Gas Welding and Cutting

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:

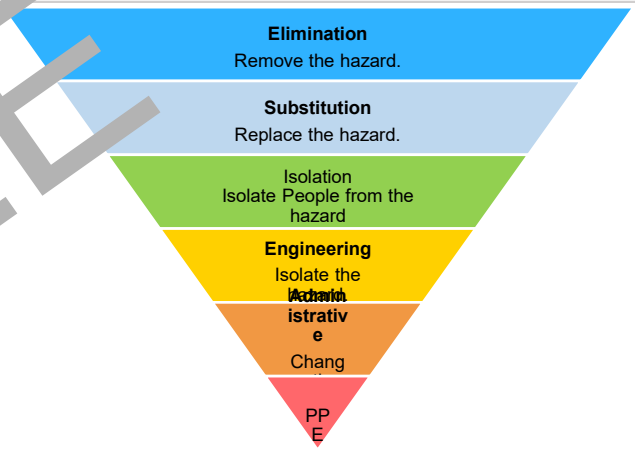
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

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, Legal Compliance and WHS Duties	• Failure to identify and comply with WHS Act 2011 and WHS Regulation requirements relating to welding, hazardous chemicals, hazardous atmospheres and plant • Absence of documented WHS management system covering gas welding and cutting activities across all sites • Unclear allocation of WHS duties and due diligence obligations for Officers, PCBUs and workers involved in welding and cutting work • Inadequate consultation arrangements with workers and Health and Safety Representatives (HSRs) regarding changes to welding and cutting processes or equipment • Lack of documented approval process for introducing new gases, regulators, torches or cutting systems • No process to ensure that contractors and labour hire workers [illegible]cting gas welding and cutting comply with organisational WH[illegible] requirements	High	• Establish and maintain a documented WHS manag[illegible]ent system that explicitly addresses gas welding and cutting, aligned with WHS Act 2011, WHS R[illegible]lation and relevant Safe Work Australia Codes of Practice (e.g. Welding Processes, Hazardou[illegible]hemicals, Managing Risks of Plant in the Workplace) • Define and document WHS roles, respons[illegible]ties and [illegible]countabilities for Officers, managers, supervisors and workers in relation to gas we[illegible]g [illegible] cutting, including authorisation levels for equipment selection, modification and decomm[illegible]oning • Implement a formal compliai[illegible] register identifyi[illegible]ll rel[illegible]nt legislation, codes of practice, Australian Standards (e.g. AS 4839, AS 42[illegible] AS/NZS 1596, A[illegible]74 series) and internal standards that apply to gas welding and c[illegible]g, [illegible] allo[illegible]d responsibility for monitoring updates • Develop an[illegible]mplement a[illegible]organisa[illegible]nal p[illegible]edure for gas welding and cutting that specifies minimum WHS requiren[illegible]ts, includi[illegible] risk mani[illegible]ent, training, isolation, hot work permits, gas storage, inspe[illegible]n, and [illegible]erge[illegible]y response • Emb[illegible]nsultati[illegible] requirements into the change management process so that proposed changes to gas typ[illegible]s, [illegible]rage lo[illegible]tions, regulators, hoses, flashback arrestors, or work methods are discussed with workers[illegible]nd [illegible]SRs be[illegible]e implementation • Establi[illegible] form[illegible] WHS requirements for contractors undertaking gas welding and cutting (e.g. pre[illegible]li[illegible]ation, review of their SWMS and risk assessments, site induction, and performance monitoring agains[illegible]S KPIs) • [illegible]clude gas welding and cutting risks and controls in WHS committee agendas and regular management rev[illegible]w meetings, with documented actions and follow-up • Conduct periodic internal WHS audits and legal compliance audits focused on gas welding and cutting systems, and track corrective actions to closure within defined timeframes	Medium
2. Hazard and Risk Management System	• Lack of formal, do[illegible]d risk assessments for gas welding and cu[illegible]ng across different work environments (workshop, field, confine[illegible], elevated work platforms) • Risk assessments focusing only on task steps and not on systemic issues such as supervision, design, maintenance and emergency management • Inconsistent application of the hierarchy of control leading to over-reliance on administrative controls and PPE • Failure to review risk assessments following incidents, near misses,	High	• Implement a formal risk management procedure that mandates documented WHS risk assessments for all gas welding and cutting activities, considering normal operations, non-routine tasks, maintenance and abnormal situations • Ensure risk assessments address system-level factors such as supervision, work scheduling, simultaneous operations, housekeeping systems, gas storage layout, and emergency arrangements, not just operator actions • Require the documented use of the hierarchy of control for welding and cutting risks, with justification where higher-order controls (elimination, substitution, engineering) are not reasonably practicable • Standardise a risk assessment template for gas welding and cutting that prompts consideration of fire and explosion, oxygen enrichment, gas leaks, fume exposure, confined spaces, working at height, electrical hazards and interaction with other work • Introduce a formal review trigger list requiring reassessment of gas welding and cutting risks after incidents, near misses, plant modifications, process changes, or introduction of new materials or consumables	Medium

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	equipment changes or changes to materials and work environments • No structured process for identifying interaction risks with other activities (e.g. hot work near flammable storage, traffic routes, or public access)		• Integrate welding and cutting into pre-start and job planning tools (e.g. Take 5, JSA, permit-to-work systems) to ensure day-to-day verification of conditions against risk controls • Maintain a central repository or database of approved gas welding and cutting risk assessments accessible to workers and supervisors, with version control and review dates	
3. Plant, Equipment and Gas Procurement	• Procurement of incompatible or sub-standard cylinders, regulators, hoses, torches or flashback arrestors that do not comply with relevant Australian Standards • Purchase of equipment without considering pressure ratings, duty cycles, environmental conditions and compatibility with existing systems • Lack of lifecycle planning for gas welding and cutting plant, including inspection, testing, replacement intervals and end-of-life disposal • Acquisition of non-standard components or modified equipment from multiple suppliers leading to complexity and incorrect set-up • Procurement processes driven solely by cost, with no structured WHS evaluation of suppliers or equipment	High	• Integrate WHS requirements into procurement policies to ensure all gas welding and cutting equipment (cylinders, regulators, hoses, torches, flashback arrestors, trolleys, gas manifolds) complies with applicable Australian Standards and supplier specifications • Develop approved equipment specifications for gas welding and cutting, including pressure ratings, materials compatibility, safety devices and environmental limitations, and require procurement staff to purchase only from the approved list • Require WHS and technical review of all new gas welding and cutting plant prior to purchase, including risk assessment and compatibility with existing site systems and storage arrangements • Implement supplier pre-qualification processes that assess WHS performance, product quality, technical support, and availability of safety information (e.g. manuals, safety bulletins, training materials, SDSs) • Maintain an asset register for all critical gas welding and cutting equipment, including serial numbers, inspection and maintenance history, and defined replacement intervals based on manufacturer guidance • Standardise on a limited range of gas types, regulators, and fittings where practicable to reduce the risk of incorrect connections and dangerous combinations • Prohibit procurement of second-hand or modified gas welding and cutting equipment unless it has been inspected, tested and approved by a competent person in accordance with relevant Standards and internal procedures	Medium
4. Storage, Handling and Facility Design	• Inadequate design of gas cylinder storage areas leading to exposure to heat sources, vehicle impact, poor ventilation or unauthorised access • Improper segregation of flammable and oxidising gas cylinders and storage with incompatible materials such as combustible goods or corrosive chemicals • Poorly designed workstations with limited space, cluttered layouts, or trip hazards affecting safe movement with hoses and trolleys • Insufficient fixed fire protection systems, fire extinguishers, or emergency isolation valves in welding and cutting areas	High	[redacted]	Medium

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	• Lack of systems controlling cylinder transport, securing and upright storage, and movement between storage and work areas		[redacted]	
5. Maintenance, Inspection and Asset Management	• Lack of systematic inspection and maintenance of regulators, hoses, flashback arrestors, torches and trolleys leading to gas leaks, flashbacks and equipment failure • Use of damaged or out-of-test cylinders, or equipment used beyond manufacturer's recommended service life • Informal repairs or modifications conducted by unqualified personnel using non-approved parts or methods • No documented schedule for testing flashback arrestors, leak testing and replacement of hoses and O-rings • Failure to remove defective equipment from service and clearly tag or quarantine it to prevent re-use	High	[redacted]	Low
6. Competency, Training and Supervision	• Workers performing gas welding and cutting without adequate theoretical and practical training in the hazards and controls • Supervisors lacking specific knowledge of gas welding and cutting risks and therefore unable to verify safe systems of work	High	[redacted]	Medium

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	• No formal competency assessment or refresher training, leading to skill fade and unsafe practices becoming normalised • Contractors and labour hire workers not receiving site-specific induction or verification of their welding qualifications and experience • Limited training in emergency response to gas leaks, flashbacks, fires or injuries related to welding and cutting		[redacted]	
7. Procedures, Work Authorisation and Hot Work Permits	• Absence of standardised procedures governing how gas welding and cutting work is planned, authorised and monitored • Inconsistent use of hot work permits, especially in non-routine locations or during after-hours work • Permits and procedures focusing on paperwork rather than effective risk control and verification in the field • Lack of coordination of gas welding and cutting activities with other high-risk work such as confined space entry, working at height or operations involving flammable liquids • Failure to define clear criteria for when welding and cutting work must cease due to environmental conditions or conflicting tasks	High	[redacted]	Medium
8. Ventilation, Fume and Exposure Control Systems	• Systemic failure to control exposure to welding fumes, gases and combustion products where gas welding and cutting	High		Medium

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	is carried out in enclosed or poorly ventilated spaces • Reliance on respiratory protective equipment as the primary control instead of engineering solutions such as local exhaust ventilation • No monitoring or assessment of atmospheric contaminants or oxygen levels in areas where welding and cutting is conducted • Inadequate integration of welding and cutting controls with confined space entry procedures and atmospheric testing regimes • Lack of maintenance and effectiveness checks for installed fume extraction and general ventilation systems		[redacted]	
9. Emergency Preparedness and Response	• Lack of coordinated [redacted] response plans for [redacted] leaks, cylinder fires, flashbacks, [redacted] welding-related inju[redacted] • Workers and supervisors not traine[redacted] or drilled in emergency shutdown procedures for gas suppl[redacted] equipment • Inadequate communication systems to raise the alarm and coordinate evacuation if a gas-related incident occurs • Emergency equipment (e.g. gas isolation valves, fire extinguishers, first aid equipment) not readily accessible or clearly identified in welding and cutting areas • No liaison with emergency services regarding storage of gas cylinders and potential worst-case scenarios	High	[redacted]	Medium

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			[redacted]	
10. Incident Reporting, Investigation and Continuous Improvement	• Under-reporting of gas welding and cutting near misses, including minor leaks, small fires or equipment malfunctions • Superficial incident investigations that focus on operator error rather than systemic issues such as design, maintenance, supervision or training gaps • Lack of trend analysis to identify recurring issues related to gas welding and cutting across sites or departments • Failure to implement, track and review corrective and preventive actions arising from incidents and audits • Limited mechanisms for sharing lessons learned and best practice improvements with all w[redacted]involved in welding and cuttin[redacted]	Medium	[redacted]	Low

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