

General Engineering Fabrication and Assembly

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			Elimination Remove the hazard.	
LIKELY	2 MODERATE	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4A ACUTE	DO NOT PROCEED	Substitution 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.	Engineering 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:	
4A	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.
3H	Review and approve additional controls before task starts. Senior supervisor sign-off needed.
2M	Ensure all nominated controls are in place and effective. 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 Leadership, Governance and Consultation	<ul style="list-style-type: none"> Lack of clear WHS roles, responsibilities and accountability across engineering and fabrication operations Insufficient leadership commitment to enforcing safe work systems over production deadlines Inadequate worker consultation on fabrication risks (e.g. cutting, drilling, foundry work, pickling, hot work) Failure to integrate WHS Act 2011 and WHS Regulations into management decision-making and planning Poor communication of lessons learned from incidents involving rotating machinery, cutting operations or hazardous chemicals Lack of formal mechanisms to involve health and safety representatives and committees in change management (new machines, new welding or pickling processes) Inadequate due diligence by officers in monitoring and verifying WHS performance data for fabrication and assembly activities 	4A	<ul style="list-style-type: none"> Establish and implement a WHS governance framework aligned with the WHS Act 2011, including defined officer due-diligence duties and reporting lines Develop a WHS policy endorsed by senior management that prioritises risk control over production pressure for all general engineering fabrication and assembly work Formally allocate WHS responsibilities to managers, supervisors and workers in position descriptions and performance reviews Implement structured WHS consultation arrangements (HSCs, HSRs, toolbox talks) that specifically address fabrication processes such as cutting, drilling, foundry work, pickling and metal treatment Introduce a standing WHS agenda item in production and planning meetings to review risks, incidents and controls for fabrication systems Establish a change management procedure requiring WHS risk assessment and consultation before introducing new machinery, chemicals, jigs, fixtures, pickling processes or production methods Conduct regular senior management safety walks and verifications focusing on system compliance (permit to work procedures, training) rather than worker behaviour alone Monitor WHS performance using lead and lag indicators (e.g. completion of risk assessments, close-out of corrective actions, frequency of machinery guarding checks) and report to the Board or executive 	3H
2. WHS Risk Management System (Hazard Identification and Assessment)	<ul style="list-style-type: none"> No systematic process to identify hazards for new or modified fabrication activities (e.g. new band clamp, mill, bearing heater, pickling procedure, hot melt glue gun use) Risk assessments focusing only on specific tasks (SWMS) rather than broader system and management failures Infrequent review of risk assessments for processes involving cutting, drilling, foundry work or surface treatments Failure to recognise interaction of hazards (e.g. metal dust, hot surfaces, rotating blades, chemical pickling fumes, manual handling of heavy fabrications) 	4A	<ul style="list-style-type: none"> Implement a documented WHS risk management procedure consistent with WHS Regulations, requiring identification, assessment, control and review for all fabrication and assembly operations Maintain a WHS risk register covering high-level risk categories (machinery, hazardous chemicals, manual tasks, noise, hot work, working at height, foundry operations, electrical, traffic and storage) Require formal risk assessments for new fabrication processes or equipment, including band clamps, metal chemical etching machines, pickling tanks, residual stress relief equipment and kickback-prone machinery Integrate risk assessment requirements into project planning, design reviews and procurement approvals for machinery and chemicals Schedule periodic review of key risk assessments (e.g. annually or after significant change) for cutting operations, drilling, grinding, pickling and foundry work Provide training to supervisors and safety representatives in risk assessment techniques specific to metal fabrication and engineering workshops 	2M

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	<ul style="list-style-type: none"> Inadequate assessment of non-routine tasks such as residual stress relief operations, water quench and pickle, and custom fabrication of complex assemblies Lack of formal process to assess new or modified chemicals for pickling, etching or surface oxidising treatments Failure to consider risks to contractors, visitors and neighbouring businesses during noisy or high-risk fabrication work 		<ul style="list-style-type: none"> Ensure risk assessments consider whole-of-life cycle of fabricated products, jigs, fixtures and materials handling equipment used in the workshop Link risk assessment outputs to action plans with assigned responsibilities, timeframes and verification of completion 	
3. Plant and Machinery Safety Management	<ul style="list-style-type: none"> Inadequate guarding and safety interlocks on rotating blades, drills, presses and kickback-prone machines Use of power tools without safety guards or with guards intentionally removed or bypassed Poorly controlled operation of fixed machinery and stationary tools such as drill presses, metal reamers, chamfering tools, countersink tools, deburring tools and metal hole cutters Lack of documented risk assessments and safe operating procedures for metal cutting, drilling, tapping, grinding and deburring systems Inadequate system for installation, commissioning and verification of new machinery and jigs/fixtures Failure of emergency stop systems, interlocks or braking systems on rotating equipment due to lack of inspection and testing Unmanaged risks from residual energy during clamp and unclamp fabrications, bearing fitting using heat or force, and water quench operations Ineffective control of unauthorised use or modification of machinery (guards removed, speed settings altered, jigs changed) 	1A	<ul style="list-style-type: none"> Establish a formal plant safety management procedure covering selection, risk assessment, guarding, commissioning, maintenance and decommissioning of machinery Ensure all fixed and portable machinery used for cutting, drilling, reaming, tapping, grinding, deburring and chamfering is designed and guarded in accordance with relevant Australian Standards Implement a structured plant risk assessment program for all major equipment, including drill presses, band saws, grinders, metal chemical etching machines and pickling equipment Develop and maintain written machine-specific safe operating procedures accessible at point of use, with mandatory supervisor sign-off for operator competency Introduce a permit or authorisation system for high-risk plant use, including operation of rotating blades, bearing heaters and kickback-prone machines Implement periodic inspections and functional testing of guarding, interlocks, emergency stops and braking systems, with records and corrective actions tracked Set up a lockout-tagout (LOTO) system for maintenance, cleaning and unjamming of all rotating or clamping equipment and verify its use through audits Control access to plant by issuing keys or access codes only to trained and authorised operators and supervisors Prohibit alteration or removal of guards without formal engineering review and approval, and enforce disciplinary processes for non-compliance 	2M
4. Hazardous Chemicals, Pickling and	<ul style="list-style-type: none"> Inadequate management of acids, alkalis and solvents used for pickling 	4A		2M

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	<ul style="list-style-type: none"> Insufficient extraction and ventilation for welding, thermal cutting and heat treatment processes Lack of coordinated emergency response for burns, fires and explosions in areas where hot work and foundry operations are performed 		[REDACTED]	
6. Mechanical Handling, Clamping and Assembly Systems	<ul style="list-style-type: none"> Uncontrolled movement or release of energy during clamp and unclamp fabrications and jigs and fixtures setup Incorrect use or design of band clamps, fixtures and edge metals leading to sudden release of fabrications Failure to consider load paths and residual stresses during assembly and residual stress relief operations Inadequate systems for safe use of bearing heaters and fitting bearings using heat or force, causing component ejection or burns Poorly planned handling of heavy or awkward fabrications, stainless steel handrails and aluminium tread plate Lack of engineering review for jigs and fixtures used in repetitive fabrication or drilling operations No formal process for inspection, maintenance and withdrawal from service of clamps, slings and fixtures 	4A	[REDACTED]	2M
7. Manual Handling, Ergonomics and Materials Movement	<ul style="list-style-type: none"> Repetitive manual handling of heavy metal components, bearings, gear cutters and fabricated assemblies Poorly designed manual deburring, hand filing and fitting tasks leading to musculoskeletal strain Ineffective systems for planning lifting, moving and storing large fabrications, stainless steel sections and aluminium tread plate Inadequate provision or management of mechanical aids for moving raw materials and finished products 	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> Inadequate segregation of pedestrian walkways from forklift or vehicle movements within the workshop Trip and slip hazards from offcuts, swarf, metal filings, broken or fractured metals and spilled liquids Poorly designed storage systems for gear cutters, bearings, clamps and heavy tooling, leading to falling object risks Insufficient lighting and signage around high-risk machinery and chemical treatment areas Uncontrolled stacking of fabricated components and aluminium tread plate creating stability hazards Lack of structured housekeeping schedules and accountability 		<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	
10. Electrical Safety and Maintenance Systems	<ul style="list-style-type: none"> Inadequate maintenance of electrical systems on fixed machinery, hand tools and metal processing equipment Use of damaged power leads or extension leads in wet or corrosive environments near racking areas or water quench processes Lack of testing and logging regime for portable electrical equipment in the workshop Failure to isolate electrical energy sources during maintenance of plant, bearing heaters or metal treatment equipment Poor segregation of electrical installations from conductive metal structures and damp areas No formal process to manage electrical modifications to machinery or workshop infrastructure 	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
11. Incident Reporting, Investigation and Corrective Action	<ul style="list-style-type: none"> Under-reporting of incidents, near misses and equipment malfunctions 	3H	<p>[REDACTED]</p>	2M

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	<ul style="list-style-type: none"> involving cutting equipment, drilling machines and clamping systems • Superficial investigations that fail to identify root causes and system weaknesses • Delayed or incomplete implementation of corrective actions following incidents in fabrication or chemical treatment operations • Lack of trend analysis to detect recurring issues with particular machines, processes or shifts • Poor communication of investigation findings and lessons learned to workers and contractors 		[REDACTED]	
12. Emergency Preparedness and Response	<ul style="list-style-type: none"> • Inadequate planning for fires, chemical spills, burns, crush injuries and entanglement incidents in fabrication areas • Poorly coordinated emergency response between workshop, office and external emergency services • Insufficient emergency equipment (e.g. eyewash, safety showers, fire extinguishers) in areas with pickling, metal etching and... • Lack of training and drills for scenarios involving machinery entrapment, foundry incidents and chemical e... • Obstructed or poorly marked emergency exits and evacuation routes due to stored materials or fabrication work in progress 	3H	[REDACTED]	2M
13. Contractor, Visitor and Client Interface Management	<ul style="list-style-type: none"> • Contractors performing cutting, drilling, pickling or hot work without aligning to site WHS systems • Inadequate induction of visitors and clients entering workshop or fabrication areas • Poor coordination when multiple PCBUs share the workplace (e.g. shared foundry, shared fabrication bays) 	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> Lack of verification of contractor competency and licensing for specialised work such as electrical, pressure equipment or chemical handling Failure to communicate changes in workshop layout, traffic routes or high-risk activities to affected parties 		[REDACTED]	
14. Health Monitoring, Welfare and Fatigue Management	<ul style="list-style-type: none"> Exposure to metal dusts, fumes and chemicals without adequate health monitoring or surveillance Heat stress and fatigue from extended work in hot environments such as foundries or during residual stress relief operations Inadequate amenities, rest breaks and hydration arrangements for workers in high-demand fabrication roles Shift patterns and overtime practices that contribute to fatigue and decrease concentration during operation of high-risk plant Insufficient support for workers reporting early signs of musculoskeletal disorders or respiratory issues 	3H	[REDACTED]	2M
15. Design, Planning and Scheduling for Safe Fabrication	<ul style="list-style-type: none"> Fabrication design that is difficult or unsafe to manufacture, assemble or install (e.g. complex stainless steel handrails or large custom design) Insufficient consideration of access, lifting and installation methods during planning of workshop fabrication works Compressed schedules that encourage bypassing of safety procedures (e.g. operating power tools without guards, using cutting equipment without proper safety measures) Failure to involve engineering, WHS and operations input into early design and planning for new products and fabrication jobs Ineffective job sequencing leading to rework, congestion and simultaneous 	3H	[REDACTED]	1L

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	high-risk activities in limited workshop space			

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.