

Live Electrical Work, Testing and Fault Finding

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, Legal Compliance and Authorisation of Live Work	<ul style="list-style-type: none"> Work on or near exposed energised electrical parts without a documented justification contrary to WHS Act 2011 and WHS Regulation requirements Lack of an Electrical Safety Management Plan and live work policy aligned with current Australian Standards (e.g. AS/NZS 4836, AS/NZS 3000, AS 2067) Inadequate process for authorising live electrical work (no formal risk assessment, no documented reasons why de-energisation is not reasonably practicable) Unclear roles, responsibilities and accountability for Person Conducting a Business or Undertaking (PCBU), officers, supervisors and electrical workers Failure to maintain up-to-date knowledge of changes in WHS legislation, electrical safety legislation and network operator requirements Inadequate document control leading to use of obsolete procedures, drawings, single line diagrams and switching programs No clear criteria for prohibiting live work in high-risk situations (e.g. arc flash energy above PPE rating, deteriorated switchgear, unknown installations) 	4A	<ul style="list-style-type: none"> Develop, implement and periodically review an Electrical Safety Management Plan that addresses live work, testing and fault finding in line with WHS Act 2011, WHS Regulation and applicable electrical standards Establish a formal Live Work Authorisation procedure requiring written justification that de-energisation is not reasonably practicable supported by a documented risk assessment and approval by a competent electrical supervisor or manager Define and document clear governance structure, including PCBU duties, officer due diligence requirements and delegated authorities for electrical safety decisions Implement a controlled document management system for policies, procedures, drawings, switching sheets and network information with version control and scheduled review dates Ensure all live work procedures reference and align with relevant Australian Standards and network operator rules, and are reviewed at least every two years or after significant incidents or changes Introduce a mandatory live work permit system for testing, fault finding and work on or near energised circuits, requiring sign-off by competent persons independent of the work crew where practicable Prohibit live work above defined risk thresholds (e.g. in the presence of visible equipment damage, unknown circuit characteristics, inadequate arc flash data, or where minimum clearances cannot be maintained) except under emergency conditions with senior authorisation Conduct periodic compliance audits against WHS legislative requirements and internal electrical safety procedures, reporting outcomes to senior management and health and safety committees 	3H
2. Electrical Competency, Licensing and Training Systems	<ul style="list-style-type: none"> Unlicensed or inadequately licensed persons performing live electrical work, testing or fault finding Electricians and electrical engineers not trained in live work techniques, arc flash hazard assessment, high-voltage switching or low voltage rescue as relevant Inadequate verification of competency for personnel accessing high-voltage 	4A	<ul style="list-style-type: none"> Implement a competency and licensing management system that verifies current electrical licences, high-voltage authorisations and endorsements before allocation to live work Develop role-specific training matrices for electricians, electrical engineers, apprentices, electrical fitters, test technicians and supervisors involved in live work, testing and fault finding Mandate initial and refresher training in live work procedures, arc flash awareness, high-voltage access, switchyard activities, static electricity management and safe approach distances Ensure all personnel likely to perform or assist with low voltage live work hold current CPR and Low Voltage Rescue certification, with refresher training at least annually or in accordance with jurisdictional requirements 	2M

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	<p>switchyards, high tension circuits and transformer installations</p> <ul style="list-style-type: none"> Lack of current CPR and low voltage rescue training for personnel who may need to respond to electric shock incidents No formal assessment of workers' competency to interpret complex or legacy electrical drawings and identify live electrical wire risks in old systems Training records not maintained, out of date or not linked to authorisation to perform or supervise live work Insufficient training for supervisors and managers in electrical risk management, including inability to assess risk from electric shock and arc flash energy 		<ul style="list-style-type: none"> Introduce formal competency assessments (theory and practical) for high-voltage switching, high-voltage switch yard entry and testing for presence of electricity on high tension circuits and busbars Require demonstrated competency in reading single line diagrams, schematics and identification of de-energised versus live conductors before authorising staff to operate on complex or old electrical systems Maintain an electronic training and competency register linked to individual authorisation levels, with automatic alerts for upcoming refresher and licence expiry dates Provide electrical risk management training for all managers and supervisors so they can appropriately review live work risk assessments and permits 	
3. Planning, Risk Assessment and Job Authorisation for Live Electrical Tasks	<ul style="list-style-type: none"> Commencing work on live circuits without a documented task-specific risk assessment focused on system and environmental conditions Inadequate planning for access to live switchboards, high-voltage switchyards and overhead lines under varying load and weather conditions Inability to assess risk from electric shock, arc flash and static discharge due to missing or inaccurate fault level and protection data Live fault finding undertaken under time pressure, leading to shortcuts in testing for presence of electricity and verifying isolation boundaries No formal process for assessing arc flash hazard categories and incident energy for switchgear, transformers and high tension circuits Failure to consider interaction between simultaneous tasks (e.g. testing, switching, and mechanical work in the same switchyard or substation) Poor planning for accessing old or unknown electrical systems where 	4A	<ul style="list-style-type: none"> Implement a mandatory pre-job planning process for all live work, including documented risk assessment, job briefing and review of relevant drawings, protection settings and equipment history Standardise a live electrical work risk assessment template that covers electric shock, arc flash, static electricity, step and touch potentials, induced voltages and environmental factors such as moisture and contaminants Require confirmation of current fault levels, protection coordination diagrams and arc flash studies (where available) before authorising work on switchboards, high-voltage yards and substations Introduce a formal Job Authorisation and Pre-Start Briefing process involving all team members, where hazards such as working near exposed live wiring, switchyard activities and transformer oil handling are discussed Apply conservative default approach distances and PPE categories where arc flash and fault level information is incomplete, and restrict work scope until data is validated Require risk assessment reviews during the task if conditions change (e.g. unexpected fault behaviour, weather changes, equipment condition changes) Prohibit ad-hoc live electrical work or troubleshooting without prior approval from a competent person and documented consideration of safer alternatives, including testing for de-energised electrical conductors first 	2M

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	<ul style="list-style-type: none"> Unclear demarcation between energised and de-energised zones within switchboards and switchyards Absence of independent verification or sign-off of isolations for high-voltage or complex systems 		[REDACTED]	
6. Arc Flash and Short-Circuit Energy Management	<ul style="list-style-type: none"> High incident energy levels leading to severe burns, blast injuries and fatality during switching or fault conditions Lack of arc flash studies, labelling and defined approach boundaries for switchgear and high-voltage equipment Inadequate configuration of protection systems resulting in extended fault clearing times and greater arc flash energy Working on or near live wiring and busbars in panels and cabinets for exposure during operation or testing No system for controlling access to high-risk arc flash zones during energisation, fault clearing and testing Improvised testing methods for troubleshooting short-circuit issues, bypassing interlocks or defeating covers 	4A	[REDACTED]	2M
7. Static Electricity and Induced Voltage Management	<ul style="list-style-type: none"> Build-up of static electricity on personnel, equipment or structures leading to ignition of flammable atmospheres or shock to workers 	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> Induced voltages on de-energised conductors located near energised high-voltage lines or busbars Inadequate bonding and earthing practices during work on overhead lines, transformers and switchyards No consistent method for discharging static electricity prior to handling sensitive circuits or flammable liquids Insufficient awareness of step and touch potentials in high-voltage yards and near earthing systems during fault conditions Failure to identify and manage static risks when working with transformer oil and other insulating fluids 		[REDACTED]	
8. Access Control, Permits and Work Area Management	<ul style="list-style-type: none"> Unauthorised entry into live electrical areas such as switchyards, substations, live switchboard rooms and overhead line work zones Poorly controlled work fronts leading inadvertent approach to live circuits, exposed live wiring or high-voltage equipment Simultaneous operations involving cranes, vehicles, mechanic trades and electrical work without coordination, creating contact or flashover risks Inadequate barricading and signage around live work areas, particularly during high-voltage switching or fault investigations Inadequate management of visitors, contractors and non-electrical personnel in or near electrical zones 	3H	[REDACTED]	2M
9. Tools, Test Instruments and PPE Management Systems	<ul style="list-style-type: none"> Use of damaged, uncalibrated or inappropriate test instruments leading to incorrect readings and exposure to live electrics 	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> Insulating gloves, mats, rescue kits and arc-rated PPE not inspected, tested or replaced in accordance with standards Lack of a system to ensure test leads, probes and accessories are rated for required voltage and fault categories Non-standard or home-made equipment used for testing, temporary connections or fault finding on energised circuits Inadequate availability and management of low voltage rescue kits, insulated operating sticks and rescue devices near live work locations 		[REDACTED]	
10. Contractor Management and Third-Party Interface	<ul style="list-style-type: none"> Contract electrical workers performing live work without alignment to the PCBU's electrical safety systems and procedures Inconsistent standards between principal contractor, sub-contractors and asset owners regarding high-voltage access, overhead work and live testing Inadequate verification of contractor competency, licences and training for live work, high-voltage switching and low voltage rescue Poor communication and coordination when multiple organisations are involved in testing, commissioning or fault response Contractors modifying or bypassing installed safety systems, interlocks or protective devices during troubleshooting short-circuit issues 	3H	[REDACTED]	2M
11. Fatigue, Work Scheduling and Emergency Response Readiness	<ul style="list-style-type: none"> Fault response and after-hours call-outs leading to fatigue, reduced concentration and errors during live testing or switching 	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> • Insufficient staffing levels resulting in lone work or inadequate supervision for high-risk tasks such as high-voltage switching or low voltage rescue operations • Lack of structured emergency response plans for electric shock, arc flash injuries and switchyard incidents • Inadequate availability or maintenance of emergency equipment such as defibrillators, first aid kits, eye wash and fire-fighting equipment near electrical installations • Poorly rehearsed emergency procedures leading to delays in de-energisation, rescue and medical treatment 		<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	
12. Documentation, Labelling, Drawings and Information Management	<ul style="list-style-type: none"> • Incorrect or outdated single line diagrams, circuit schedules and labels leading to misidentification of live conductors and circuits • Inconsistent or missing labelling on isolation points, earthing and overhead lines and high-voltage equipment • Lack of documented history of modifications, repairs and fault conditions in older electrical systems impairing risk assessment accuracy • Information on arc flash energy, fault levels and protection settings not readily accessible to field personnel • Poor record-keeping for test results, electrical safety checks and inspections of switchboards, transformers and overhead lines 	3H	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M
13. Change Management, Commissioning and Legacy System Risk Control	<ul style="list-style-type: none"> • Commissioning and testing of new or modified installations without structured change management or review of new live work risks • Integration of new equipment into old electrical systems without reassessment 	3H	<p>[REDACTED]</p> <p>[REDACTED]</p>	2M

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	<p>of fault levels, protection settings and arc flash hazards</p> <ul style="list-style-type: none"> • Unknown condition of legacy cabling, switchboards and overhead lines, including degraded insulation, corrosion and undocumented alterations • Inadequate procedures for inspecting and preventing electrocution when inspecting old electrical systems with potential exposed wires and hazardous insulation • Failure to update training, procedures and emergency plans following significant system changes 		[REDACTED]	
14. Monitoring, Reporting, Consultation and Continuous Improvement	<ul style="list-style-type: none"> • Under-reporting of electrical incidents, near misses and abnormal conditions such as nuisance tripping, overheating and partial discharges • Lack of worker consultation and feedback on live work procedures, leading to impractical controls or workarounds • Failure to analyse incident data to identify systemic weaknesses in electrical safety management • No defined key performance indicators (KPIs) for electrical safety performance and compliance with live work controls • Limited sharing of learnings from electrical incidents across different sites or business units 	3H	[REDACTED]	1L

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/factsheets-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.