Soldering Iron

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:

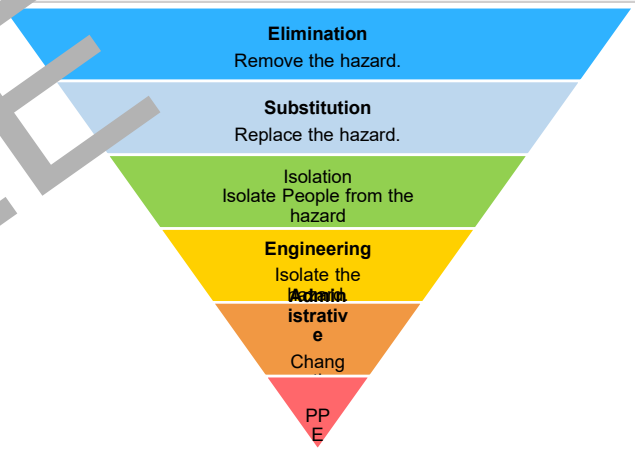
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

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. WHS Governance, Policies and Legal Compliance	• Absence of a documented WHS management system addressing soldering activities (metal soldering machine, manual soldering, wiring ends, pipework) • Non-alignment of site procedures with WHS Act 2011, WHS Regulation and relevant Codes of Practice (e.g. Managing Risks of Hazardous Chemicals in the Workplace) • Unclear roles, responsibilities and accountabilities for managing soldering risks (PCB work, wiring looms, pipework assemblies) • Inadequate consultation with workers and Health and Safety Representatives on soldering-related risks and controls • No formal process to review and update soldering policies after incidents, near misses, or legislative changes	High	• Establish and maintain a documented WHS management system that explicitly covers soldering operations (metal soldering machines, manual soldering stations, wiring terminations and pipework soldering) • Develop a soldering-specific WHS policy that commits to eliminating or minimising risks so far as is reasonably practicable in accordance with the WHS Act 2011 • Define and document WHS roles, responsibilities and delegated authorities for PCB soldering, electrical wiring soldering and pipework soldering supervisors, technicians, maintenance and WHS advisors • Implement formal consultation arrangements (e.g. WHS committee, toolbox talks, safety forums) that routinely address soldering hazards, control effectiveness and worker feedback • Integrate relevant Australian Standards, Codes of Practice and guidance material into internal procedures (e.g. hazardous chemicals, plant safety, welding and allied processes) • Establish a scheduled review process (at least annually or following incidents/changes) to update soldering-related policies and procedures for legal, technical and process changes • Ensure that PCB rework, wiring harness assembly and pipework soldering are included in the organisation's overarching risk register and WHS planning documents	Medium
2. Plant Procurement, Design and Specification (Soldering Irons and Machines)	• Procurement of soldering irons or metal soldering machines that are not compliant with Australian electrical and safety standards • Lack of engineering controls (soldering equipment without temperature control, thermal cut-out, insulated handles, secure stands) increasing burn and fire risk • Inadequate consideration of fume extraction and ventilation requirements when selecting soldering systems • Use of inappropriate tips or accessories for fine wiring, PCB work or pipework, leading to overheating, damaged insulation and potential electric shock or leaks • Failure to consider ergonomic design (handle shape, weight, cable routing) resulting in repetitive strain and musculoskeletal disorders	High	• Implement a formal plant procurement procedure requiring pre-purchase WHS review for all soldering irons, soldering stations and metal soldering machines • Specify compliance of all soldering plant with relevant Australian Standards and ensure electrical equipment is suitable for the workplace environment • Require soldering stations to have temperature control, thermal overload protection, insulated handles, stable stands/holsters and heat-resistant cable sheathing as minimum features • Include fume control requirements (e.g. integrated fume extraction arms, local exhaust ventilation connection points, filtration efficiency) in procurement specifications • Incorporate ergonomic criteria in equipment selection (handle size and grip, balance, swivelling leads, low-force activation, adjustable work stands) • Require suppliers to provide operating manuals, safety instructions, maintenance schedules and conformity documentation prior to commissioning • Perform a pre-commissioning WHS inspection of new soldering equipment to verify features, labels, guarding, and compatibility with existing fume extraction and electrical systems	Low

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	• No systematic pre-delivery verification of supplier documentation (manuals, safety data, compliance certificates, guarding/fume hood performance data)			
3. Hazardous Substances and Fume Management	• Exposure to flux fumes, metal fumes (e.g. lead, tin, silver, copper) and thermal decomposition products during manual and machine soldering • Use of solder and flux without Safety Data Sheets (SDS) or with outdated SDS information • Inadequate risk assessment of hazardous chemicals used in soldering (e.g. rosin-based fluxes, flux cleaners, solvents, protective coatings) • No engineered fume extraction or reliance solely on general ventilation in areas where wiring ends and pipework are soldered • Inappropriate storage, decanting and labelling of fluxes, solvents and cleaning chemicals creating inhalation, skin contact and fire hazards • Lack of health monitoring or exposure assessments where lead-based solders or other regulated substances are used	High	• Implement a hazardous chemicals management procedure that covers solder wire, fluxes, cleaning solvents and related products used across manual and machine soldering • Ensure current SDS (within 5 years) are obtained, readily accessible and referenced in the soldering risk assessments and work instructions • Conduct a documented hazardous chemicals risk assessment for all soldering activities (PCB, wiring ends, pipework, metal joints), considering inhalation, skin contact and ingestion pathways • Install and maintain local exhaust ventilation (LEV) / fume extraction systems designed for soldering operations, with documented performance testing and maintenance schedules • Develop procedures for safe storage, decanting and labelling of fluxes and solvents, including segregation from ignition sources and incompatible substances • Substitute hazardous fluxes or solders with less hazardous alternatives where reasonably practicable, including moving away from lead-containing products where feasible • Establish health monitoring and exposure surveillance where required by WHS Regulation (e.g. lead processes or other specific hazardous substances), documented and overseen by a registered medical practitioner • Train workers and supervisors in the health effects of solder and flux fumes, correct use of LEV, and requirements for personal protective equipment as a secondary control	Medium
4. Electrical Safety and Isolation Systems	• Electric shock or electrocution from damaged soldering irons, power cords, plug tops, or metal soldering machines • Use of soldering equipment on inappropriate electrical circuits or without Residual Current Devices (RCDs) • Lack of a formal test and tag regime for soldering irons and associated equipment • Uncontrolled energised work on connected wiring, electronics or pipework heat-trace circuits during soldering activities • Inadequate procedures for isolating power to soldering machines or	High	[redacted]	Low

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	workpieces before maintenance or change-over • Use of non-approved adapters, power boards or daisy-chained leads to power multiple soldering stations		[redacted]	
5. Facility Layout, Work Environment and Fire Safety	• Soldering carried out in congested or poorly planned areas leading to burns, trips, collisions and contact with hot tools or materials • Inadequate housekeeping systems resulting in accumulation of flammable materials (paper, packaging, dust, solvents) near soldering stations • Insufficient fire detection, fire-fighting equipment and emergency access in soldering areas (including pipework and plant rooms) • Poor lighting or ventilation in bench-top soldering and pipework locations, increasing error rates and exposure to fumes • Inadequate separation of soldering areas from other operations involving combustible materials or sensitive electronics • No formal hot-work permit/isolation process for higher-risk soldering in non-standard or temporary locations (e.g. field pipework repairs)	High	[redacted]	Medium
6. Training, Competency and Supervision	• Workers performing manual soldering, wiring terminations or pipework soldering without adequate theoretical and practical training • Supervisors unaware of specific soldering risks, control measures and legal duties under the WHS Act 2011 • Inconsistent soldering quality leading to rework, overheating and extended exposure to fumes and hot surfaces • No formal competency assessment or authorisation process for use of metal	High	[redacted]	Medium

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	soldering machines and specialised electronics soldering equipment • Insufficient training in emergency response, including burns management, fire response and exposure to fumes • Failure to provide refresher training when equipment, materials, layouts or procedures change		[redacted]	
7. Safe Systems of Work and Procedures	• Lack of standardised safe work procedures for different soldering contexts (bench-top PCBs, wiring harnesses, metal components, pipework joints) • Reliance on undocumented custom and practice rather than formalised, reviewed and approved procedures • Inadequate integration of soldering controls into broader systems such as permit to work, isolation, confined space or hot-work permits • No clear process for identifying when job moves from low-risk routine soldering to higher-risk [redacted] needing additional controls (e.g. soldering near flammable insulation on pipes) • Failure to embed [redacted] into planning, scheduling and job instructions, leading to rushed or improvised work	High	[redacted]	Medium
8. Personal Protective Equipment (PPE) Management	• Reliance on PPE as the primary control rather than as part of a hierarchy-based risk control strategy • Inadequate specification of PPE for different soldering operations (fine electronics, heavy metal soldering, pipework in plant areas) • Incorrect use, fit or maintenance of PPE leading to burns, fume inhalation or eye injuries • Insufficient supply or availability of suitable PPE at soldering locations,	Medium	[redacted]	Low

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	causing non-use or substitution with inappropriate items • No monitoring or enforcement of PPE requirements by supervisors and management		[redacted]	
9. Equipment Inspection, Maintenance and Lifecycle Management	• Degradation of soldering iron tips, cables, stands and metal soldering machines leading to overheating, inconsistent temperature and increased burn or fire risk • Failure of fume extraction equipment due to lack of maintenance (blocked filters, damaged ducting, fan failure) • Use of damaged or modified soldering equipment without formal assessment or approval • No systematic process to remove, tag out and repair defective soldering irons or accessories • Inadequate record keeping of inspections and maintenance, preventing trend analysis and proactive replacement	High	[redacted]	Medium
10. Ergonomics, Manual Handling and Work Organisation	• Prolonged static postures, awkward wrist angles and repetitive fine motor movements during manual soldering of wiring ends and PCBs • Poor workstation design for bench-top soldering or pipework assembly, leading to reaching, twisting and over-extension • High work pace, extended overtime or inadequate breaks during intensive soldering campaigns, increasing fatigue and error rates • Manual handling of heavy components, jigs or pipework sections to and from soldering areas without mechanical aids or planning • Lack of job rotation or task variety for workers primarily assigned to continuous soldering work	Medium	[redacted]	Low

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11. Contractor and Visitor Management for Soldering Areas	• Contractors performing soldering or adjacent works without understanding site-specific soldering hazards, controls and emergency procedures • Visitors and non-production staff entering soldering areas without appropriate PPE or awareness of hot surfaces and fumes • Inconsistent application of site standards when contractors bring in their own soldering irons, machines or chemical products • Poor coordination between contractor activities (e.g. maintenance on pipework, electrical work, cleaning) and ongoing soldering operations	Medium	[redacted]	Low
12. Incident Reporting, Monitoring and Continuous Improvement	• Under-reporting of soldering-related incidents, near misses, minor burns, fume exposures and equipment defects • Lack of trend analysis obscuring systemic issues such as recurrent burns, fume complaints or electrical near misses • No structured process to implement and verify corrective actions relating to soldering risks • Failure to share learnings from incidents across teams working on PCBs, wiring, metal assemblies and pipework	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