

**Structural Steel Erection**

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:	



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			<b>Elimination</b> Remove the hazard.	
LIKELY	2 MODERATE	3 HIGH	3 HIGH	4 ACUTE	4 ACUTE	4A ACUTE	DO NOT PROCEED	<b>Substitution</b> 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.	<b>Engineering</b> Isolate the hazard	
RARE	1 LOW	1 LOW	2 MODERATE	3 HIGH	3 HIGH	1L LOW	Monitor and keep records.	<b>Administrative</b> Change	
								<b>PPE</b>	

  

Risk Rating & Required Action:	
<b>4A</b>	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.
<b>3H</b>	Review and approve additional controls before task starts. Senior supervisor sign-off needed.
<b>2M</b>	Ensure all nominated controls are in place and effective. Proceed with caution; monitor conditions.
<b>1L</b>	Proceed, following standard operating procedures. Monitor and keep records.

  

Consequence Scale:			
Consequence	People (injury/illness)	Project / Assets	Compliance / Reputation
<b>Catastrophic</b>	Fatality or permanent total disability	project shutdown	Significant regulator intervention; criminal prosecution
<b>Major</b>	Serious injury/illness (hospital > 5 days)	critical delay	Improvement notice; major media coverage
<b>Moderate</b>	Medical-treatment injury; lost-time > 1 day	moderate delay	Minor breach; adverse client comment
<b>Minor</b>	First-aid only, no lost time	negligible delay	Isolated non-conformance
<b>Insignificant</b>	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 Management, Governance & Legal Compliance	<ul style="list-style-type: none"> <li>Inadequate WHS management system to address structural steel erection risks under WHS Act 2011 and WHS Regulations</li> <li>Lack of clear roles, responsibilities and accountability for PCBU, officers, workers and contractors</li> <li>Failure to consult, cooperate and coordinate with other duty holders on multi-contractor sites</li> <li>Insufficient monitoring of compliance with Australian Standards (e.g. AS 3828, AS/NZS 1576, AS 4100, AS 3990, AS 4991, AS 2550 series)</li> <li>Inadequate resourcing of WHS (time, budget, competent people, supervision) for complex steel erection works</li> <li>No documented WHS objectives, performance indicators or audit program specific to structural steel construction</li> <li>Failure to review and update systems when scope changes (e.g. production of mezzanine floors after installation, or replacement of existing steel)</li> </ul>	4A	<ul style="list-style-type: none"> <li>Establish and maintain a certified WHS management system (e.g. ISO 45001 aligned) that explicitly covers structural steel erection activities</li> <li>Define and document WHS responsibilities for officers, managers, supervisors, engineers, crane coordinators, riggers and installers in position descriptions and project WHS plans</li> <li>Implement formal consultation and coordination arrangements (e.g. interface agreements, pre-start coordination meetings, joint risk workshops) between principal contractor, steel fabricators, transport providers, erection crews and other PCBUs</li> <li>Ensure legal register of standards register identify all relevant WHS legislation, Codes of Practice and Australian Standards applicable to structural steel erection, and link them to procedures</li> <li>Allocate adequate WHS resources in project planning (e.g. budget for temporary works design, lifting studies, supervision, traffic management and independent inspections)</li> <li>Implement a documented WHS audit and inspection schedule focused on structural stability, lifting operations, working at height, and plant interaction risks</li> <li>Require periodic management reviews of WHS performance on steel erection projects, including lessons learned and corrective actions</li> </ul>	3H
2. Design, Engineering & Constructability Management	<ul style="list-style-type: none"> <li>Structural design not adequately considering erection methodology, temporary stability and staged loading</li> <li>Insufficient design detail for connections, cleats, cross-bracing and mezzanine floor supports</li> <li>Lack of engineered temporary works design (props, braces, falsework, temporary guying) for partially erected frames</li> <li>Design changes during construction not being subject to formal engineering review</li> <li>Inadequate coordination between architect, structural engineer and fabricator leading to misaligned connections or site modifications</li> </ul>	4A	<ul style="list-style-type: none"> <li>Require structural designs to be completed, checked and certified by suitably qualified and registered professional engineers with experience in steel erection</li> <li>Incorporate constructability reviews (including erection sequencing, access, crane positions and temporary stability) during design development and prior to procurement</li> <li>Mandate engineered temporary works designs (including tie-in points, braces, propping for mezzanines and frames) with design certificates and clear installation / removal criteria</li> <li>Establish a controlled design change management process requiring formal engineering approval, revision control and communication to site teams before implementation</li> <li>Ensure 3D modelling/BIM coordination between design disciplines and fabricator to resolve clashes and misalignments prior to fabrication</li> <li>Require issue of for-construction drawings, connection schedules and bolt tensioning requirements well before erection start, with a controlled document management system</li> <li>Specify design criteria for wind loading, crane induced loads, progressive loading from steel liner installation and girder transport / lifting in design briefs</li> </ul>	2M

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	<ul style="list-style-type: none"> <li>Late provision or absence of certified erection drawings, connection details and hold-down bolt layouts</li> <li>Failure to consider dynamic loads from crane operations, wind, lifting of long girders and installation of steel liners during design</li> </ul>			
3. Procurement of Steel, Components & Temporary Works	<ul style="list-style-type: none"> <li>Procurement of non-compliant or undocumented structural steel, bolts and welding consumables</li> <li>Use of uncertified lifting lugs, spreader bars or temporary bracing components incorporated into structures</li> <li>Inadequate quality assurance for prefabricated columns, beams, cross-braces, mezzanine floor components and liners</li> <li>Lack of traceability of critical materials (e.g. high strength friction grip bolts, structural bolts for cleats, proprietary mezzanine systems)</li> <li>Lead times and cost pressures driving substitution of material components without engineering review</li> <li>Failure to specify protective treatments, corrosion protection and protective systems suitable for installed environment</li> <li>No clear acceptance criteria for fabricated items and temporary works systems on delivery to site</li> </ul>	3H	<ul style="list-style-type: none"> <li>Establish procurement specifications requiring compliance with relevant Australian Standards (e.g. AS/NZS 3678, AS 1779, AS 1700, AS/NZS 1552, AS/NZS 1554) and project-specific requirements</li> <li>Require suppliers and fabricators to provide material test certificates, certificates of compliance, weld procedures and qualifications, and product data sheets for critical items</li> <li>Restrict use of lifting lugs, embedded anchors and temporary bracing components to items designed, verified and certified by an engineer, with load ratings clearly marked</li> <li>Implement a material traceability system (heat numbers, batch numbers, bolt lot identification) from fabrication through to site installation for critical structural elements</li> <li>Define formal substitution / variation procedures requiring engineering approval and updated documentation before acceptance of any alternative materials or components</li> <li>Specify corrosion and fire protection requirements (e.g. galvanising, intumescent coatings) in procurement documents and verify on delivery</li> <li>Implement documented incoming goods inspection and hold-point process to reject non-conforming fabricated steel, mezzanine systems or temporary works equipment</li> </ul>	2M
4. Contractor Selection, Competency & Training	<ul style="list-style-type: none"> <li>Engagement of steel erection contractors without demonstrated competency in structural steel construction and high-risk work</li> <li>Riggers, doggers, crane operators and EWP operators lacking current high-risk work licences or verifiable experience with complex lifts</li> <li>Insufficient training on project-specific systems (e.g. cross-bracing techniques,</li> </ul>	4A	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M

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	<p>mezzanine floor installation sequences, steel liner handling)</p> <ul style="list-style-type: none"> <li>Supervisors not competent in structural stability principles and temporary works requirements</li> <li>Poor understanding of WHS responsibilities among subcontractors, including duties under WHS Act and Codes of Practice</li> <li>Inadequate induction systems for new workers and short-term personnel</li> <li>No competency verification for personnel undertaking inspection, torquing of structural bolts or signing off critical connections</li> </ul>		[REDACTED]	
5. Planning, Sequencing & Methodology for Erection	<ul style="list-style-type: none"> <li>Lack of integrated erection plan covering columns, frames, girders, mezzanines, cross-bracing and steel liner installation</li> <li>Unplanned changes to erection sequence leading to unstable frames or overloaded components</li> <li>Inadequate planning for replacement of existing structural steel while maintaining building stability</li> <li>Missing or incomplete studies for heavy or complex lifts (e.g. long-span girders, pre-assembled frames, mezzanine modules)</li> <li>Failure to coordinate erection with other trades, creating clashes and increased exposure to falls or dropped objects</li> <li>Insufficient planning for progressive tightening and inspection of bolted connections and cleats</li> <li>No contingency planning for adverse weather (high winds, lightning) during critical erection stages</li> </ul>	4A	[REDACTED]	2M
6. Structural Stability, Temporary Works & Bracing Control	<ul style="list-style-type: none"> <li>Partial frames (columns, beams and girders) left unrestrained and vulnerable to collapse</li> </ul>	4A	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>Inadequate or incorrectly installed temporary bracing, guys or props during erection of structural frames and mezzanines</li> <li>Removal of temporary bracing before permanent cross-bracing, floors or liners are fully installed and fixed</li> <li>Underestimation of loads on existing structures when attaching new steel, mezzanine floors or steel liners</li> <li>Lack of monitoring for deflection, movement or loosening of temporary supports during girder erection and liner installation</li> <li>Uncontrolled alterations to temporary works by site personnel without engineering approval</li> </ul>		[REDACTED]	
7. Working at Height, Edge Protection & Fall Prevention Systems	<ul style="list-style-type: none"> <li>Inadequate fall prevention systems when erecting columns, connecting frames, installing cross-bracing and mezzanine floors</li> <li>Poorly planned access to elevated work areas leading to unsafe climbing on steel members</li> <li>Inconsistent standards for edge protection on mezzanine floors and during steel liner installation on roofs or walls</li> <li>Insufficient inspection and maintenance of scaffolds, EWPs, work platforms and ladders</li> <li>Failure to integrate fall protection requirements into design of prefabricated structures and lifting arrangements</li> <li>Inadequate rescue planning for suspended or injured workers at height</li> </ul>	4A	[REDACTED]	2M
8. Plant, Cranes, Lifting Equipment & Transport Management	<ul style="list-style-type: none"> <li>Use of unsuitable or poorly maintained cranes, EWPs, telehandlers or load shifting equipment for steel erection and girder transport</li> </ul>	4A	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>Inadequate planning of crane setups, outrigger loads, ground bearing pressures and interaction with underground services</li> <li>Uncertified or misused lifting gear (chains, slings, shackles, spreader bars, lifting beams and lifting points on prefabricated members)</li> <li>Poorly coordinated vehicle and plant movements during transport and erection of girders and large frames</li> <li>Insufficient separation between mobile plant and workers, particularly during delivery and positioning of long steel members and liners</li> <li>Failure to manage fatigue and shift length for crane operators and transport drivers</li> </ul>		[REDACTED]	
9. Quality Control of Connections, Bolting & Welding	<ul style="list-style-type: none"> <li>Critical bolted connections, cleats and cross-braces not tightened to specific tension or left incomplete</li> <li>Incorrect bolt grades, lengths or washers used in primary structural connections and mezzanine supports</li> <li>Welds not complying with welding procedures or lack of inspection, particularly on lifting lugs or modified members</li> <li>Lack of systematic inspection and sign-off of hidden or inaccessible connections before covering (e.g. with liners or floor systems)</li> <li>Uncontrolled on-site modification of drilled holes, cleats or members affecting structural capacity</li> <li>Poor documentation of inspection results and rectification of non-conformances</li> </ul>	4A	[REDACTED]	2M
10. Site Layout, Material Handling & Housekeeping Systems	<ul style="list-style-type: none"> <li>Poorly planned laydown areas leading to unstable stacking of girders, columns, mezzanine components and steel liners</li> </ul>	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>Inadequate systems for safe manual handling or mechanical handling of long, heavy or awkward steel members</li> <li>Congested work areas increasing tripping hazards, collisions and difficulty in emergency access</li> <li>Uncontrolled storage of gas cylinders, flammable materials and welding equipment in steel erection zones</li> <li>Lack of systematic waste management and removal of offcuts and packaging creating slip, trip and puncture hazards</li> </ul>		[REDACTED]	
11. Interface with Existing Structures, Services & Public Areas	<ul style="list-style-type: none"> <li>Unidentified or poorly controlled interaction between new steel erection and existing structural elements during refurbishment or replacement works</li> <li>Damage to or overloading of existing structures when attaching new mezzanines, braces or liners</li> <li>Contact with live services (electrical, gas, hydraulics) during drilling, fixing or cutting operations on existing buildings</li> <li>Inadequate separation between erection activities and public areas, neighbouring properties or occupied parts of the building</li> <li>Noise, dust and vibration from steel erection affecting building occupants or neighbours</li> </ul>		[REDACTED]	2M
12. Environmental Conditions, Weather & Site Emergencies	<ul style="list-style-type: none"> <li>High winds, lightning or rain affecting stability of partially erected frames, cranes and handling of steel liners and long girders</li> <li>Poor visibility due to weather or lighting conditions increasing risk of falls and plant interaction</li> <li>Inadequate emergency response arrangements for structural collapse, plant incident or fall from height</li> <li>No clear communication protocols for weather-related stop-work decisions and evacuation</li> </ul>	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>Heat stress or cold exposure affecting judgement and physical capacity of erection crews</li> </ul>		[REDACTED]	
13. Consultation, Communication & Coordination with Workforce	<ul style="list-style-type: none"> <li>Workers not informed of changes to erection sequence, temporary bracing requirements or access arrangements</li> <li>Language, literacy or cultural barriers leading to misunderstanding of safety instructions and drawings</li> <li>Inadequate reporting of near misses involving stability, dropped objects or plant interactions</li> <li>Lack of coordination between erection crews, welders, liner installers and other trades on shared workfaces</li> <li>Poor distribution and control of current drawings, lift plans and temporary works documentation</li> </ul>	3H	[REDACTED]	2M
14. Health, Welfare & Psychosocial Risk Management	<ul style="list-style-type: none"> <li>Fatigue and stress arising from tight erection programs, crane availability windows and weather delays</li> <li>Psychological strain due to working at height, in exposed conditions or with perceived collapse risk</li> <li>Alcohol and other substances affecting judgement and coordination in high-risk steel erection tasks</li> <li>Insufficient amenities (showers, toilets, drinking water) impacting worker health and decision-making</li> <li>Poor supervision culture that discourages raising safety concerns or stopping unsafe work</li> </ul>	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>

**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/laws-and-compliance/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.