Battery Safety

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:

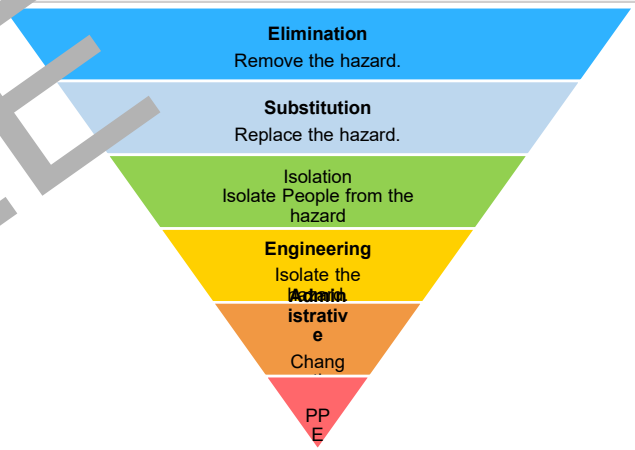
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

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, WHS Duties and Legal Compliance	• Lack of clear organisational accountability for battery-related WHS risks, leading to gaps in oversight and decision-making • Failure to identify and comply with WHS Act 2011, WHS Regulations 2011 and relevant Codes of Practice (e.g. Hazardous Chemicals, Managing Electrical Risks, Managing Risks of Plant) • Inadequate integration of battery safety (including handling, charging, storage and testing) into the PCBU's WHS management system • No formal process to identify reasonably foreseeable battery hazards across all business units (e.g. warehousing, field service, workshop, storage sites) • Poor change management when introducing new battery technologies, chemistries (e.g. lithium-ion, lead-acid, NiMH), plant, or storage systems • Inadequate consultation with workers and health and safety representatives on battery risk controls and procedures • Insufficient monitoring and review of battery-related incidents, near misses, and non-conformances, allowing systemic issues to persist	High	• Define and document WHS governance arrangements for battery safety, including PCBU responsibilities, due diligence expectations for officers, and specific line management accountabilities for battery-related risks • Incorporate battery safety into the organisation's WHS policy and risk management framework, explicitly referencing the WHS Act 2011, WHS Regulations 2011 and relevant Codes of Practice • Establish a formal battery safety risk register that covers battery handling and changing, replacement procedures, charging and servicing, extraction/installation of industrial batteries, installation of battery storage systems, setting up battery banks and use of battery testers • Implement a structured change management procedure for introduction or modification of battery types, charging infrastructure, storage systems, test equipment and associated plant, including pre-implementation risk assessment and consultation • Develop a documented legislative and standards compliance register for battery safety (including electrical, hazardous chemicals, fire safety and environment interfaces) and review it at least annually • Ensure worker consultation mechanisms (HSCs, HSRs, toolbox talks) explicitly include battery-related topics, and require consultation during development or revision of battery procedures • Set measurable battery safety performance indicators (e.g. incidents, near misses, training completion, inspection close-out rates) and include them in regular WHS performance reports to senior management • Schedule periodic internal audits of the battery safety management system (policies, procedures, training, inspections, maintenance records) and track corrective actions to completion • Ensure procurement and project approval processes include a documented WHS review of battery safety implications before purchase or installation of new battery systems	Medium
2. Procurement and Design of Battery Systems and Equipment	• Selection of inappropriate battery chemistries or capacities for the application, increasing risk of thermal runaway, off-gassing, or mechanical failure • Purchase of battery chargers, battery banks, storage systems and test equipment that are non-compliant with Australian standards or are poorly documented • Lack of consideration of ergonomic and mechanical handling risks when specifying large industrial batteries (e.g.	High	• Implement a procurement standard for all batteries, chargers, battery banks, battery storage systems, handling equipment and test devices, requiring compliance with relevant Australian standards and manufacturer's specifications • Require pre-purchase WHS risk assessment and engineering review for new or modified battery systems (including large industrial batteries and stationary battery storage systems) • Specify ergonomic and mechanical handling requirements at the design stage, such as compatible battery extraction trolleys, lifting frames, cranes, or roller beds for heavy batteries • Ensure battery rooms and storage locations are designed by competent persons, including adequate ventilation, fire separation, spill containment, drainage, clearances, and emergency access in line with relevant codes and standards	Medium

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SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
	forklift, MEWP, UPS, motive power batteries) • Inadequate design of battery rooms or battery storage areas (ventilation, separation distances, spill containment, fire rating, emergency access and egress) • No specification of built-in safety features (e.g. interlocks, emergency stop, insulation, polarity protection, over-charge/over-current protection, battery management systems) • Insufficient integration between electrical design, fire systems design and WHS risk controls for large battery storage systems and battery banks • Failure to specify clear documentation and labelling requirements from suppliers (SDS, technical manuals, installation instructions, emergency procedures, labelling of voltages and chemical hazards)		• Mandate built-in engineering controls such as insulation, guarded live parts, interlocked covers, automatic disconnects, fusing, polarity protection, BMS with monitoring and alarms, and lockable isolators • Require suppliers to provide comprehensive technical documentation, SDS, commissioning procedures, emergency instructions and training resources as part of the procurement contract • Specify standardised labelling and signage requirements for voltage, energy capacity, chemical hazards, PPE, emergency contact details and isolation points for all installed battery systems • Integrate fire engineering and electrical engineering reviews into design approvals for large battery energy storage systems and major battery banks • Maintain a central register of approved battery types, chargers, test instruments and ancillary equipment and prohibit purchase of non-approved products	
3. Battery Storage, Facilities and Environmental Controls	• Inadequate segregation of charged, discharged, damaged and waste batteries, creating risk of short-circuit, fire or chemical exposure • Poorly designed or overcrowded battery storage areas leading to blocked access, trip hazards and restricted emergency egress • Insufficient ventilation in battery rooms or charging areas leading to accumulation of hydrogen gas or other hazardous vapours • Inadequate control of ignition sources in areas where flammable gases may be present (e.g. open flames, non-rated equipment, hot work) • Lack of spill containment, acid-resistant surfaces and appropriate clean-up systems for lead-acid or other corrosive battery types	High	• Develop and enforce a battery storage and charging area standard that defines segregation, layout, maximum quantities, clearances and access requirements for all sites • Provide designated, clearly signed battery storage and charging areas with adequate space, lighting and unobstructed emergency egress, and include them in emergency plans • Ensure ventilation systems in battery rooms and charging zones are designed and verified by competent persons to control accumulation of hazardous gases, and are maintained to specification • Control ignition sources by specifying appropriate hazardous area classifications where required, enforcing no-smoking rules, and ensuring electrical equipment is suitably rated • Install spill containment systems, acid-resistant flooring or trays, and provide appropriate spill kits and neutralising agents, with instructions for safe use • Develop procedures for segregation of intact, damaged, suspect and waste batteries, including insulated terminals and stable racking systems to prevent short-circuits and falls • Ensure incompatible substances (e.g. flammable liquids, gas cylinders, combustible materials) are not stored in battery areas by implementing storage zoning plans and periodic inspections • Integrate environmental management controls with WHS requirements, including controlled disposal of electrolyte, used PPE and contaminated absorbents through licensed waste contractors • Provide standardised safety signage including hazardous chemicals, electrical hazard, PPE, emergency contact details and isolation instructions at all battery storage, charging and battery bank locations	Medium

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SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
	• Storage of incompatible materials adjacent to batteries (e.g. flammables, LPG, oxidising agents, heat sources) • Inadequate environmental protection measures leading to uncontrolled release of electrolyte or contaminated wash water to stormwater or soil • Insufficient signage and delineation for high-voltage or high-energy battery banks and storage systems			
4. Systems for Battery Handling, Changing and Extraction	• Manual handling of heavy batteries during change-out, extraction or installation leading to musculoskeletal disorders or crush injuries • Use of unsuitable lifting or extraction equipment for industrial batteries, causing dropped loads, impact or pinch injuries • Uncontrolled movement of plant (e.g. forklifts, pallet movers) during battery change-out due to inadequate isolation or restraint systems • Lack of systematic procedures for handling damaged, leaking or swollen batteries, increasing risk of fire, chemical exposure or short-circuit • Inadequate supervision or competency verification for workers performing battery extraction, handling and replacement tasks • Absence of standardised fixtures, guides or docking systems for battery trays, increasing risk of misalignment, cable damage or mechanical failure	Hi	[redacted]	Medium
5. Electrical Isolation, Connection and Battery Replacement Systems	• Inadequate isolation and lock-out procedures when disconnecting and reconnecting industrial batteries leading to electric shock, arcing or short-circuits • Uncontrolled reconnection of high-voltage or high-energy battery	High	[redacted]	Medium

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SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
	packs resulting in arc flash, equipment damage or fire • Poor management of polarity, earthing and bonding requirements in battery banks and battery storage systems • Use of non-standard, damaged or makeshift connectors and cables during battery replacement or installation • Lack of formal testing and verification process after installation or replacement of battery packs and banks • No clear delineation between electrical work (requiring a licensed electrician) and non-electrical servicing tasks, causing workers to undertake tasks beyond their competency		[redacted]	
6. Charging, Servicing and Maintenance Management	• Uncontrolled battery charging leading to over-charging, overheating, thermal runaway or off-gassing • Use of incompatible or incorrectly configured chargers for specific battery types and capacities • Poorly planned maintenance activities resulting in live-working activities or inadvertent energisation of plant connected to battery systems • Lack of systematic inspection and testing of chargers, cables, connectors and battery management systems • Inadequate management of electrolyte levels, vent caps and corrosion in lead-acid batteries, increasing risk of failure and chemical exposure • No standardised servicing intervals or maintenance records for critical battery banks (e.g. emergency, UPS, fire systems, BESS)	High	[redacted]	Medium

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			[redacted]	
7. Use of Battery Testers, Diagnostic Equipment and Monitoring Systems	• Use of non-compliant or poorly maintained battery testers leading to inaccurate results and unsafe decisions about battery condition • Inadequate procedures for safe connection and disconnection of test instruments to live battery systems • Insufficient training or competency in interpreting test results (e.g. capacity, internal resistance, cell balance) leading to continued use of unsafe batteries • Data from monitoring systems (e.g. BMS alarms, temperature and voltage logs) not systematically reviewed or acted upon • Over-reliance on test instruments without visual inspections or consideration of manufacturer limits ar environmental conditions	Medium	[redacted]	Low
8. Training, Competency and Authorisation Systems	• Workers and contr tors undertaking battery handling, r lacement, charging, servicing or testing ithout a knowledge of electri chemica risks • No formal competency frame for battery-related roles, lead inconsistent skills and unsafe practices between locations • Insufficient training on emergency response for battery fires, electrolyte exposure, thermal runaway or gas release • Inadequate induction for new workers or contractors regarding site-specific battery storage systems and battery banks • Failure to maintain current training records, licences and authorisations for	High	[redacted]	Medium

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
	persons performing high-risk battery tasks			
9. Emergency Preparedness, Incident Management and First Aid	• Lack of clear emergency procedures for battery fires, off-gassing, explosions, electrolyte spills or thermal runaway events • Insufficient firefighting equipment and strategies tailored to different battery chemistries and configurations • Poor coordination with emergency services regarding large battery storage systems or high-risk battery banks on site • Inadequate first aid arrangements for chemical burns, inhalation exposures and electrical injuries from battery incidents • Failure to systematically investigate battery-related incidents and near misses, resulting in repeated systemic failures	High	[redacted]	Medium
10. Contractor Management and Outsourced Battery Works	• Contractors perfor[illegible]g battery installation, servici[illegible], testing or disposal without alignment [illegible]the PCB[illegible]G procedures and risk [illegible]s • Insufficient verification of contract[illegible] competency, licences and insur[illegible]es for high-risk battery and electr[illegible]l tasks • Poor communication and coordination between multiple PCBUs working around the same battery systems or battery storage areas • Inadequate supervision of contractor activities during battery extraction, installation of battery storage systems, or set-up of battery banks	High	[redacted]	Medium
11. Documentation, Labelling and	• Incomplete or outdated procedures for battery handling, changing, replacement,	Medium		Low

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Information Management	charging, servicing and testing leading to inconsistent practices • Missing or illegible labels on batteries, battery banks, isolation points and chargers causing confusion and error • Workers unable to readily access SDS, technical manuals, risk assessments and emergency information relating to batteries • Poor configuration control of technical drawings and documentation for installed battery storage systems and battery banks • Lack of clear record-keeping for battery inspections, maintenance, tests, failures and disposals		[redacted]	

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