Plant and Machinery Maintenance Repair and Overhaul

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:

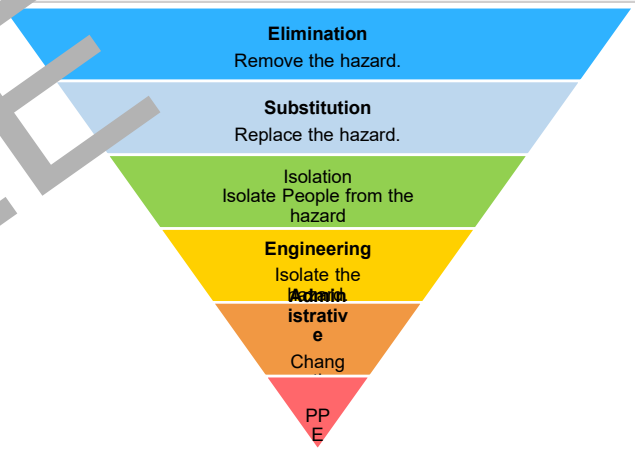
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

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, Duty of Care and Legislative Compliance	• Lack of clear WHS responsibilities for plant and machinery maintenance under WHS Act 2011 and WHS Regulations • Inadequate understanding of PCBU, officer and worker duties regarding plant, structures and maintenance activities • Failure to apply hierarchy of control when planning repair and overhaul activities • No systematic review of compliance against relevant Australian Standards (e.g. AS/NZS 4024 series, electrical, pressure equipment, lifting) • Poor integration of plant safety obligations into contracts with repairers, OEMs and service providers • Insufficient consultation with workers and Health and Safety Representatives (HSRs) when introducing or modifying plant maintenance systems • Lack of documented WH objectives, KPIs and performan measures specific to plant an machinery maintenance • Inadequate due dili ce by officer n ensuring resources and processes f safe maintenance and overhauls	4A	• Develop and maintain a WHS governance fra k that clearly allocates duties and authorities for plant and machinery maintenance in line with W Act 2011 an WHS Regulations • Establish a documented WH lant safety policy verin achinery repairs, major maintenance, onsite repair works and servicing of he and motorised e ent • Implement a co pliance gister pping all re vant legislation, codes of practice and Australian Standards a cable to pla mainte nce, r ir, overhaul and extraction equipment • Defin officer e dilige e processes cluding regular WHS reports on plant maintenance perfo ce, res ing gaps and major risk issues • Embe WHS requ ments into procurement and service contracts for OEMs, contractors and mobile repair s vic includ explicit duties for risk management and information provision • Establi a fo al consultation procedure with workers and HSRs for any significant changes to plant, ma tena ce reg es, retrofit of obsolete parts or overhaul processes • Set pla elated WHS objectives and KPIs (e.g. number of high-potential maintenance incidents, mpliance with planned inspections, corrective action closure rates) and review at management m tings • Schedule periodic external or internal WHS compliance audits focusing on plant and machinery maintenance systems, with tracked corrective actions	3H
2. Plant Lifecycle Management, Design and Procurement	• Purchase of plant and equipment without adequate WHS specification or maintainability requirements • Acquisition of machinery lacking guarding, interlocks or energy isolation provisions suitable for safe maintenance and overhaul • Use of imported or obsolete machinery without local compliance assessment or documentation • Poor consideration of access for safe servicing of belts, chains, worn-out components and extraction equipment	4A	• Implement a plant lifecycle management procedure requiring WHS risk and maintainability criteria at design, selection and procurement stages • Develop standard plant procurement specifications mandating compliance with relevant Australian Standards, machine guarding, lockable isolation points and safe access for maintenance • Require OEMs to provide full technical documentation, maintenance schedules, parts lists and safety information (including for retrofitting obsolete parts and replacing worn-out seals) • Conduct pre-purchase risk assessments for major plant and equipment, including access for repair of minor damages, servicing of belts and chains and overhaul of heavy machinery • Establish a commissioning process that includes verification of guarding, emergency stops, isolation systems and safe maintenance access before plant is accepted into service	2M

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	• Failure to obtain or retain OEM maintenance manuals, service bulletins and safety updates • Inadequate assessment of leased, hired or loan machinery prior to use and maintenance • Selection of plant with complex automation or hydraulic systems without appropriate diagnostic interfaces for safe fault finding and temporary repairs		• Apply a formal assessment and registration process for all hired, leased or loan plant before use or integration into repair and maintenance operations • Maintain a central plant register with configuration details, design changes, retrofits and known maintenance-related hazards	
3. Preventive Maintenance, Inspection and Asset Integrity Systems	• Absence of a structured preventive maintenance program for critical machinery, extraction equipment and motorised equipment • Reactive maintenance culture leading to breakdowns, rushed temporary repairs and increased exposure to hazards • Failure to identify and track critical components (e.g. worn-out seals, belts, chains, safety devices) that require systematic replacement • Inadequate inspection frequencies for heavy machinery used in harsh or remote environments • Poor recordkeeping for servicing, repair history and condition monitoring data • Use of ad hoc pre-start checklists without standardisation or verification • Failure to schedule major overhauls based on OEM guidance, usage hours or condition monitoring • No formal criteria for determining when temporary repairs are acceptable and when plant must be removed from service	4A	• Establish a computerised maintenance management system (CMMS) or equivalent to schedule, track and record preventive maintenance, inspections and overhauls • Develop risk-based maintenance plans for all critical plant, including extraction systems, heavy machinery and motorised equipment, aligned with OEM recommendations and operating conditions • Standardise pre-start inspection checklists that include guarding, safety interlocks, belts and chains, damaged components and leaks from worn seals, with clear escalation triggers • Define and document criteria for service limits, mandatory replacement intervals and major overhaul frequencies for high-risk components and assemblies • Implement asset criticality ranking to prioritise inspection and maintenance resources on machinery where failure has high safety consequences • Require maintenance completion reports with sign-off, including details of parts replaced, temporary repairs made and any outstanding defects or restrictions • Introduce periodic independent inspections (e.g. annual) for key items such as cranes, lifting equipment, pressure systems and key extraction equipment • Set clear policy on temporary repairs, including approval levels, time limits, risk assessment requirements and tagging or labelling of temporarily repaired plant	2M
4. Hazard Identification, Risk Assessment and Change Management for Repairs	• Inconsistent or informal risk assessment of major maintenance, overhauls and complex onsite repair works	4A	[redacted]	2M

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	• Failure to identify latent hazards when removing broken components or reinstalling mishandled units • No structured process for assessing risks of non-standard, one-off or high-risk repairs (e.g. retrofitting obsolete parts, major extraction system modifications) • Poor evaluation of risks associated with temporary repairs and repair of minor damages that may mask underlying structural faults • Lack of Management of Change (MoC) for design alterations, control system changes or replacement of components with non-OEM equivalents • Insufficient integration of learnings from incidents, near misses and OEM bulletins into future risk assessments and repair methods		[redacted]	
5. Competency, Training and Supervision for Maintenance Personnel	• Maintenance personnel undertaking complex repairs or servicing heavy machinery without appropriate trade qualifications or verifi[redacted] competency • Inadequate traini[redacted] on specifi[redacted] types, including ext[redacted]quipmen[redacted] motorised equipment and specialised hydraulic or electrical systems • Lack of refresher training[redacted]olation procedures, pressure systems, working at height and confined spaces relevant to maintenance • Insufficient supervision of apprentices, new starters, labour hire workers and contractors performing repairs and temporary fixes • Poor competency in fault finding leading to incorrect repair of faulty machinery or misdiagnosis of worn-out components	4A	[redacted]	2M

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	• No formal assessment of competency for use of diagnostic software, testing equipment or calibration tools			
6. Contractor and OEM Management for Repair and Overhaul	• Use of external repairers or OEM technicians without appropriate vetting of WHS performance and competencies • Poor coordination between site and contractors undertaking onsite repairs, major overhauls or extraction system work • Inadequate induction of contractors into site-specific hazards and plant conditions • Unclear delineation of responsibilities for isolation, permits, supervision and verification of completed work • Contractors bypassing site procedures in favour of their own unsafe work practices • Lack of post-work review of contracto performance and lessons learned	4A	[redacted]	2M
7. Isolation, Lockout–Tagout and Energy Control Systems	• Inadequate isolat n procedures for mechanical, electr l, hydr pneumatic and stor gy during repairs and maintenance • Plant design not supporting eff ve lockout points or energy di pation for servicing belts, chains and moving components • Failure to control stored energy when removing broken components, replacing defective parts or reinstalling mishandled units • Multiple work groups conducting concurrent tasks without coordinated isolation controls • Use of shared keys, informal tagging or undocumented overrides of safety interlocks	4A	[redacted]	2M

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	• Poor verification of isolation before commencing repair work or temporary repairs			
8. Workshop Layout, Housekeeping and Traffic Management	• Poor workshop layout causing interaction between pedestrians, forklifts, delivery vehicles and heavy machinery under repair • Inadequate separation of hot work, grinding, cutting and mechanical repair areas • Blocked access to emergency exits, fire equipment, isolation points or extraction systems • Accumulation of oil, grease, offcuts and components increasing slip, trip and fire risks • Inadequate storage systems for removed components, defective parts and heavy assemblies awaiting reinstall or overhaul • Lack of designated areas for tempora storage of plant waiting for assessment or repair	3H	[redacted]	2M
9. Lifting, Rigging and Handling of Plant Components	• Inadequate syste for lifting and handling heavy or kward plant items during removal, ov aul reinstallation • Use of uncertified lifting gear or exceeding safe working l en handling broken components or heavy sub-assemblies • Poor planning of lifts in restricted spaces or near live services • Manual handling of heavy parts, belts, chains and motors due to lack of mechanical aids • Insufficient inspection and maintenance of lifting equipment used in repair and maintenance activities • Lack of documented lifting plans for complex or critical lifts associated with major plant maintenance	4A	[redacted]	2M

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10. Working Environment, Extraction and Hazardous Substances Control	• Inadequate extraction and ventilation when performing repairs on extraction equipment, engines, exhaust systems or dust-generating machinery • Exposure to welding fumes, solvents, paints, oils and cleaning agents during repair and maintenance activities • Failure of extraction systems due to poor maintenance leading to build-up of hazardous airborne contaminants • Poor management of combustible dusts and flammable vapours around hot work or grinding in repair areas • Uncontrolled use of aerosols, adhesives and sealants during replacing worn seals, retrofitting parts and repairing minor damages • Inadequate systems for storage, labelling and disposal of chemicals used in servicing and overhauls	3H	[redacted]	2M
11. Emergency Preparedness, Incident Response and Recovery	• Inadequate planning for emergencies arising from plant maintenance, such as entrapment, fire, hydraulic failure or structural collapse • Lack of rescue procedures, equipment for working under raised plant or within confined areas of machinery • Poor communication systems for maintenance teams working in remote or isolated locations during onsite repair works • Delayed medical response due to unclear site access arrangements or lack of first aid coverage in workshops • Failure to investigate and learn from maintenance-related incidents, near misses and repeated equipment failures	3H	[redacted]	2M
12. Documentation, Information	• Loss or inaccessibility of OEM manuals, service bulletins and technical	3H		1L

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Management and Technical Records	drawings required for safe repair and overhaul • Out-of-date procedures, diagrams and specifications guiding repairs and retrofits • Inconsistent or incomplete recording of maintenance activities, parts replaced and temporary repairs performed • Informal communication of critical information (e.g. known defects, plant restrictions, outstanding recalls) to maintenance staff • Lack of traceability for modifications, retrofits of obsolete parts and design changes impacting safety functions		[redacted]	
13. Fatigue, Workload and Scheduling of Maintenance Activities	• Fatigue among maintenance personnel due to extended hours, call-outs and night work for breakdown repairs • High workload during shutdowns or major overhauls leading to shortcutting of procedures • Inadequate rest breaks or rotation for tasks requiring sustained concentration, such as fault diagnosis or precision repairs • Poor planning of major maintenance outages causing time pressures and conflicting priorities • Insufficient staffing levels for concurrent maintenance projects, leading to over-reliance on key individuals	3H	[redacted]	2M
14. Quality Assurance of Repairs and Verification of Plant Readiness	• Plant returned to service after repairs without adequate functional testing or verification of safety systems • Inconsistent standards for assessing acceptability of temporary repairs on faulty machinery and minor damage repairs	4A	[redacted]	2M

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	• Lack of independent verification or peer review for critical repairs and overhauls affecting safety-related controls • No formal sign-off process for completion of major maintenance activities and reinstatement of plant to full operation • Failure to update operating instructions and maintenance plans to reflect changes made during repairs and retrofits		[redacted]	
15. Continuous Improvement, Consultation and WHS Culture in Maintenance	• Lack of systematic review of maintenance-related WHS performance and recurring issues • Limited worker engagement in identifying improvements to repair and overhaul systems • Normalisation of deviance where unsafe shortcuts or temporary repairs become accepted practice • Poor feedback loops between operators, maintenance [redacted] and management regarding plant reliability and safety issues • Failure to recogni[redacted] and [redacted]ess cultural barriers to reporting defects, near misses or unsafe conditions	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