Structural Glazing High Rise and Curtain Wall

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:

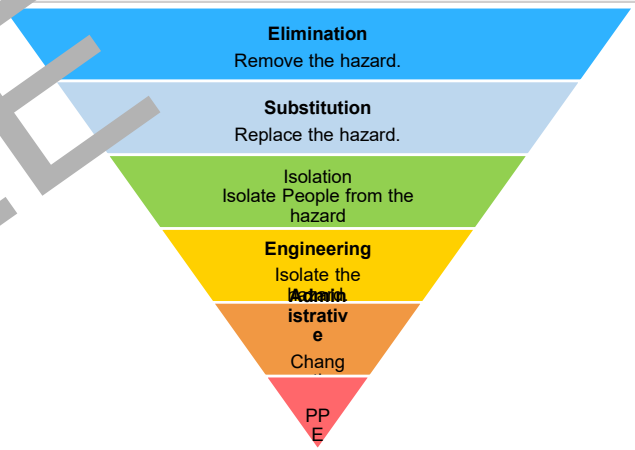
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

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 Leadership, PCBU Duties and Safety Governance	• Lack of clear allocation of WHS responsibilities between principal contractor, glazing contractor, designers and suppliers • Inadequate understanding of due diligence duties under WHS Act 2011 by officers and senior management • Conflicting commercial pressures overriding safety decisions on high-risk glazing activities • Absence of a WHS management plan specific to structural and curtain wall glazing on high-rise projects • Poor consultation and coordination arrangements between multiple PCBUs working on façades, lift shafts and structural glazing • Inadequate resourcing of WHS roles (e.g. no dedicated façade safety coordinator for complex curtain wall projects)	4A	• Establish and document a project-specific WHS governance structure that defines PCBU interfaces, officer duties and delegated authorities for glazing and façade works, consistent with WHS Act 2011 and WHS Regulations • Implement an officer due diligence framework (regular WHS reports, site walks, verification audits) specifically addressing structural glazing, glazing robots, planar glazing and lift shaft glazing risks • Develop a high-rise façade and structural glazing WHS Management Plan that integrates with the principal contractor's WHS plan and addresses the full lifecycle of façade works • Formalise consultation, cooperation and coordination arrangements (CC&C) with principal contractor, crane provider, hoist climb, hoist provider, lift contractor, building owner and façade engineers, including scheduled coordination meetings • Embed WHS performance measures for glazing activities (e.g. leading indicators such as close-out of façade-related hazard and design review actions) into management KPIs and contractor performance reviews • Require senior management sign-off on any deviation from approved façade/glazing safety systems (e.g. lifting strategies, exclusion zones, anchorage layouts) following formal risk review	3H
2. Design, Engineering and Safety in Design for Façade and Structural Glazing	• Façade and structural glazing designs that are difficult or impossible to install safely at height • Insufficient consideration of temporary loads on anchors, monorails, and glazing during installation of large curtain wall panels and planar glazing • Lack of engineered solutions for glass lift shafts, including internal access, rescue and fall protection systems • Inadequate design for maintenance and replacement of glass elements (e.g. no permanent access or anchor points for future works) • Failure to consider glass breakage behaviour, containment and impact on building occupants and public • Poor coordination between structural engineer, façade engineer and lift	4A	• Implement a formal Safety in Design (SiD) process for all structural glazing, curtain wall, planar glazing and glass lift shaft systems, in line with WHS Act 2011 designer duties and relevant Codes of Practice • Require independent engineering review and certification of all façade support systems, lifting inserts, monorails, davits, glazing robots interfaces and temporary edge protections used for glazing works • Mandate that façade and lift shaft glazing designs incorporate safe access provisions (e.g. permanent anchor points, walkways, maintenance platforms, inspection hatches) for installation and future maintenance • Include explicit design criteria for glass breakage, redundancy and containment (e.g. laminated glass types, fixing redundancy, fall-arrest screens, internal catch systems) • Conduct multi-disciplinary constructability workshops with façade designers, lift designers, builders and installers to review access, build sequence, tolerances and lifting strategies before construction • Implement a controlled design change management process that requires WHS impact assessment and re-certification of any variation to glass specification, fixings, support systems or access arrangements	2M

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	designer leading to incompatible fixings, tolerances or access constraints			
3. Structural Calculations, Fixings and Anchorage Systems Management	• Incorrect selection or installation of anchors, brackets and fixings supporting curtain wall and structural glazing loads • Unverified temporary fixings used during installation of large glass panels, glazing robots or lifting frames • Lack of traceability and documentation for critical structural components (e.g. cast-in channels, post-installed anchors, fall-arrest anchors) • Inadequate inspection and testing regime for embedded items and post-installed fixings before load is applied • Poor quality control over concrete strength, edge distances and reinforcement locations impacting anchor capacity • Use of non-compliant or substituted components without engineering approval	4A	• Establish a documented engineering verification process for all structural fixings, anchors and support systems used in glazing and curtain wall works, including design certificates and load tables • Implement a procurement control procedure requiring engineering approval for any alternative fixings, adhesives or support components prior to purchase and use • Develop and enforce an inspection and testing plan (ITP) for cast-in and post-installed anchors, including concrete strength verification, pull-out testing where required, and photographic records of reinforcement and embedment • Introduce a tagging or labelling system for critical anchors and support brackets linked to batch certificates, installation records and location drawings • Require competent installers certified by the fixing system manufacturer to install post-installed anchors in structural and lift shaft applications, with supervision and random audits by the engineer or façade coordinator • Prohibit substitution of structural components through a controlled variation process requiring re-engineering and formal sign-off	2M
4. High-Rise Access Systems and Edge Protection Management	• Inadequate management of scaffolds, mast climbers, swing stages and BMUs used for façade and window installation • Insufficient edge protection around slab edges, lift shafts and open façades during glazing works • Uncontrolled modifications to access systems by workers or subcontractors (e.g. removal of guardrails to fit large glass panels) • Incompatible or overlapping access systems for different trades on the same elevation • Lack of emergency egress routes and rescue capability from suspended platforms and lift shafts	4A	[redacted]	2M

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	• Poor inspection, maintenance and log-keeping for temporary access and edge protection		[redacted]	
5. Plant, Glazing Robots and Lifting Equipment Management	• Use of glazing robots, vacuum lifters, cranes and hoists without adequate engineering assessment of capacities and limits • Failure of vacuum systems due to poor maintenance, incompatible glass coatings, or environmental conditions (wind, temperature, moisture) • Uncontrolled movement of robots or lifting frames on slabs, platforms or inside lift shafts • Lack of integration between crane operations plan and façade/glazing lift requirements • Inadequate competency and verification for operators of specialised glazing robots and lifting gear • Absence of systems for plant pre-use checks, servicing and defect management	4A	[redacted]	2M
6. Contractor Prequalification, Competency and Training Systems	• Engagement of glazing subcontractors without verified experience in high-rise structural glazing or curtain wall systems • Inadequate competency of installers, riggers, crane crews and robot operators for complex façade works • Lack of formal training on specific façade systems, planar fixings, and glass lift shaft installation procedures • Insufficient understanding of high-rise wind effects, glass handling risks and suspended load controls by workers • No system for monitoring and managing fatigue for extended shifts or night works on façade installations	3H	[redacted]	2M

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			[redacted]	
7. Planning, Scheduling and Sequencing of Façade and Glazing Works	• Poor coordination of glazing activities with structural works, lift shaft construction, services rough-in and internal fitout • Compressed programs leading to overlapping trades on the same elevation or level, increasing exposure to falling object and congestion risks • Inadequate allowance for wind, weather delays and curing times affecting lifts and glazing adhesives • Unplanned after-hours or weekend glazing works without equivalent supervision and safety systems • Lack of structured interface planning for glass lift shaft installation with lift contractor and structural engineer	3H	[redacted]	2M
8. Working at Height and Fall Protection Systems Management	• Systemic failures in the planning and oversight of fall-prevention and fall-arrest systems used on glazing works • Inadequate design or installation of static lines, anchors and temporary lifelines used by façade installers • Lack of consistency between different fall protection systems installed by multiple contractors on the same building • Absence of documented procedures for work in and around open lift shafts and partially glazed façades • Inadequate rescue procedures and equipment for workers suspended in harnesses or in glass lift shafts	4A	[redacted]	2M

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9. Glass, Materials Handling, Storage and Logistics Management	• Unsafe delivery, storage and movement of large glass panels, curtain wall frames and planar glazing components • Glass stillages and A-frames not designed or rated for high-rise site conditions or crane lifts • Insufficient systems to prevent glass damage leading to latent defects, spontaneous breakage or structural failure • Congested loading zones, loading docks and material hoists leading to manual handling and collision risks • Lack of tracking and segregation of different glass types (e.g. heat-soaked, laminated, fire-rated) and corresponding installation locations	3H	[redacted]	2M
10. Environmental Conditions, Wind Management and Structural Stability During Installation	• Uncontrolled installation of glass and curtain wall panels in hi[redacted]s or adverse weather ex[redacted]eding design limits • Temporary instal[redacted]ty of partial[redacted] installed façade sys[redacted]millions under wind or construction loads • Inadequate consideration of diff[redacted]ntial movement, building sway[redacted] construction stage tolerances during glazing • Lack of real-time weather monitoring integrated into lift and glazing decisions • No clear authority or procedure for stopping work when environmental limits are approached	4A	[redacted]	2M
11. Public Interface, Dropped Objects and Site Perimeter Controls	• Inadequate protection of public areas adjacent to façades during high-rise glazing works	4A	[redacted]	2M

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	• Insufficient controls to prevent dropped tools, glass fragments or components from façade works reaching ground level or lower setbacks • Poorly managed road closures, footpath diversions and building entry restrictions during critical lifts • Lack of systems to manage glass breakage, panel failure or detachment during or after installation in occupied buildings • Insufficient communication with building occupants and neighbours about façade glazing activities and associated restrictions		[redacted]	
12. Glass Quality, Specification Control and Latent Defect Management	• Incorrect glass specifications installed (thickness, laminate, coatings, fire performance) due to documentation or labelling errors • Latent defects in toughened glass, he[redacted] soaking or lamination leading to spontaneous breakage po[redacted]installation • Poor QA/QC on se[redacted]ants, structural silicone and gaske[redacted] resulting in water ingress or loss of s[redacted]ctural [redacted]ce over time • Uncontrolled design or product substitutions driven by co[redacted]t or a[redacted]ability without full engineering and WHS review • Lack of long-term documentation for as-built façade systems, impacting future maintenance and safety	3H	[redacted]	2M
13. Documentation, Procedures, Permits and Change Management	• Informal or undocumented work practices for high-risk structural glazing and curtain wall activities • Outdated or incomplete procedures for glass lift shaft installation, glazing robots and planar systems	3H	[redacted]	1L

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	• Uncontrolled changes in methodology, sequence or plant selection on site without WHS review • Inconsistent use of permits for critical tasks such as work in lift shafts, at height or over public areas • Inadequate record-keeping of inspections, sign-offs and engineering approvals		[redacted]	
14. Consultation, Communication and Coordination Between PCBUs and Workers	• Poor communication of façade-related hazards, design assumptions and changes to site personnel • Limited engagement of workers in identifying practical risks associated with structural glazing tasks • Inadequate coordination of simultaneous operations (SIMOPS) involving cranes, hoists, internal trades and façade crews • Language and literacy barriers affecting understanding of complex glazing procedures and emergency instructions • Information gaps between design office, factory fabrication and site installation teams	3H	[redacted]	2M
15. Incident Reporting, Monitoring, Audit and Continuous Improvement	• Under-reporting of near misses, defects and unsafe conditions related to glazing and façade works • Lack of trend analysis on façade-related incidents (e.g. glass damage, dropped objects, anchor defects) • Ineffective close-out of corrective actions from inspections, audits and incident investigations	3H	[redacted]	1L

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	• Limited independent verification of compliance with façade-specific WHS controls and legal requirements • Failure to incorporate lessons learned into future façade design, planning and contractor selection		[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