

Mig Welding

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:	

SAMPLE

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. Governance, WHS Leadership and Legal Compliance	<ul style="list-style-type: none"> Lack of clear organisational accountability for welding safety leading to unmanaged risks Senior management not fully aware of duties under the WHS Act 2011 and WHS Regulations regarding welding and hazardous chemicals Inadequate integration of welding risks into the overall WHS management system and risk register Absence of a formal Mig welding safety policy or welding-specific standards and procedures Poor consultation with workers and Health and Safety Representatives (HSRs) on welding-related decisions Failure to monitor and review compliance with Australian Standards and Codes of Practice related to welding and fume control 	High	<ul style="list-style-type: none"> Assign clear WHS governance roles for welding (e.g. PCBU director-level sponsor, WHS manager, line managers, supervisors) and document responsibilities in the WHS management system Develop, approve and communicate a Mig welding policy that references obligations under the WHS Act 2011, WHS Regulations, and relevant Codes of Practice (e.g. Managing risks of hazardous chemicals, Welding processes) Incorporate Mig welding risks into the enterprise risk register and ensure they are reviewed at WHS committee and executive meetings at defined intervals Establish a formal consultation framework with workers and HSRs regarding changes to welding equipment, consumables, work methods, and control measures Adopt and periodically review internal welding safety procedures and guidelines against current Australian Standards (e.g. AS/NZS 1677 series, AS/NZS 1554, AS/NZS 1715/1716 for RPE) and Safe Work Australia guidance Schedule annual compliance audits of welding activities focusing on governance, documentation, and alignment with WHS legislative requirements Embed welding safety KPIs into management performance plans (e.g. completion of risk reviews, closure of corrective actions, completion of training) Ensure that contractor management procedures require contractor welding activities to comply with the same organisational governance and WHS standards 	Medium
2. Planning, Design and Integration of Welding Activities	<ul style="list-style-type: none"> Welding introduced into the workplace without formal planning and change management Poor workshop layout leading to congestion, inadequate separation from other tasks, and uncontrolled ignition sources Inadequate assessment of interaction between Mig welding and concurrent activities (e.g. hot work near flammable liquid storage, compressed gas handling, painting, grinding) No systematic pre-implementation risk assessment for new welding processes, consumables, or materials Lack of standard criteria for establishing designated welding bays or booths, including ventilation and fire separation Insufficient consideration of ergonomics and manual handling in 	High	<ul style="list-style-type: none"> Implement a formal change management procedure requiring WHS risk assessment for new or modified Mig welding activities, materials, or equipment before introduction Design the workshop layout using risk-based principles, ensuring defined welding zones, adequate clearances, and separation from incompatible activities (e.g. flammable stores, office areas) Integrate hot work and welding requirements into site layout planning, including fire-resistant barriers, curtains, and controlled access zones Require a documented welding-specific risk assessment (or welding safety plan) during project planning stages for any significant welding scope Standardise criteria for welding bays, including ventilation design, fume extraction points, lighting levels, emergency egress, and fire protection systems Incorporate ergonomic design principles into jigs, benches, and fixtures to minimise awkward postures and excessive manual handling Ensure that any off-site or field Mig welding is subject to the same planning controls, including location-specific risk assessment and permissions Include electrical supply, cable routing, and earthing considerations in the planning for welding stations to reduce electrical and trip hazards 	Medium

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	welding design (e.g. fixture height, rotation devices, work positioning)			
3. Procurement of Plant, Equipment and Consumables	<ul style="list-style-type: none"> • Purchase of Mig welding machines, gas systems, and accessories that do not comply with relevant Australian Standards or are unsuitable for the intended task • Lack of specification for safety features (e.g. voltage reduction devices, over-temperature protection, appropriate IP ratings, fume extraction compatibility) • Use of substandard or incompatible welding consumables (wires, shielding gases) increasing fume generation or process instability • Procurement of gas cylinders and regulators from multiple suppliers without standardisation, leading to misuse and compatibility issues • Absence of safety and technical documentation (manuals, data sheets, certificates of conformity, Safety Data Sheets) at the point of purchase • Inadequate evaluation of lifecycle costs, including maintenance, calibration, and replacement availability, leading to increased maintenance 	High	<ul style="list-style-type: none"> • Develop a formal welding equipment procurement specification requiring compliance with relevant Australian Standards, manufacturer safety requirements, and organisational WHS policies • Involve WHS, engineering, and end-user representatives in the selection of Mig plant and associated equipment to ensure compatibility, usability, and inherent safety • Standardise preferred brands and models of Mig welders, wire feeders, torches, and regulators to support consistent training, maintenance, and spare parts management • Include safety features (such as voltage reduction devices, overload protection, built-in fume extraction where applicable) as mandatory criteria in procurement tenders • Require suppliers to provide all instruction manuals, Safety Data Sheets for consumables and shielding gases, and evidence of conformity with relevant standards as a condition of purchase • Assess welding consumables not only on cost but also on fume generation characteristics and compatibility with existing controls (e.g. extraction systems, RPE) • Implement a centralised approval process for new consumables and gases, including trial and WHS review before broad rollout • Establish supply contracts that specify cylinder handling equipment, storage systems, and safety training support for compressed gas use 	Medium
4. Facility Infrastructure, Ventilation and Fume Control Systems	<ul style="list-style-type: none"> • Inadequate general ventilation or lack of local exhaust ventilation resulting in accumulation of welding fumes and gases • Poorly designed or unmaintained extraction systems leading to ineffective capture at the arc • Ventilation that interferes with shielding gas coverage, resulting in weld defects and rework pressures • Lack of monitoring of airborne contaminants and welding fume exposure against workplace exposure standards 	High	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	Medium

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	<ul style="list-style-type: none"> • Insufficient segregation of welding fumes from adjacent work areas and office spaces • Inadequate design of make-up air, creating negative pressures and unintended airflow paths • Noise amplification due to hard surfaces and extraction systems not considered in acoustic design 		[REDACTED]	
5. Electrical Safety, Power Supply and Isolation Systems	<ul style="list-style-type: none"> • Inadequate electrical design leading to overloading of circuits, overheating, or increased fire risk • Lack of appropriate earthing and bonding for welding circuits, increasing risk of electric shock or equipment damage • Improper use of extension leads, adaptors, and power boards introducing trip and fire hazards • Absence of formal isolation, lockout and tagout procedures for welding equipment during maintenance or fault finding • Insufficient testing and tagging of portable electrical equipment and leads • Electrical supply and earthing not adapted for outdoor or field welding, exposing workers to increased shock risk in damp conditions 	High	[REDACTED]	Medium
6. Hazardous Chemicals, Gases and Cylinder Management Systems	<ul style="list-style-type: none"> • Poorly controlled storage and handling of shielding gases resulting in risk of cylinder rupture, leaks, or projectiles • Inadequate separation of flammable and oxidising gases in storage and at point of use • Lack of system for maintaining Safety Data Sheets and communicating 	High	[REDACTED]	Medium

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	<p>hazardous chemical information to workers</p> <ul style="list-style-type: none"> • Incorrect regulator selection, installation, or maintenance leading to gas release or explosion • Inadequate controls to prevent oxygen enrichment or asphyxiation in confined or poorly ventilated spaces • Unsystematic management of welding-related chemicals (cleaners, anti-spatter, paints) creating uncontrolled exposure and fire risk 		[REDACTED]	
7. Fire, Explosion and Hot Work Permit Systems	<ul style="list-style-type: none"> • Mig welding conducted in areas containing combustible materials, flammable liquids, or dusts without formality of a hot work process • Lack of systematic hot work permitting for non-routine or high-risk welding activities • Inadequate fire detection, fire fighting equipment, or emergency response planning in welding areas • Poor housekeeping leading to accumulation of combustibles, offcuts, and flammable residues near welding operations • No formal post-weld fire watch or monitoring system for smouldering materials • Incompatible hot work activities conducted simultaneously by different work groups or contractors without coordination 	High	[REDACTED]	Medium

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8. Worker Competency, Licensing and Training Systems	<ul style="list-style-type: none"> Workers performing Mig welding without adequate theoretical and practical competency Supervisors unable to recognise unsafe welding practices or ineffective controls due to lack of training No structured induction on welding-specific risks such as fumes, radiation, heat, electrical hazards, and manual handling Insufficient training on use, care and limitations of PPE and respiratory protective equipment Competency not re-assessed when new materials, processes, or equipment are introduced Lack of documented evidence of worker competency and training completion 	High	<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>	Medium
9. Safe Systems of Work, Procedures and Work Instructions	<ul style="list-style-type: none"> Absence of documented safe systems of work for Mig welding activities Procedures that focus on production outcomes and not on controlling health and safety risks Inconsistent work practices between shifts, teams, and contractors leading to unpredictable risk levels Procedures not updated when new technology, processes, or legislation changes occur Complex or impractical procedures that workers bypass in order to meet production targets Safe work procedures not integrated with other relevant systems (e.g. confined space, working at height, hazardous chemicals) 	High	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	Medium

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			[REDACTED]	
10. Personal Protective Equipment (PPE) and Respiratory Protection Management	<ul style="list-style-type: none"> • PPE selected on an ad hoc basis without formal risk assessment, leading to inadequate protection • Inconsistent use of welding helmets, eye protection, gloves, and protective clothing due to poor supervision or comfort issues • Respiratory protective equipment not matched to the level and type of welding fume generated • Lack of fit testing, maintenance and storage systems for tight-fitting RPE • PPE not integrated with other equipment (e.g. compatibility between helmets, RPE, and communication devices) • Over-reliance on PPE instead of prioritising higher order controls such as elimination, substitution, and engineering controls 	High	[REDACTED]	Medium
11. Maintenance, Inspection and Asset Management of Welding Plant	<ul style="list-style-type: none"> • Welding equipment used with damaged cables, torches, connectors, or gas hoses due to lack of systematic inspection • Preventive maintenance not undertaken leading to overheating, electrical faults, and poor weld quality • Calibration of machines not verified, resulting in out-of-specification welds and rework pressure • Spare parts and consumables (e.g. liners, tips, nozzles) not managed, encouraging unsafe improvisation • Repairs performed by unqualified personnel, bypassing safety features • Maintenance records not kept, preventing identification of recurrent failures or systemic issues 	High	[REDACTED]	Low

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			[REDACTED]	
12. Contractor Management and Outsourced Welding Activities	<ul style="list-style-type: none"> Contractors performing Mig welding without meeting the organisation's WHS standards Inadequate pre-qualification of welding contractors regarding competency, licences, and safety performance Poor communication of site-specific hazards, procedures, and emergency arrangements to contractors Overlap between contractor welding activities and internal operations creating uncoordinated risks Lack of monitoring and supervision of contractor compliance with welding safety controls Contractor use of unverified welding equipment and consumables 	High	[REDACTED]	Medium
13. Health Surveillance, Exposure Monitoring and Wellbeing	<ul style="list-style-type: none"> Chronic exposure to welding fumes, gases and noise without adequate long-term health monitoring Lack of systems to identify workers at higher health risk (e.g. pre-existing respiratory or cardiovascular conditions) Early signs of overexposure (respiratory symptoms, skin conditions, eye irritation) not systematically captured or investigated No coordinated approach to audiometric testing for workers exposed to welding-related noise Insufficient support for workers affected by heat stress, fatigue, or musculoskeletal strain from sustained welding work 	High	[REDACTED]	Medium

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			[REDACTED]	
14. Supervision, Monitoring, Consultation and Safety Culture	<ul style="list-style-type: none"> • Insufficient frontline supervision of welding activities leading to unsafe shortcuts and non-compliance with controls • Limited worker engagement in identifying hazards and suggesting improvements to welding processes • Near misses and minor incidents during welding not reported, investigated, or shared for learning • Production pressure overriding safety considerations in welding tasks • Poor safety culture where repeated low-level deviations from welding procedures are tolerated 	High	[REDACTED]	Medium
15. Emergency Preparedness, Incident Management and Recovery	<ul style="list-style-type: none"> • Lack of clear emergency procedures specific to welding incidents such as fires, electric shock, gas leaks, and other injuries • Emergency equipment (fire extinguishers, eyewash, first aid kits) not readily accessible from welding locations • Workers and supervisors not trained in initial response to welding-related emergencies • Inadequate coordination with external emergency services for complex welding environments (e.g. confined spaces, multi-storey work) • Poor incident investigation processes leading to repeated welding-related events 	High	[REDACTED]	Medium

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			[REDACTED]	
			[REDACTED]	
			[REDACTED]	

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 IF 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/facts-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.