

CNC Router Flat Bed

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. Governance, WHS Duties and Consultation	<ul style="list-style-type: none"> Failure of officers and PCBUs to understand and exercise WHS due diligence obligations under the WHS Act 2011 in relation to CNC router operations Inadequate consultation with workers, health and safety representatives (HSRs) and contractors about CNC router risks, changes to plant, and new work methods Lack of a documented WHS management system addressing plant safety and integration of CNC router risks into the broader WHS risk register Insufficient consideration of CNC router risks in business planning, resourcing and budgeting leading to underinvestment in controls Poor change management processes when introducing new CNC router models, software updates or layout changes in the workshop 	High	<ul style="list-style-type: none"> Establish and maintain a documented WHS management system that explicitly includes plant safety and CNC router risk management, aligned with the WHS Act 2011, WHS Regulations and relevant Codes of Practice Define and document officer due diligence responsibilities for CNC router risks, including requirements for regular review of incident data, inspection findings and audit results specific to plant Implement a formal consultation procedure requiring engagement with workers, HSRs and relevant contractors before procurement, modification, relocation or major software changes to CNC routers Integrate CNC router risks into the organisation wide WHS risk register, with allocated risk owners, review dates and action tracking Develop and apply a documented management of change (MOC) process that must be followed for any change to CNC router plant, guarding, control systems, work layout or software, including risk assessment and sign-off Schedule regular WHS leadership walk-arounds that include observation and discussion of CNC router safety, encouraging upward reporting of concerns Ensure WHS policy, plant safety procedures and consultation arrangements are communicated during induction, toolbox talks and refresher sessions with evidence of attendance 	Medium
2. Procurement, Design and Specification of CNC Router Plant	<ul style="list-style-type: none"> Procurement of CNC routers that do not comply with Australian standards or WHS Regulation requirements for guarding, emergency stop and control systems Inadequate specification of safety features (e.g. interlocked guarding, light curtains, emergency stop locations, dust extraction interfaces) at purchase stage Selection of plant that is not suited to the scale, material types or production environment, increasing risk of misuse or unsafe modifications Insufficient supplier documentation and lack of clear information on safe use, installation, commissioning, inspection and maintenance requirements Cost-driven procurement decisions overriding safety, resulting in inadequate 	High	<ul style="list-style-type: none"> Develop a documented plant procurement procedure that requires WHS review and sign-off before purchasing or leasing any CNC router or associated control system Specify compliance requirements in purchase contracts, including relevant Australian Standards (e.g. AS 4024 series for machinery safety), the WHS Act 2011 and WHS Regulations, and require written confirmation from the supplier Include mandatory safety features in procurement specifications such as fixed and interlocked guarding, emergency stop devices at operator and loading positions, safe access platforms, and integrated dust extraction connections Require suppliers to provide comprehensive documentation including instruction manuals, commissioning procedures, maintenance schedules, residual risk information and safety system descriptions in English Engage competent WHS and engineering personnel in pre-purchase risk assessment of proposed CNC router models, considering task types, materials, workpiece sizes, noise, dust and vibration Include acceptance testing criteria in contracts so that CNC routers are not handed over for production until safety and performance criteria are verified and documented Ensure procurement procedures require consideration of lifecycle costs including maintenance, upgrades, guarding improvements and operator training, not only purchase price 	Low

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	guarding, inferior control systems or absent safety interlocks			
3. Installation, Commissioning and Physical Layout	<ul style="list-style-type: none"> Poor workshop layout leading to collision risks with pedestrians, forklifts or other mobile plant around the CNC router envelope Inadequate clearance zones and exclusion areas around the CNC bed, allowing inadvertent entry into hazardous movement areas Incorrect installation or commissioning of guarding, interlocks or emergency stop systems resulting in unsafe operation Insufficient structural support, power supply capacity or dust extraction capability, causing overloading, failures or secondary hazards Unsafe routing of power, air and extraction ducting creating trip, fire or entanglement hazards 	High	<ul style="list-style-type: none"> Develop engineering and WHS design criteria for CNC router installation, including minimum clearance distances, exclusion zones and traffic segregation requirements documented in layout drawings Require installation and commissioning to be carried out or supervised by competent persons authorised by the supplier, with written verification that all safety functions and interlocks have been tested and validated Implement a pre-commissioning risk assessment and sign-off process involving management, WHS, maintenance and other representatives before production use Design pedestrian and mobile plant traffic management plans around the CNC router area, including marked walkways, barrier signage and restricted access where necessary Ensure power supply isolation devices, dust extraction and compressed air systems are designed, installed and certified by appropriately licensed trades in accordance with applicable standards and regulations Document and maintain as-built layouts showing locations of emergency stops, isolators, extraction controls and access points, and keep them accessible to workers and emergency responders Establish a system to review layout and access arrangements after any significant change (e.g. new machine tracking, or traffic routes) to maintain compliance with exclusion zone and access requirements 	Medium
4. Guarding, Safety Systems and Interlocks	<ul style="list-style-type: none"> Defeatable or bypassed guards and interlock systems allowing access to moving parts or tooling during operation Inadequate design of maintenance light curtains, pressure mats, safety scanners or interlocks leading to failure to detect persons in danger zones Uncontrolled software or parameter changes that alter safety-related functions, speeds or access permissions Lack of periodic verification and validation of safety system performance and integrity Unclear responsibilities for maintaining, testing and authorising changes to CNC safety systems 	High	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	Medium

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			[REDACTED]	
5. CNC Programming, Software Control and Data Management	<ul style="list-style-type: none"> • Incorrect or unvalidated CNC programs causing unexpected tool paths, collisions, or over-travel within the machine envelope • Unauthorised program changes or use of outdated programs leading to unsafe feeds, speeds or rapid movements • Poor control over software versions, post-processors and parameter sets that influence machine behaviour and safety limits • Lack of segregation of duties between programming, verification and approval, increasing the chance of undetected errors • Inadequate backup and recovery systems leading to use of improvised or untested programs after data loss 	High	[REDACTED]	Medium
6. Competency, Training and Supervision	<ul style="list-style-type: none"> • Workers operating or setting up CNC routers without adequate competency in both machine operation and WHS requirements • Insufficient supervision of new or vulnerable workers (e.g. apprentices, young workers, labour hire) around CNC equipment • Training limited to production tasks without sufficient focus on hazard identification, isolation, guarding, emergency stops and safe work systems • No formal verification of competency or refresher training, resulting in skills fade and inconsistent practices • Contractors or visitors interacting with CNC router areas without site-specific induction or plant safety briefing 	High	[REDACTED]	Medium

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			[REDACTED]	
7. Maintenance, Inspection and Isolation Systems	<ul style="list-style-type: none"> • Unplanned breakdowns or failures of critical components (e.g. spindles, drives, brakes, dust extraction) due to inadequate preventive maintenance • Maintenance tasks performed without effective isolation (lock out tag out) of energy sources leading to entanglement, crush or electrocution • Use of non-genuine or unsuitable replacement parts diminishing safety performance or reliability • Lack of formal inspection regimes for structural elements, guarding, cables, extraction ducting and emergency stop • Insufficient maintenance planning resulting in rushed, error-prone or ad-hoc repairs with increased error and risk 	High	[REDACTED]	Medium
8. Dust, Noise and Environmental Controls	<ul style="list-style-type: none"> • Inadequate dust extraction from CNC router operations leading to inhalation of wood, composite or MDF dust, potentially breaching exposure standards • Accumulation of combustible dust increasing fire and explosion risk in the workshop and extraction system • Excessive noise levels from CNC routers and extraction systems contributing to noise-induced hearing loss • Poor management of off-cuts, waste and housekeeping contributing to slips, trips, fire load and vermin 	High	[REDACTED]	Medium

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	<ul style="list-style-type: none"> Ineffective monitoring of environmental conditions and control system performance over time 		[REDACTED]	
9. Emergency Preparedness, Incident Management and First Aid	<ul style="list-style-type: none"> Delayed or ineffective response to entanglement, crush or laceration incidents due to unclear emergency procedures or inaccessible emergency stops Inadequate first aid capability for likely CNC router injuries including severe cuts, eye injuries and dust inhalation incidents Incomplete reporting and investigation of near misses and incidents involving CNC routers, leading to repeat events Lack of coordination with external emergency services regarding access to CNC areas, isolation points and specific plant hazards Workers not knowing how to safely stop the machine or isolate power in an emergency 	High	[REDACTED]	Medium
10. Documentation, Monitoring, Audit and Continuous Improvement	<ul style="list-style-type: none"> Outdated or inconsistent procedures, work instructions and drawings leading to unsafe or non-compliant CNC router practices Lack of systematic monitoring of CNC-related risks, resulting in unnoticed deterioration in controls or emerging hazards Poor integration of supplier safety bulletins, standards updates and regulatory changes into site procedures 	Medium	[REDACTED]	Low

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	<ul style="list-style-type: none"> Ineffective internal audits that fail to identify gaps in CNC router safety management systems Insufficient analysis of leading and lagging indicators for CNC-related events to drive improvement 		<div style="background-color: black; height: 15px; width: 100%;"></div>	

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.