duty holders (e.g. facility owners, contractors, IT vendors)</li> <li>No formal process for due diligence by officers regarding control room and navigation system risks</li> <li>Inadequate resourcing (staff, systems budget) to manage for control room hazards</li> </ul>	4A	<ul style="list-style-type: none"> <li>Establish and implement a documented WHS governance framework specific to control room, navigation and machine room controller operations, aligned with WHS Act 2011 duties</li> <li>Define and document roles, responsibilities and authorities for PCBUs, officers, control room supervisors, system engineers and operators in position descriptions and WHS procedures</li> <li>Integrate control room safety objectives into corporate WHS policy, KPIs and management performance plans, including 24/7 operations considerations</li> <li>Implement a senior due diligence program including regular briefings on critical control room risks, performance indicators, and incident trends</li> <li>Develop and enforce a risk appetite statement that prioritises safe operation over production output during abnormal upset conditions</li> <li>Establish a formal consultation structure (HSCs, toolbox meetings, change working groups) that includes control room and machine room controller personnel</li> <li>Implement WHS planning and budgeting processes that ensure adequate staffing, redundancy, training and technology for safe control room operation</li> <li>Conduct scheduled WHS management system audits focused on control room governance, with corrective action tracking and management review</li> </ul>	3H
2. Control Room Design, Layout and Ergonomics	<ul style="list-style-type: none"> <li>Poor ergonomic workstation design leading to musculoskeletal disorders and operator discomfort</li> <li>Inadequate line-of-sight to critical displays and navigation console condition indicators</li> <li>Glare, reflections and poor lighting affecting screen visibility and situational awareness</li> <li>Inappropriate acoustics causing distraction, alarm audibility issues or communication errors</li> <li>Insufficient space for safe movement, emergency egress and access to critical controls</li> <li>Inadequate segregation between noisy machine rooms and quiet control environments</li> </ul>	4A	<ul style="list-style-type: none"> <li>Adopt and apply recognised ergonomic and human factors standards (e.g. AS/NZS 4443, ISO 11064 principles) in control room and navigation console design</li> <li>Engage competent human factors specialists in the design and periodic review of control room layout, including line-of-sight and display positioning analyses</li> <li>Implement adjustable workstations, seating, monitor mounts and input devices to suit a range of body sizes and work patterns</li> <li>Design and maintain appropriate lighting levels, minimising glare and reflections on control and navigation displays with controlled ambient lighting systems</li> <li>Specify and manage acoustic performance (noise limits, sound absorption) to support clear communications and alarm audibility</li> <li>Ensure design provides adequate circulation space, clear emergency exits and unimpeded access to emergency stop devices and critical controllers</li> <li>Develop a workstation and equipment layout standard (including cable management) and include it in engineering and fit-out specifications</li> </ul>	2M

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	<ul style="list-style-type: none"> <li>Uncontrolled cables, trip hazards and ad-hoc equipment placement around consoles</li> <li>Control room layout not aligned with task flows, increasing cognitive load and error potential</li> </ul>		<ul style="list-style-type: none"> <li>Conduct periodic ergonomic risk assessments and user feedback sessions to drive systematic improvements to the control room environment</li> </ul>	
3. Human-Machine Interface (HMI), SCADA and Control System Design	<ul style="list-style-type: none"> <li>Complex or inconsistent HMI design leading to operator confusion and incorrect actions</li> <li>Inadequate alarm management causing alarm flooding, missed critical alarms or nuisance alarms</li> <li>Poor navigation screen design for control and navigation systems increasing error likelihood</li> <li>Non-standardised colour coding, symbols and terminology between different systems</li> <li>Insufficient clarity and priority ranking for safety-critical alarms and trip indications</li> <li>Inadequate segregation between control functions and information-only displays</li> <li>Lack of intuitive emergency override functions on controllers in machine rooms</li> </ul>	4A	<ul style="list-style-type: none"> <li>Implement HMI and SCADA design standards aligned with recognised human factors principles, including consistent colour coding and symbology across systems</li> <li>Develop and enforce an alarm management philosophy (e.g. based on ISA 18.2 or equivalent) including alarm rationalisation, prioritisation and shelving rules</li> <li>Standardise HMI templates for control room, navigation and machine-room controller interfaces to reduce variability and cognitive load</li> <li>Ensure critical process and navigation information is clearly visible at a glance, with distinct prioritisation of safety-related indications and alarms</li> <li>Conduct usability testing and operator-involved design reviews for new or modified HMI screens and controller interfaces</li> <li>Implement change management and configuration control for HMI and control logic modifications, including risk assessment and approval workflows</li> <li>Provide clear, documented guidance on emergency control functions, trip resets and overrides within system manuals and training</li> <li>Schedule periodic HMI and alarm performance reviews (e.g. alarm rate reports, top offenders, missed alarms analysis) with documented improvements</li> </ul>	2M
4. Control Systems Integrity, Redundancy and Cybersecurity	<ul style="list-style-type: none"> <li>Single points of failure in control navigation or machine room control systems causing loss of control</li> <li>Inadequate redundancy for critical servers, communications and power supplies</li> <li>Uncontrolled software changes or firmware updates introducing new faults</li> <li>Cybersecurity vulnerabilities in control networks leading to malicious or accidental interference</li> <li>Poor segregation between corporate IT and operational technology (OT) networks</li> </ul>	4A	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M

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	<ul style="list-style-type: none"> <li>Lack of validated backups and disaster recovery arrangements for control and navigation systems</li> <li>Use of unsupported or obsolete hardware and software in control and machine rooms</li> </ul>		[REDACTED]	
5. Staffing Levels, Workload Management and 24/7 Rostering	<ul style="list-style-type: none"> <li>Inadequate staffing levels in control rooms leading to excessive workload and delayed responses</li> <li>Single-operator coverage during high-risk operations or navigation activities</li> <li>Extended working hours and poor roster design leading to fatigue and reduced vigilance</li> <li>Lack of contingency plans for unplanned absences during critical operating periods</li> <li>Insufficient overlap during shift handover for effective communication plant and navigation status</li> <li>Unmanaged concurrent tasks (alarms, calls, reporting) leading to distraction and task shedding</li> <li>No formal process for staffing during abnormal or emergency conditions</li> </ul>	4A	[REDACTED]	2M
6. Competency, Training and Authorisation of Control Room Personnel	<ul style="list-style-type: none"> <li>Inadequate technical and systems training for control, navigation and machine room operators</li> <li>No formal competency assessment or authorisation to operate complex control systems</li> <li>Insufficient training in emergency response, abnormal situation management and navigation emergencies</li> <li>Lack of refresher training leading to skill fade, particularly for infrequent critical tasks</li> </ul>	4A	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>Reliance on informal buddying and on-the-job learning without structured materials</li> <li>Contractor or vendor personnel operating controls without site-specific induction and verification</li> </ul>		[REDACTED]	
7. Procedures, Work Instructions and Abnormal Situation Management	<ul style="list-style-type: none"> <li>Lack of clear, up-to-date procedures for normal, abnormal and emergency control room operations</li> <li>Procedures that are too complex, lengthy or not user-friendly under time pressure</li> <li>Inconsistent procedures between control room, navigation control and machine room controller operations</li> <li>Uncontrolled use of personal notes or workarounds that bypass formal procedures</li> <li>Procedures not updated following incidents, system modifications or regulatory changes</li> <li>Inadequate guidance for loss of control room, loss of navigation signals or machine room control failures</li> </ul>	4A	[REDACTED]	2M
8. Alarm Management, Monitoring and Escalation Systems	<ul style="list-style-type: none"> <li>Alarm floods overloading operators during plant upsets or navigation anomalies</li> <li>Nuisance or chattering alarms leading to operator desensitisation and alarm ignoring</li> <li>Failure to escalate unacknowledged or unresolved critical alarms</li> <li>Inadequate distinction between advisory, warning and critical trip alarms</li> <li>No clear ownership of alarm tuning, rationalisation and governance</li> <li>Alarm routing failures between machine rooms, navigation systems and central control</li> </ul>	4A	[REDACTED]	2M

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			[REDACTED]	
9. Communications, Handover and Information Management	<ul style="list-style-type: none"> <li>• Miscommunication between shifts leading to incorrect understanding of plant or navigation status</li> <li>• Ambiguous or incomplete log keeping and incident recording</li> <li>• Inadequate coordination between control room, navigation crew, field technicians and machine room staff</li> <li>• Reliance on informal verbal communications without confirmation or repeat-back</li> <li>• Failure of communications equipment (radios, phones, PA, data links) without backup arrangements</li> <li>• Information overload or poor display of critical information, increasing confusion</li> </ul>	4A	[REDACTED]	2M
10. Physical Security, Access Control and Visitor Management	<ul style="list-style-type: none"> <li>• Unauthorised access to control rooms, navigation console or machine room controllers</li> <li>• Interference with controls or safety systems by untrained personnel or visitors</li> <li>• Theft, sabotage or malicious tampering with control equipment</li> <li>• Lack of segregation between public, office and restricted control areas</li> <li>• Inadequate visitor supervision within control and machine rooms</li> <li>• Poor emergency access arrangements due to over-restrictive or poorly managed security controls</li> </ul>	3H	[REDACTED]	1L

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11. Machine Room and Equipment Controller Setup, Isolation and Maintenance Systems	<ul style="list-style-type: none"> <li>• Incorrect setup or configuration of machine room controllers leading to unsafe operation</li> <li>• Lack of formal management of change for controller parameter adjustments</li> <li>• Inadequate lockout/tagout (isolation) systems when working on controllers and associated equipment</li> <li>• Poor coordination between control room operators and maintenance personnel during testing and commissioning</li> <li>• Unplanned controller firmware or hardware changes without risk assessment</li> <li>• Infrequent or reactive maintenance increasing likelihood of control failures</li> </ul>	4A	<p>[REDACTED]</p> <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
12. Environmental Conditions, Fatigue and Worker Wellbeing in Control Rooms	<ul style="list-style-type: none"> <li>• Extended sedentary work and static postures leading to musculoskeletal strain</li> <li>• Sub-optimal temperature, air quality or ventilation affecting alertness</li> <li>• Insufficient management of fatigue for night shift and rotating shift operators</li> <li>• Psychosocial risks including high responsibility, isolation and critical incident stress</li> <li>• Inadequate rest and breakout facilities for control room staff</li> <li>• Use of stimulants or medications to cope with long hours and fatigue</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> <p>[REDACTED]</p>	2M

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13. Emergency Preparedness, Response and Business Continuity for Control Rooms	<ul style="list-style-type: none"> <li>• Inability to maintain control or navigation capability during fire, power loss or evacuation of the control room</li> <li>• Lack of documented emergency response plans specific to control and navigation operations</li> <li>• Insufficient training and drills for control room operators in emergency procedures</li> <li>• No backup or secondary control location for critical operations</li> <li>• Poor coordination with external emergency services and other PCBUs</li> <li>• Failure to prioritise safe shutdown over production during emergencies</li> </ul>	4A	[REDACTED]	2M
14. Incident Reporting, Investigation and Continuous Improvement	<ul style="list-style-type: none"> <li>• Under-reporting of incidents, near misses and control system anomalies</li> <li>• Superficial investigations that fail to identify systemic or management root causes</li> <li>• Lack of feedback to control room and navigation staff on lessons learned</li> <li>• Repeated recurrence of similar control or navigation incidents</li> <li>• No structured process for tracking corrective actions to completion</li> </ul>	3H	[REDACTED]	1L
15. Compliance Management, Audit and Review of Control Room Safety	<ul style="list-style-type: none"> <li>• Non-compliance with WHS Act 2011 and WHS Regulation requirements relevant to control rooms and plant</li> </ul>	3H	[REDACTED]	1L

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	<ul style="list-style-type: none"> <li>• Outdated policies and procedures not reflecting current legislation, codes of practice or standards</li> <li>• Gaps between documented systems and actual practice in control rooms and navigation operations</li> <li>• No systematic internal audit or assurance program focusing on control system safety</li> <li>• Failure to act on audit findings or regulator notices relating to control environments</li> </ul>		<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.