Automation Safety			
Business Name:		ABN:	
Business Address:			
Contact Person:	Phone:	Email:	

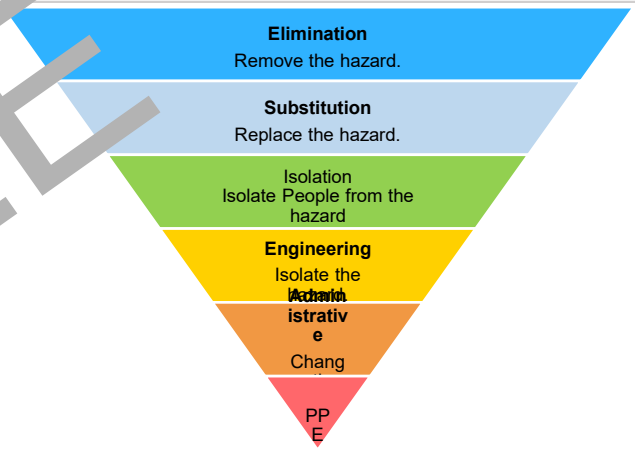
THIS RISK ASSESSMENT IS APPROVED BY THE PCBU OF THE PROJECT		
Under the Work Health and Safety Regulation (WHS Regulation), a person conducting a business or undertaking (PCBU) is required to ensure that a RISK ASSESSMENT is prepared before the proposed work starts.		
Full Name:		
Signature:	Title:	Date:

CLIENT OR PRINCIPAL CONTRACTOR DETAILS	
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. Governance, WHS Duties & Automation Safety Strategy	• Lack of clear organisational strategy for safe automation leading to ad-hoc decisions • Officers not exercising due diligence regarding automated plant risks under WHS Act 2011 • Unclear allocation of responsibilities between engineering, IT, operations and WHS • Inadequate consultation with workers and health and safety representatives about automation changes • Failure to integrate automation risk management into existing WHS management system • Insufficient resources allocated for safe design, verification and lifecycle management of automated systems	4A	• Establish an organisation-wide Automation Safety Governance Framework aligned with WHS Act 2011 and WHS Regulations, including documented policy objectives and accountabilities • Define and document officer due-diligence activities specific to automation (e.g. regular automation risk reviews, resourcing decisions, performance monitoring) • Create a RACI matrix that clearly assigns roles and responsibilities for design, programming, testing, change control, maintenance and operation of automated systems • Embed automation risk management into the existing WHS management system (planning, consultation, risk management, incident management and audit processes) • Implement formal worker consultation processes for all significant automation changes, including design reviews, pre-implementation briefings and post-implementation reviews • Set minimum competency requirements for key automation roles (controls engineers, integrators, programmers, technicians, supervisors) and ensure they are met • Include automation safety metrics (incident trends, near misses, bypass events, override frequency, safety function failures) in WHS performance reporting to the PCBUs and officers • Undertake periodic external review or audit of automation safety governance against relevant Australian Standards and industry good practice	3H
2. Automation Safety in Design & Procurement of Plant and Controls	• Procurement of machinery and control systems without formal safety-in-design review • Inadequate function safety design for hazardous plant (e.g. no risk-based SIL/PL determination) • Reliance on vendor assurances without verification of safety performance or compliance • Incompatible or poorly integrated components (PLC, safety relays, light curtains, interlocks) creating hidden failure modes • Failure to specify automation safety requirements in purchase contracts and tenders • Use of non-industrial-grade or uncertified control components in safety-critical applications	4A	• Implement a formal Safety in Design procedure for all new or modified automated plant, referencing AS/NZS 4024 series and other relevant Australian Standards • Require documented machine safety risk assessments from designers and integrators, including determination of required Performance Level (PLr) or Safety Integrity Level (SIL) • Include explicit automation safety performance and compliance requirements in procurement specifications and contracts (e.g. AS/NZS 4024, IEC 62061, IEC 61508, IEC 61511 where relevant) • Mandate use of certified safety PLCs and safety components for safety-related control functions, and require evidence of certification from suppliers • Conduct design reviews and HAZOP/LOPA style workshops for complex automated systems with participation from engineering, operations, maintenance and WHS • Require a documented verification and validation plan for all automated safety functions prior to accepting new equipment • Prohibit acceptance of new or modified automated plant until all specified guarding, interlocks, emergency stops and safety functions have been commissioned and validated • Maintain a design standards library for automation projects, including approved hardware platforms, safety architectures and programming standards	2M
3. PLC, Microprocessor & Software Lifecycle Management	• Uncontrolled changes to PLC and microprocessor programs introducing new hazards	4A	• Implement a formal Software Development Lifecycle (SDLC) for PLC and microprocessor programming, including design, review, testing, approval and controlled deployment	2M

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	• No version control leading to confusion over which logic is in service • Loss or corruption of source code preventing safe recovery after failures • Inadequate software development practices causing latent defects in safety-related logic • Programming of PLC controlled machinery by unqualified or unsupervised personnel • Lack of segregation between safety-related code and standard control code • Inadequate documentation of logic, safety functions and interfaces		• Use a version control system for all automation software with unique identifiers, change history, rollback capability and secure backups stored on corporate servers • Define mandatory competency and authorisation requirements for personnel allowed to program or modify PLCs and microprocessor controllers • Adopt coding standards for PLC and embedded software (naming conventions, modular structure, comments, safety function labelling and diagnostics) • Physically and logically segregate safety-related code (safety PLC or safety task) from standard control code where practicable • Require independent peer review and functional safety review of all changes affecting safety-related logic before download to live systems • Maintain complete and current documentation for each automated system, including I/O lists, safety function descriptions, cause-and-effect matrices and software revision records • Establish an emergency software recovery procedure, including secure storage of ‘last known good’ binaries and source code for critical controllers	
4. Change Management for Automation, Programming & Control Logic	• Control logic changes implemented without formal risk assessment • Bypassing or disabling interlocks during programming or fault finding without controls • Reprogramming microprocessor controllers without verifying impact on other systems • Inadequate communication of changes to operators, maintainers and supervisors • Parallel or conflicting changes from different vendors or contractors • Temporary changes left in place becoming de facto permanent configuration	4A	[redacted]	2M
5. Functional Safety & Interlocking Systems	• Failure or defeat of interlocks allowing access to hazardous zones during motion	4A		2M

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	• Incorrect safety function design (e.g. inadequate stopping performance, incorrect PL/SIL) • Poorly configured safety PLC logic leading to unexpected start-up or loss of protection • Reliance on single-channel safety devices without diagnostics where higher integrity is needed • Inadequate validation testing after programming or modifications • Lack of periodic proof testing leading to undetected dangerous failures		[redacted]	
6. Integration of Legacy and Modern Control Systems	• Incompatibility bet en outdated industrial controls d modern PLC or SCADA systems • Unclear boundaries of responsibilit where multiple vendors and technologies coexist • Hidden single points of failure due to partial upgrades or hybrid architectures • Insufficient documentation of legacy logic and wiring complicating safe upgrades • Inadvertent disabling of existing safeguards during migration or interfacing • Obsolescence of components preventing safe maintenance or replacement	3H	[redacted]	2M

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			[redacted]	
7. Testing, Commissioning & Validation of Automated Systems	• Inadequate testing of automated sequences before exposing workers to live plant • Testing automated systems with active energy sources and people in hazardous zones • Rushed commissioning leading to unresolved defects and temporary workarounds • Failure to verify fail-safe behaviour under power loss, communication loss or sensor faults • Testing bypasses and jumpers left in place after commissioning • Limited involvement of operators and maintainers in acceptance testing	4A	[redacted]	2M
8. Operational Control, Supervision & Human–Machine Interface	• Poorly designed [redacted] leading to operator confusion [redacted] responses • Over-reliance on automation reducing operator situational awareness and skill • Alarm flooding, nuisance trips or unclear messages causing alarm fatigue • Ambiguous mode indications (manual/auto/maintenance) resulting in unexpected motion • Insufficient supervisory oversight of automated operations, especially during abnormal conditions • Language, literacy or colour-vision barriers affecting understanding of screens and indicators	3H	[redacted]	2M

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			[redacted]	
9. Maintenance, Inspection & Calibration of Automated and Safety Controls	• Inadequate preventive maintenance of sensors, actuators and safety components • Drift or failure of sensing devices (e.g. encoders, proximity sensors, light curtains) going undetected • Maintenance practices that inadvertently defeat safeguards or alter programming • Lack of specialist diagnostic tools or skills to maintain complex automated systems • Use of non-equivalent replacement parts compromising safety function performance • Inadequate maintenance documentation and history leading to repeated failures	3H	[redacted]	2M
10. Cybersecurity, Remote Access & Networked Control Systems	• Unauthorised access to PLCs, HMIs or safety systems via network connections • Malware or ransomware affecting control system availability or integrity • Unsecured remote support tools allowing unintended changes to programming • Shared or weak passwords for engineering workstations and controllers • Lack of segregation between corporate IT network and operational technology (OT) network	4A	[redacted]	2M

JOB STEP	POTENTIAL HAZARDS	IR	CONTROL MEASURES	RR
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	• Unlogged or unmonitored remote connections leading to undetected changes		[redacted]	
11. Competency, Training & Authorisation for Automation Work	• Programming of PLC controlled machinery by inadequately trained personnel • Lack of understanding of functional safety principles among engineers and technicians • Operators and maintainers unaware of changes to automated behaviours or interfaces • Contractors performing automation work without verification of competence • No clear authorisation levels for software changes, testing and override • Insufficient training on updated or upgraded industrial control systems	3H	[redacted]	2M
12. Documentation, Configuration Control & Technical Records	• Out-of-date drawings, logic diagrams and manuals leading to unsafe decisions • Loss of configuration information for PLCs and controllers after failures • Multiple conflicting 'truth sources' for documentation across departments • Inadequate recording of safety assessments, validations and test evidence • Unavailable or inaccessible documentation for contractors and night shift staff • Informal storage of code and configs on personal drives or laptops	3H	[redacted]	1L

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			[redacted]	
13. Emergency Management, Fault Response & Override Control	• Workers not understanding correct response to automation failures or emergency stops • Uncontrolled restarts after trips, faults or emergency shutdowns • Extended or unapproved use of overrides and bypasses to keep production running • Lack of clear escalation pathways for persistent control system faults • Emergency procedures not updated following automation upgrades or reprogramming • Inadequate drills and practice for automation-related em[redacted] scenarios	3H	[redacted]	2M
14. Contractor, Vendor & System Integrator Management	• External programmers making unauthorised or undocum[redacted] changes to control systems • Vendors bypassing safeguards during commissioning or troubleshooting without site controls • Inconsistent standards and practices across different integrators and contractors • Insufficient handover documentation and training from vendors after projects • Conflicts between vendor default settings and site safety requirements	3H	[redacted]	2M

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			[redacted]	
15. Monitoring, Incident Investigation & Continuous Improvement in Automation Safety	• Automation-related near misses not recognised or reported, leading to repeat events • Incident investigations focusing on operator error rather than system and management causes • No systematic analysis of automation trip data, alarms or safety system activations • Failure to track performance of safety functions and automation reliability over time • Inadequate feedback loop from incidents to design, programming and training	3H	[redacted]	2M

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