Tower Crane Assembly - Dismantling

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:

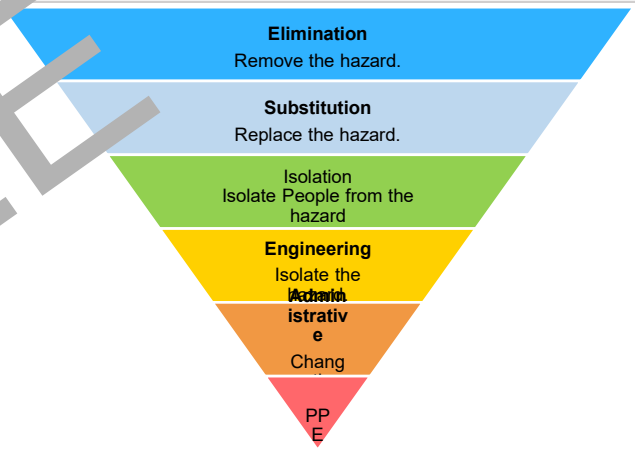
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

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. Project WHS Governance & Legislative Compliance	• Inadequate understanding or application of WHS Act 2011 and WHS Regulation 2017 duties for high risk construction work and tower cranes • Lack of clearly defined PCBU interfaces where multiple contractors are involved in crane assembly and dismantling • Absence of a documented WHS management plan specific to tower crane assembly, dismantling and high reach lifting • Failure to appoint competent person(s) responsible for crane erection, climbing, dismantling and verification of structural integrity • Poor consultation, cooperation and coordination between PCBUs leading to overlapping or conflicting controls • Inadequate consideration of AS 1418, AS 2550 and manufacturer instructions in project-level planning • No systematic review of lessons learned from previous crane incidents or near misses	4A	• Develop and implement a project-specific WHS management plan that explicitly addresses tower crane assembly, self-erecting cranes, high reach lifting and dismantling activities in line with WHS Act 2011 and WHS Regulation requirements • Establish a documented PCBU interface agreement (or WHS coordination plan) defining roles, responsibilities and consultation arrangements for principal contractor, crane supplier, erector, rigger, electrical contractor and other stakeholders • Adopt and reference relevant Australian Standards (e.g. AS 1418 Cranes, hoists and winches series; AS 2550 Safe use of cranes) and manufacturer technical manuals within the project WHS documentation • Ensure appointments of competent persons for design verification, erection, climbing, dismantling and inspection are documented, with evidence of qualifications, licences and experience verified prior to mobilisation • Implement a formal WHS legislative compliance checklist for high risk construction work and plant, reviewed at key project milestones (pre-erection, post-erection, pre-dismantle) • Schedule regular senior management WHS review meetings focused on crane-related risks, incident trends and verification of critical controls • Maintain a lessons-learned register for crane operations on the project, and require its review prior to any major configuration change, climbing, or dismantling • Ensure arrangements for worker consultation, health and safety representative (HSR) involvement and issue resolution procedures are clearly communicated and utilised in relation to crane works	3H
2. Crane Selection, Engineering Verification & Design Management	• Incorrect selection of tower or self-erecting crane type, height, capacity or foundation system for site conditions and load cases • Inadequate engineering verification of tie-ins, ballast, base frames, grillages and climbing systems • Failure to consider wind loads, out-of-service configurations and adjacent structures in the design • Use of non-approved modifications or non-genuine components in the crane structure or connections • Incomplete design documentation, calculations or drawings for the assembly and dismantling configurations	4A	• Implement a formal crane selection process that includes engineering review of load charts, radius, hook heights, high reach lifting requirements and interaction with nearby assets and airspace • Require site-specific engineering design for foundations, base frames, ballast, ties, climbing sequences and dismantling methodology prepared or certified by a suitably qualified engineer • Mandate independent third-party engineering verification for critical crane support and restraint elements, including ties, foundations and major modification to standard configurations • Ensure that only manufacturer-approved components and configurations are used, with a documented process for managing any deviations or engineered solutions • Maintain controlled design documentation (drawings, calculations, lift studies) with revision control and clear status (approved for construction/use) accessible to relevant personnel • Include wind loading, dynamic effects, out-of-service weathervaning and adjacent building effects in the design brief and verification process • Establish a formal change management procedure for any alteration to crane design parameters, including engineering sign-off and WHS review prior to implementation	2M

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	• Lack of independent verification of engineering design and temporary works (e.g. ties to structures, guy wires, foundations)			
3. Site Layout, Ground Conditions & Structural Interface	• Unverified ground bearing capacity or inadequate assessment of subsurface conditions for base or mobile cranes used in assembly/dismantling • Insufficient clearance from excavations, retaining walls, services or underground voids supporting crane load paths • Poorly designed or controlled interface between tower crane ties and permanent structure leading to structural overload or damage • Inadequate planning for access and egress of mobile cranes, trucks and support plant in congested sites • Lack of systematic management of exclusion zones, public protection and overhead protection around the crane footprint	4A	• Require geotechnical assessment and engin[illegible]ertification of ground bearing capacity for crane bases and for outriggers of mobile cranes used [illegible]ssembly/dis[illegible]ntling • Implement a site layout plan [illegible]ich identifies cran[illegible]ase[illegible]upport cranes, exclusion zones, traffic flows, materials laydown areas and no[illegible] zones for plant a[illegible]edestrians • Ensure structu[illegible]engine[illegible]ign-o[illegible]r all tie-in [illegible]cations, cladding removal, local strengthening and any temporary w[illegible]s associate[illegible]ith cra[illegible]and [illegible]cture interface • Appl[illegible] permi[illegible]nd app[illegible]al system fo[illegible]iting of support cranes and heavy vehicles near excavations, retain[illegible]alls a[illegible]u[illegible]ground services • Desig[illegible]a[illegible]docum[illegible]t public protection measures (hoardings, overhead protection, catch decks, road closure[illegible]fo[illegible]ane as[illegible]mbly and dismantling operations in or adjacent to public areas • Use ph[illegible]sical [illegible]rriers, signage and access control systems to enforce exclusion zones around crane si[illegible]radi[illegible]and a[illegible]sembly areas, supported by documented procedures and supervision • Review [illegible]anging site conditions (backfilling, dewatering, staging of construction) via scheduled [illegible]pections to confirm continued adequacy of ground and structural support conditions	2M
4. Supplier, Contractor & Competency Management	• Engagement of cr[illegible]e suppliers, erectors and rigge[illegible]without adequate verification of tech[illegible]al com[illegible]nd WHS performance • Inadequate verification of high risk work licences (e.g. dogging, rig[illegible]g, crane operation) and specific tower crane experience • Poor induction to project-specific hazards such as self-erecting crane behaviour, high reach lifts and work at height on booms • Over-reliance on subcontractors' internal systems without integration into principal contractor WHS arrangements • Lack of competency in rescue planning, emergency response and high-angle access involved in crane assembly	4A	[redacted]	2M

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			[redacted]	
5. Planning of Assembly, Climbing, High Reach Lifts & Dismantling	• Lack of integrated lifting studies for high reach and heavy lifts during assembly and dismantling • Inadequate planning for simultaneous operations (SIMOPS) around the crane including other plant, trades and public interfaces • Insufficient contingency planning for weather delays, partial dismantle stages or out-of-service conditions • Poor consideration of crane radius limits, in-service restrictions and preferred assembly/dismantle orientations • No formal management review and approval of complex lift plans and assembly methodologies	4A	[redacted]	2M
6. Documentation, Procedures & Safe Systems of Work (Non-SWMS Level)	• Absence of overarching pr… governing crane lifec… manageme… on the project • Reliance on undocumented cu…n and practice instead of for…ised systems for assembly and dismantling • Failure to integrate manufacturer instructions, engineering conditions and site-specific requirements into operational guidance • Outdated or uncontrolled documentation leading to conflicting instructions and confusion • Incomplete coverage of self-erecting crane specific risks in general crane procedures	3H	[redacted]	2M

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			[redacted]	
7. Plant Integrity, Inspection & Maintenance Systems	• Use of cranes, climbing frames or ancillary lifting gear with overdue inspections or maintenance • Failure of critical components (slew ring, bolts, pins, ropes, hoist systems) due to inadequate preventive maintenance • Inadequate system for managing pre-erection inspection and certification of crane sections, pins and fasteners • Poor control of lifting equipment registers for chains, slings, shackles and spreader beams used in assembly and dismantling • Lack of follow-up on identified defect or condition monitoring alerts	4A	[redacted]	2M
8. Working at Heights on Towers, Booms & Structures	• Inadequate syste[redacted]ork at heights on crane [redacted], booms, counter-jibs and machinery decks d[redacted]g assembly and dismantling • Lack of engineered acce[redacted]ystems (fixed ladders, platforms, guardrails) for frequent access points • Reliance on improvised access or non-compliant fall protection methods • Insufficient planning for high-angle rescue from crane structures or booms • Poor integration of work at height controls with crane movement and energisation controls	4A	[redacted]	2M

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			[redacted]	
9. Lifting Gear, Load Management & Materials Handling Systems	• Inadequate control over suitability and certification of lifting gear used to assemble and dismantle tower sections and booms • Poor planning of load weights, centres of gravity and rigging configurations for non-standard components • Overloading of cranes during high reach assembly lifts due to inaccurate information or lack of verification • Inadequate systems for managing loose items, tools and components that may fall from heights during lifts • Lack of standardised tagging, inspection and quarantine process for defective rigging gear	3H	[redacted]	2M
10. Weather, Wind & Environmental Monitoring Systems	• Inadequate monit[redacted]control wind and weather conditions during h reach lifting, assembly and dismant[redacted]g activities • Failure to act on wind-speed alarms or weather warnings due to unclear responsibilities or procedures • Lack of understanding of out-of-service wind limits and weathervaning requirements for specific crane models • Environmental factors such as lightning, poor visibility, heat and cold stress impacting safe performance of high-risk crane work	4A	[redacted]	2M

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11. Traffic, Public Interface & Exclusion Zone Management	• Uncontrolled interaction between crane assembly/dismantling activities and public areas, adjoining properties or public roads • Inadequate traffic management planning for delivery and mobilisation of large crane components and support cranes • Poorly enforced exclusion zones beneath and around cranes, particularly in urban or constrained sites • Insufficient control of site access during critical lifts and dismantling phases	3H	[redacted]	2M
12. Communications, Supervision & Coordination of Crane Activities	• Miscommunication between crane operators, riggers, doggers and supervisors during complex assembly and dismantling operations • Insufficient supervision of critical stages such as initial erection, climbing and final dismantling • Conflicting instructions from different supervisors or PCBUs leading to unsafe decisions • Inadequate communication technology (e.g. unreliable radios) or protocols for high noise or obstructed visibility conditions	3H	[redacted]	2M
13. Fatigue, Rostering & Competency Retention	• Long work hours, night shifts or extended periods at height during crane assembly and dismantling leading to fatigue-related errors	3H	[redacted]	2M

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	• Insufficient rest periods or rotation for workers in high concentration roles (crane operators, riggers, supervisors) • Loss of competence due to infrequent performance of complex tasks such as tower climbing or boom dismantling • Pressure to work through unsafe conditions to meet program milestones		[redacted]	
14. Energy Isolation, Lock-Out & Interface with Electrical Systems	• Uncontrolled movement of cranes or support plant during assembly/dismantling due to inadequate isolation systems • Contact with overhead or adjacent electrical infrastructure when slewing o lifting components • Unclear demarcati between authorised and un thorised personnel for energising or d energisi systems • Bypassing of safety interlocks or li t switches during fault-findin or alignment tasks	4	[redacted]	2M
15. Emergency Preparedness, Rescue & Incident Management	• Delayed or ineffective rescue of workers suspended at height or injured on crane structures • Lack of rehearsed procedures for crane-related emergencies such as structural failures, dropped loads or collisions • Inadequate access for emergency services to crane base or surrounding site areas	4A	[redacted]	2M

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	• Poor incident notification, investigation and learning processes following crane-related events		[redacted]	
16. Documentation, Record Keeping & Assurance	• Incomplete or inaccurate records of inspections, certifications, training and permits related to crane assembly and dismantling • Inability to demonstrate compliance with WHS Act, WHS Regulation and Australian Standards during regulatory inspections or investigations • Loss of critical documents (engineeri certificates, lift plans, maintenance records) due to poor i mation management • Failure to system ically ve critical controls for ks are implemented and effective	H	[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

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