Wind Farm Safety			
Business Name:		ABN:	
Business Address:			
Contact Person:	Phone:	Email:	

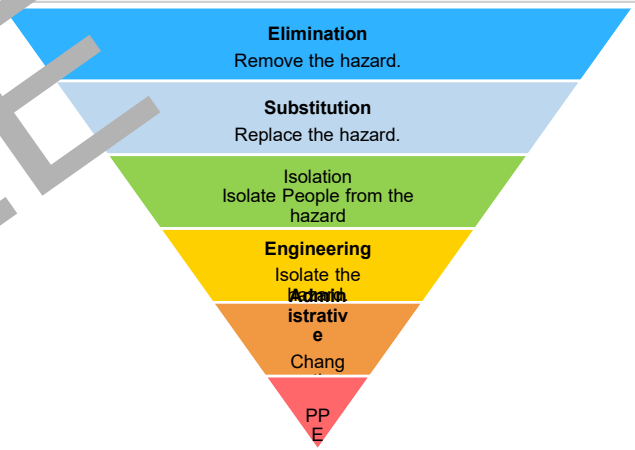
THIS RISK ASSESSMENT IS APPROVED BY THE PCBU OF THE PROJECT		
Under the Work Health and Safety Regulation (WHS Regulation), a person conducting a business or undertaking (PCBU) is required to ensure that a RISK ASSESSMENT is prepared before the proposed work starts.		
Full Name:		
Signature:	Title:	Date:

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 Safety Leadership	• Board and senior management not clearly understanding WHS Act 2011 primary duty of care and due diligence obligations for wind farm operations • Lack of documented WHS policy specific to wind farm and turbine operations, including high-risk construction and maintenance activities • Inadequate allocation of resources (budget, staffing, time) for safety-critical systems such as training, inspections and emergency response • Poor safety culture where production targets are prioritised over safety controls and legal compliance • Insufficient consultation mechanisms with workers and health and safety representatives (HSRs) on wind farm specific risks • Failure to integrate WHS considerations into business planning, project approvals and change management for turbine upgrades or repowering projects	4A	• Establish a WHS governance framework that explicitly references WHS Act 2011 officer due diligence duties, with clear accountabilities for wind farm safety performance • Develop and ratify a site-specific WHS Policy for the wind farm that addresses high-risk plant, work at height, remote work and electrical safety, endorsed by the board and senior leadership • Implement a documented safety leadership program including visible field leadership visits, safety walk-arounds and regular reviews of leading safety indicators (e.g. inspections completed, corrective actions closed) • Ensure WHS objectives and key performance indicators are incorporated into all senior and middle management performance plans, with specific metrics for turbine maintenance safety and contractor performance • Establish formal consultation arrangements under the WHS Act 2011, including HSRs, regular WHS committee meetings and toolbox forums focused on wind farm specific hazards • Implement an annual WHS strategic plan with resourcing for critical controls such as rescue equipment, training, maintenance management systems and independent audits • Require documented WHS due diligence reports to the board at least quarterly, covering compliance status, incidents, investigations, audit findings and corrective action progress • Integrate WHS risk criteria into business case approvals for new turbines, repowering projects, grid connection upgrades and major maintenance campaigns	3H
2. WHS Risk Management Framework and Critical Control Assurance	• Lack of a structured risk management procedure aligned with the WHS Regulations and ISO 31000 for wind farm operations • Failure to identify and document critical controls for major incident scenarios such as falls from height, electrical contact, dropped objects, fire in nacelle, and rescue failures • Risk assessments limited to construction and not maintained for the operational life of the wind farm and ongoing maintenance inside turbines • Inconsistent risk rating methodology across contractors leading to gaps in control effectiveness • No systematic process to verify that critical controls (e.g. anchor points,	4A	• Implement a formal WHS risk management procedure consistent with the WHS Regulations and ISO 31000, covering identification, assessment, control and review for all wind farm lifecycle phases • Develop and maintain a site-wide risk register for the wind farm, including specific entries for maintenance work inside turbines, operational turbine activities, and emergency response limitations • Identify and document critical controls for high-consequence events (falls, entrapment, electrical shock, fire, dropped objects, rescue delays) including performance standards and verification methods • Require that all contractors adopt the site risk matrix and definitions for likelihood and consequence, and align their SWMS to the site-level risk register • Establish a critical control assurance program with scheduled inspections, tests and field verifications of anchor points, fall arrest systems, rescue kits, fire systems, communication systems and isolation devices • Mandate multi-disciplinary risk reviews (engineering, operations, HSRs, contractors) for new turbine models, major modifications, software changes and new maintenance methods • Review and update all relevant risk assessments at defined intervals (at least annually) and after significant incidents, near misses or design changes	2M

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	rescue systems, lock-out devices) are functional and in use • Risk assessments focused on task steps (SWMS only) rather than system and organisational failures that can lead to serious incidents		• Record and track risk treatment actions in a central action management system with due dates, responsible persons and closure verification • Undertake periodic independent WHS risk reviews by suitably qualified external specialists for high-risk turbine operations	
3. Design, Procurement and Engineering of Wind Turbines and Balance of Plant	• Procurement of turbine models or components that do not meet relevant Australian Standards or WHS Regulation requirements for plant safety • Inadequate consideration of safe access, egress, working platforms and anchorage points within tower, nacelle and hub design • Lack of engineered lifting points and certified lifting plans for major components (gearboxes, blades, transformers) • Electrical design not aligned with safe isolation, earthing and lock-out requirements, increasing risk of inadvertent energisation • Insufficient fire detection and suppression systems within nacelles, switch rooms and transformers • Incompatibility between OEM design requirements and site conditions (wind regime, grid conditions, remoteness, temperature extremes) • Failure to incorporate redundancy or fail-safe features for braking, yaw and rotor control systems leading to overspeed or uncontrolled movements	4A	• Establish procurement standards requiring all wind turbines and associated plant to comply with relevant WHS laws, Australian Standards (e.g. AS 4024 series for machinery safety, AS/NZS 3000 for electrical installations) and industry good practice • Include safety in design requirements in all contracts with OEMs, specifying engineered access ways, ladders, platforms, guardrails, fall arrest systems and anchor points throughout tower, nacelle and hub • Require OEM design risk assessments and safety in design reports to be provided, reviewed and accepted by the PCBU prior to installation, with documented close-out of identified safety actions • Mandate engineered lifting points and validated lifting studies for major components, including maximum wind conditions and load paths for cranage and internal lifting devices • Specify electrical design requirements including clearly segregated low/high voltage areas, lockable isolation points, visible isolators, robust earthing and compliance with HV switching procedures • Include nacelle and switch room fire detection, alarm and suppression systems (where practicable) in the design, considering remote location and response delays • Require braking and yaw systems with redundancy, overspeed protection and remote monitoring, with failure modes analysed through engineering studies • Conduct pre-acceptance inspections and factory acceptance tests that include verification of safety features, signage, guarding, access systems and documentation quality • Ensure as-built design documentation, schematics and safe operating limits are provided in English and accessible to operations and maintenance personnel	2M
4. Asset Integrity, Maintenance Management and Inspection Systems	• Inadequate preventive maintenance system for turbines, towers, blades and electrical systems leading to progressive deterioration and failure • Lack of formal inspection regimes for safety-critical equipment such as ladders, anchor points, rescue kits, internal hoists and elevators	4A	[redacted]	2M

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	• Reliance on OEM recommendations only, without adapting to local operating conditions and incident history • Deferred maintenance due to production pressures or access constraints, increasing likelihood of catastrophic failures (e.g. blade throw, structural failure, gearbox failure) • Poor documentation, record keeping and traceability of completed maintenance, inspections and repairs • Use of non-approved parts or modifications that undermine the original plant safety design • Insufficient condition monitoring and failure trend analysis for turbines and balance-of-plant assets		[redacted]	
5. Contractor, OEM and Third-Party Management	• Contractors performing turbine maintenance and operations without adequate verification of WHS systems, competence and training • Inconsistent safe standards/procedures between principal contractor, OEM technicians and local subcontractors • Commercial arrangements that incentivise speed and availability over safe work practices and quality of maintenance • Lack of clarity regarding PCBU roles, responsibilities and consultation duties under the WHS Act 2011 where multiple PCBUs share the wind farm site • Inadequate oversight of contractors' SWMS, rescue plans and high-risk work permits for work inside turbines • Failure to manage interface risks between different contractors working	4A	[redacted]	2M

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	concurrently (e.g. crane operations, electrical work, blade inspections)		[redacted]	
6. Competence, Training and Authorisation for Turbine Operations and Maintenance	• Insufficient technical and WHS training for personnel entering and working inside turbines, including contractors and visitors • Lack of formal authorisation for high-voltage switching, turbine start/stop control and resetting of safety systems • Inadequate training in work at height, rope access (if used), confined space entry (where applicable) and rescue techniques • Training not tailored to specific turbine models, site procedures, environmental conditions and emergency response limitations • Competency not reassessed over time, resulting in skill fade and outdated knowledge • Non-English speaking or low literacy workers not understanding critical safety instructions and emergency procedures	4A	[redacted]	2M
7. Access, Egress and Work at Height Systems within Turbines	• Unsafe internal access systems (ladders, climb assists, service lifts) leading to falls from height or falls down ladders inside towers • Inadequate design or maintenance of anchor points, fall arrest systems and rail systems • Failure to plan for safe egress in case of medical emergency, fire or equipment failure at height • Congested nacelle and hub spaces increasing risk of trip, entanglement and	4A	[redacted]	2M

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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
	fall hazards when moving or handling components • Lack of robust procedures for exclusion zones below towers to protect from dropped objects and tools from internal and external work • Improper use or selection of temporary access equipment or rope access systems (if used for blade inspections or external work)		[redacted]	
8. Electrical Safety, Isolation and SCADA / Control Systems	• Exposure to energised high-voltage or low-voltage components during maintenance inside turbines or substations • Inadequate lock-out tag-out (LOTO) and verification procedures resulting i inadvertent energisation or turbine restart • Complex SCADA, re te control and automation logic no ully understood by field personnel, lea ng to unsafe overrides or resets • Poor coordination between control room and field teams during turbin start-up, fault finding or g s • Inadequate segregation and labelling of electrical equipment, cables and control circuits • Cyber or communication failures affecting the ability to safely monitor, stop or isolate turbines in an emergency	4A	[redacted]	2M
9. Emergency Preparedness, Rescue and Remote Area Response	• Insufficient planning for medical emergencies or trauma incidents occurring at height inside turbines or in remote locations	4A	[redacted]	2M

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	• Lack of appropriate rescue equipment or trained personnel on site when high-risk work is undertaken • Extended emergency response times due to remoteness, poor road access, weather or communication blackspots • Inadequate coordination with local emergency services regarding wind farm layout, turbine access methods and potential hazards • Emergency procedures not practised, not understood by all personnel, or not updated for new turbine models or layout changes • Failure to consider mental health and fatigue issues associated with remote and isolated work in emergency planning		[redacted]	
10. Traffic, Crane Operations and Site Logistics	• Vehicle collisions on wind farm acce roads due to poor road conditions, weather, fatigue or mixed traffic with heavy plant and service vehicles • Uncontrolled intera ons between cranes, elevated w k platforms, delivery trucks and ther ve r turbines and laydow s • Inadequate planning for major lifts turbine components during inst on, replacement or major ma ance campaigns • Poor segregation of pedestrian and vehicle movements at substations, control buildings and maintenance compounds • Unmanaged interface between public roads and wind farm access points creating risks for community road users • Lack of clear responsibilities for traffic management during abnormal load deliveries or crane mobilisation	3H	[redacted]	2M

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11. Environmental, Weather and Geographical Hazards	• Severe weather conditions (high winds, lightning, ice, extreme heat or cold) affecting safe turbine access and maintenance activities • Bushfire risk affecting access roads, turbine integrity and safe evacuation routes • Remote and rugged terrain creating slip, trip, fall and vehicle rollover hazards • Wildlife interactions (e.g. snakes, insects, birds) posing health and safety risks during inspections and maintenance around turbines • Inadequate monitoring of meteorological conditions and failure to integrate weather warnings into work planning and turbine operations • Fatigue and isolation risks due to long distances between turbines, accommodation and support services	3H	[redacted]	2M
12. Health, Fatigue, Psychosocial and Remote Work Management	• Worker fatigue due to long shifts, ros patterns, drive-in/drive-out arrangemen or overtime during breal and major maintenance paigns • Psychosocial risl arising from isolation, remote w local support services and high productio pressures • Inadequate manageme ss for work, including drugs and alcohol, medical conditions and physical capability for working at height in confined turbine spaces • Poor reporting culture for stress, fatigue and mental health concerns due to stigma or fear of reprisal • Lack of suitable amenities, rest areas and communication with families for remote workforces	3H	[redacted]	2M
13. Documentation, Procedures, Work	• Outdated or inconsistent procedures for turbine operation, maintenance and	3H		2M

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Permits and Information Management	emergency response across different turbine models or vintages • Workers unable to access current documents, drawings, risk assessments and rescue plans while in the field or inside turbines • Permit-to-work systems not adequately controlling high-risk activities such as work at height, electrical work, confined space entry or hot work • Poor version control resulting in different teams using differing instructions for similar tasks • Insufficient consideration of human factors in procedures (overly complex, unclear or not aligned with actual work practices)		[redacted]	
14. Incident Reporting, Investigation and Continuous Improvement	• Under-reporting of incidents, hazards and near misses, especially for lower-level events that could indicate system failures • Inadequate investi[illegible]on of serious incidents related to [illegible]rbine operations, leading to recurren[illegible]e • Focus on worker be[illegible]viour rather t[illegible]n underlying organisational and engineering causes • Weak processes for tracking, closing and verifying corrective actions across multiple turbines and contractors • Failure to share lessons learned between sites, shifts, contractors and OEMs	3H	[redacted]	2M

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