

**Plasma Cutter**

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			<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.	<b>Administrative</b> Change	
								<b>PPE</b>	

  

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. Procurement, Design and Specification of Plasma Cutting Equipment	<ul style="list-style-type: none"> <li>• Selection of plasma cutter and gas cutting equipment that is not fit for purpose, leading to excessive fume, heat, noise and electrical risk</li> <li>• Procurement of hand-held units without adequate built-in safety features (e.g. failsafe triggers, thermal overload, voltage reduction device where applicable)</li> <li>• Failure to ensure equipment is designed and manufactured in accordance with relevant Australian Standards and supplier instructions</li> <li>• Inadequate matching of electrical supply capacity, duty cycle and ventilation requirements to the intended work environment</li> <li>• Purchasing incompatible consumables, hoses, regulators and leads, increasing risk of leaks, flashbacks, overheating and electric shock</li> <li>• Lack of consideration for required guarding, screens and safe extraction at the time of purchase</li> </ul>	High	<ul style="list-style-type: none"> <li>• Establish and implement a formal procurement procedure that requires WHS review and sign-off before purchasing plasma cutters and associated gas cutting equipment</li> <li>• Specify compliance of plant with relevant Australian Standards, manufacturer's requirements and WHS Regulation (e.g. plant safety, electrical safety, pressure equipment, hazardous chemicals)</li> <li>• Ensure all plasma cutters are sourced from reputable suppliers and include appropriate built-in controls such as dead-man triggers, appropriate insulation, overload protection and where applicable voltage reduction devices</li> <li>• Include WHS criteria in purchase decisions, covering fume generation rate, noise output, duty cycle, cooling requirements, torch ergonomics and lead management systems</li> <li>• Standardise brands and models where applicable to simplify training, maintenance, spare parts and risk control verification</li> <li>• Require supplier provide technical data sheets, safety information, instructions for safe use, and details of compatible consumables, gases, hoses and regulators</li> <li>• Assess the intended work locations (workshop, site, confined or partially enclosed spaces) during design and procurement to ensure suitable local exhaust ventilation, general ventilation and fume control options can be installed</li> <li>• Ensure procurement process considers the need for welding screens, fire-resistant curtains, spark containment mats, cable management systems and appropriate RCD-protected power outlets</li> <li>• Include consultation with workers, health and safety representatives (HSRs) and maintenance personnel when selecting new or replacement units</li> </ul>	Medium
2. Governance, WHS Management System and Legal Compliance	<ul style="list-style-type: none"> <li>• Absence of a documented WHS management system specifically addressing plasma and gas metal cutting activities</li> <li>• Lack of clarity around PCBU, officer and worker duties under the Work Health and Safety Act 2011 for plant and hazardous chemicals</li> <li>• Inconsistent application of risk management processes for plasma cutters across different sites or shifts</li> <li>• Poor communication and consultation mechanisms leading to workers being unaware of policies, procedures and changes to controls</li> <li>• Failure to monitor and review the effectiveness of risk controls for fumes,</li> </ul>	High	<ul style="list-style-type: none"> <li>• Develop and implement a documented WHS management system that explicitly covers metal cutting by gas or plasma, including plasma cutter use in workshops and field locations</li> <li>• Ensure officers exercise due diligence under the WHS Act 2011 by keeping up-to-date knowledge of plasma cutting hazards, reviewing risk assessments and verifying implementation of controls</li> <li>• Embed a formal risk management procedure requiring identification, assessment, control and review of hazards associated with plasma cutting, consistent with the WHS Regulation and relevant Codes of Practice</li> <li>• Document and communicate organisational policies on safe use of plasma cutters, including authorisation requirements, PPE standards, maintenance, isolation, confined space work and hot work permitting</li> <li>• Establish clear responsibilities and accountabilities for managers, supervisors, leading hands and workers for implementing and monitoring controls</li> <li>• Maintain a WHS consultation framework (toolbox talks, HSRs, safety committees) that includes regular discussion of plasma cutting risks, incidents and improvements</li> <li>• Implement an incident and near-miss reporting and investigation procedure that specifically captures plasma and gas cutting events, identifies root causes and tracks corrective actions to closure</li> </ul>	Medium

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	<ul style="list-style-type: none"> <li>fire, electrical risks and manual handling associated with plasma cutting</li> <li>Inadequate arrangements for incident reporting, investigation and corrective actions relating to plasma cutter use</li> </ul>		<ul style="list-style-type: none"> <li>Periodically audit compliance with plasma cutting procedures, training, maintenance schedules and permit systems, and report findings to management</li> <li>Integrate plasma cutting hazards into the organisation's broader plant safety, hazardous chemicals and electrical safety programs to ensure consistency and compliance</li> </ul>	
3. Training, Competency and Supervision for Plasma Cutting	<ul style="list-style-type: none"> <li>Workers operating hand-held plasma cutters without adequate theoretical or practical training</li> <li>Lack of understanding of specific hazards such as UV radiation, fumes, burns, fire, electrical shock and gas cylinder risks</li> <li>Inability to recognise unsafe conditions, abnormal equipment behaviour, or early warning signs of equipment failure</li> <li>Supervisors lacking competence to verify safe work practices or to challenge unsafe behaviours</li> <li>Inadequate training for new starters, labour-hire workers, contractors and apprentices</li> <li>Training not refreshed, leading to skill fade and outdated knowledge on procedures or equipment upgrades</li> </ul>	High	<ul style="list-style-type: none"> <li>Develop and implement a formal competency and training program for plasma cutter operators that covers theory, practical skills and assessment against defined criteria</li> <li>Ensure training addresses hazard identification, UV/IR protective duties, manufacturer's instructions, site rules, PPE selection, permit systems, fume hazards, fire risks and emergency response</li> <li>Require workers to be authorised in writing before operating plasma cutters unsupervised, with authorisation linked to demonstrated competency</li> <li>Provide induction and task-specific training for all new workers, contractors and labour-hire personnel who may be involved in or exposed to plasma cutting activities</li> <li>Deliver refresher training at defined intervals or when procedures, equipment or legislation change, and following relevant incidents or near misses</li> <li>Train supervisors in plasma cutting risks, observation and coaching techniques so they can competently oversee work, verify compliance and intervene when unsafe practices are observed</li> <li>Maintain up-to-date training records, competency assessments and authorisation registers for all plasma cutter users</li> <li>Include training on safe gas cylinder handling, regulator use, hose inspection, and isolation/lockout procedures as relevant to gas cutting operations</li> <li>Incorporate safety data sheets (SDS) content and Code of Practice requirements into training materials to reinforce regulatory compliance</li> </ul>	Medium
4. Safe Work Procedures, Permits and Work Planning	<ul style="list-style-type: none"> <li>Absence of documented safe work procedures (SWPs) for plasma and gas cutting activities</li> <li>Inconsistent application of hot work permit systems, particularly for non-routine or site work</li> <li>Poor planning leading to cutting being done in unsuitable locations (e.g. near flammables, poor ventilation, tripping hazards)</li> <li>Lack of integration of plasma cutting risks into broader work planning, such as simultaneous operations, confined spaces or working at heights</li> <li>Failure to consider change management when introducing new</li> </ul>	High	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	Medium

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	materials, thicknesses, gases or cutting techniques		[REDACTED]	
5. Ventilation, Fume, Radiation and Noise Control Systems	<ul style="list-style-type: none"> <li>Inadequate general and local exhaust ventilation leading to accumulation of welding and cutting fumes, including metal oxides and ozone</li> <li>Lack of engineering controls for UV and IR radiation exposure to operators and bystanders</li> <li>Noise levels from plasma cutting and associated equipment exceeding exposure standards without controls</li> <li>Work planning that allows fumes to travel to adjacent work areas, offices or public spaces</li> <li>Over-reliance on respirators in place of higher order controls</li> </ul>	High	[REDACTED]	Medium
6. Fire, Explosion and Hot Work Risk Management	<ul style="list-style-type: none"> <li>Ignition of nearby combustible materials from sparks, hot slag and hot workpieces</li> <li>Explosion risk from cutting near flammable or combustible liquids, gases, dusts or sealed containers</li> <li>Inadequate fire prevention planning when plasma cutting in non-designated areas or client sites</li> </ul>	High	[REDACTED]	Medium

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	<ul style="list-style-type: none"> <li>• Insufficient fire protection equipment, fire watch arrangements and emergency evacuation planning</li> <li>• Poor housekeeping leading to accumulation of flammable waste, rags, dust and offcuts</li> </ul>		[REDACTED]	
7. Electrical Safety and Energy Isolation Systems	<ul style="list-style-type: none"> <li>• Electric shock or arc flash due to damaged leads, plugs, connectors or internal faults in plasma cutters</li> <li>• Use of plasma cutters on unsuitable or non-RCD protected circuits</li> <li>• Inadequate systems for isolation, lockout and tagging during maintenance or when equipment is defective</li> <li>• Use of extension leads and power boards not suited to workshop conditions, creating electrical fire risks</li> <li>• Lack of formal inspection and testing program for portable electrical equipment</li> </ul>	High	[REDACTED]	Medium
8. Gas Supply, Cylinders and Pressure System Management	<ul style="list-style-type: none"> <li>• Incorrect storage, securing or transport of gas cylinders associated with gas cutting leading to cylinder falls, leaks or projectile hazards</li> <li>• Use of incompatible regulators, hoses and fittings, increasing risk of leaks and flashbacks</li> </ul>	High	[REDACTED]	Medium

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	<ul style="list-style-type: none"> <li>Inadequate leak detection and maintenance systems for gas supply equipment</li> <li>Poor segregation of oxygen and fuel gas cylinders from ignition sources and incompatible materials</li> <li>Workers not familiar with safe cylinder handling, connection and emergency shutdown procedures</li> </ul>		[REDACTED]	
9. Plant Inspection, Preventive Maintenance and Asset Management	<ul style="list-style-type: none"> <li>Degradation of torches, leads, consumables and internal components leading to increased risk of electric shock, fire, fume generation and poor cut quality</li> <li>Lack of systematic preventive maintenance increasing likelihood of sudden equipment failure</li> <li>Use of non-genuine or unsuitable spare parts and consumables compromising safety systems</li> <li>Failure to remove defective plasma cutters from service promptly</li> <li>Inadequate documentation of inspections, repairs and modifications</li> </ul>	High	[REDACTED]	Low
10. Personal Protective Equipment Programs	<ul style="list-style-type: none"> <li>Inadequate or inconsistent use of PPE when operating or observing plasma cutting (e.g. eye, face, hand, respiratory and body protection)</li> <li>PPE not selected to match the specific hazards (UV, IR, hot metal, noise,</li> </ul>	Medium	[REDACTED]	Low

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	<p>fumes) associated with plasma and gas cutting</p> <ul style="list-style-type: none"> <li>• Lack of systems for issuing, fitting, maintaining and replacing PPE</li> <li>• Workers not trained in correct use, limitations and care of PPE</li> <li>• Reliance on PPE as the primary control instead of higher order controls</li> </ul>		[REDACTED]	
11. Ergonomics, Manual Handling and Workspace Layout	<ul style="list-style-type: none"> <li>• Poor workstation layout causing awkward postures, extended reaches and repetitive movements when running a hand-held plasma cutter</li> <li>• Manual handling of heavy plate, structural sections and gas cylinders without suitable aids</li> <li>• Trip hazards from poorly managed leads, hoses and offcuts in cutting area</li> <li>• Insufficient space around work areas causing crowding and collision risks with other workers or plant</li> </ul>	Medium	[REDACTED]	Low
12. Contractor, Visitor and Third-Party Management	<ul style="list-style-type: none"> <li>• Contractors performing plasma or gas cutting without meeting the PCBU's WHS standards</li> <li>• Visitors or other trades entering plasma cutting areas without appropriate controls or PPE</li> <li>• Lack of coordination of plasma cutting activities with other contractors, increasing risk of fire, fume exposure or conflicting operations</li> <li>• Client site rules conflicting with or diluting the organisation's own safety standards</li> </ul>	High	[REDACTED]	Medium

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			[REDACTED]	
13. Emergency Preparedness, First Aid and Incident Response	<ul style="list-style-type: none"> <li>• Delayed or ineffective response to burns, eye injuries, electric shock, fume inhalation or fire related to plasma cutting</li> <li>• Workers unaware of emergency procedures, including shutdown, evacuation and first aid arrangements</li> <li>• Inadequate availability or maintenance of first aid equipment for typical plasma cutting injuries</li> <li>• Poor communication systems for summoning assistance in workshops or remote sites</li> </ul>	High	[REDACTED]	Medium
14. Health Monitoring, Exposure Surveillance and Recordkeeping	<ul style="list-style-type: none"> <li>• Unrecognised long-term health effects from chronic exposure to metal fumes, noise and UV radiation</li> <li>• Lack of systematic monitoring of workers who frequently perform plasma cutting in higher-risk environments</li> <li>• Inadequate records of exposure assessments, health monitoring outcomes and follow-up actions</li> <li>• Failure to identify vulnerable workers (e.g. pre-existing respiratory or skin conditions) who may be at higher risk</li> </ul>	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>

**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.