Silo and Storage Vessel Access

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:

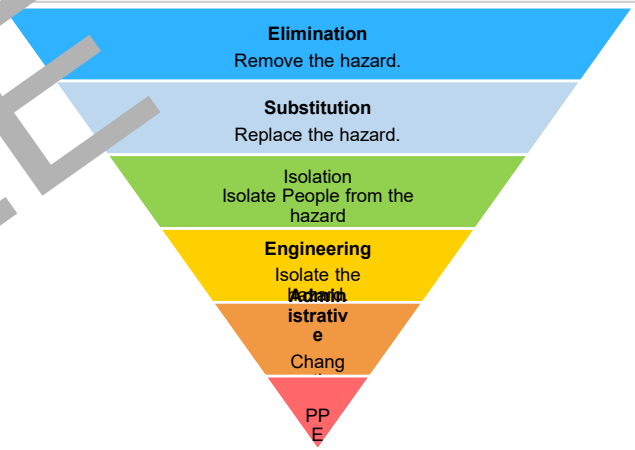
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

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 Regulatory Compliance	• Lack of clear allocation of person conducting a business or undertaking (PCBU), officer and worker WHS duties in relation to silos and storage vessels • Inadequate consultation, cooperation and coordination between host employer, contractors, transport operators and maintenance providers • Failure to apply WHS Act 2011 and WHS Regulations to confined spaces, hazardous atmospheres, plant and major hazard facilities where applicable • Absence of formal process to identify which vessels are ‘confined spaces’ and which are not • Inadequate monitoring of regulatory changes, Australian Standards and industry guidance relating to silo and tank access • No documented risk management procedure for silos, agitated vessels ar extractor systems	4A	• Establish a WHS governance framework t defines BUs, officers and supervisors responsible for silo and vessel safety, with documented roles d ountabilities • Implement a formal legislati compliance regis covering S Act 2011, WHS Regulation, confined space, plant, hazardous chem ls and major haza facili equirements relevant to silo and storage vessel access • Develop and m tain a ten S and Storag Vessel Risk Management Procedure that integrates with the orga ation’s WHS manage nt sy m • Creat a regis of all s s, tanks and orage vessels, clearly identifying which are confined spaces, which agitate s, and which have mechanical extraction systems • Imple e chang management and legal update process to review and update procedures when legislat n, s ndards g. AS 2865, AS 1657, AS 4024 series) or operations change • Requir docu nted consultation with workers and health and safety representatives when developing o isin silo ac ss and unloading procedures	3H
2. Design, Engineering and Procurement of Silos and Vessels	• Legacy silo and ve l designs without safe access, work atforms or fall prevention • Inadequate design f safe loading, unloading and overflow prevention • Lack of engineered acc (stairs, ladders, platforms) compliant with AS 1657 • Poor segregation of moving plant, agitators and extraction equipment from access areas • Designs that promote dust accumulation, product bridging or confined space entry for routine tasks • Absence of safe sampling and inspection points from ground level or secure platforms	4A	• Implement an engineering design standard for all new and modified silos and storage vessels incorporating WHS by design and referencing relevant Australian Standards • Require procurement specifications to mandate fixed access ladders, platforms, guardrails, toe boards, fall prevention anchors and safe roof access where access is reasonably foreseeable • Ensure silo and vessel design minimises the need for internal entry by including external clearing systems, inspection hatches, level monitoring and sampling points at safe locations • Standardise inlet and outlet configurations to prevent over-pressurisation and uncontrolled product discharge during loading and unloading • Involve competent engineers, operators and health and safety representatives in design reviews and HAZOP/HAZID processes for new silos, agitated vessels and extractor systems • Set procurement requirements for guarding and isolation of agitators, conveyor drives, rotary valves and extractor augers consistent with AS 4024 series	2M

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3. Structural Integrity, Inspection and Maintenance Systems	• Undetected corrosion, wall thinning or cracking in silo and tank shells, roofs and supports • Failure of internal structures such as liners, filters, aeration systems and agitation components • Blocked or damaged vents causing over-pressurisation or implosion during loading and unloading • Unreliable silo extractor systems leading to sudden blockage release or mechanical failure • Inadequate inspection of safety-critical items such as ladders, platforms, anchors and handrails • Absence of a formal system to manage end-of-life or decommissioning of deteriorated vessels	4A	• Establish a formal inspection and maintenance program for all silos and vessels, including structural inspections by competent persons at defined intervals • Develop detailed inspection checklists covering shells, roofs, supports, vents, filters, access ways, anchors and extraction equipment, with clear criteria for grading and repair priorities • Implement a preventive maintenance schedule for agitators, bearings, drives, extractor systems and level sensing equipment aligned with manufacturer recommendations • Introduce a defect reporting and work order system ensuring critical defects are escalated, controlled and rectified before further access or operation • Engage structural engineers to perform periodic detailed assessments of high-risk or aged silos and define remaining life and load limits • Create decommissioning criteria and procedures for vessels that no longer meet structural or safety standards, including isolation from service and removal plans	2M
4. Access, Egress and Working at Height Systems	• Inadequate or non-compliant ladders, stairs, landings and platforms for access to silo tops and hatches • Lack of safe anchor points or fall arrest systems for work on roofs or elevated areas • Trip, slip and fall hazards due to poor housekeeping, [redacted] spills or weather-affected surfaces • Restricted or single-point egress routes from platforms and walkways in an emergency • Uncontrolled access to hazardous zones such as agile roof areas, fragile covers or unguarded openings • Failure of temporary access equipment (ladders, mobile platforms) due to absence of selection and inspection systems	4A	[redacted]	2M
5. Confined Space and Hazardous Atmosphere Management	• Unrecognised confined spaces within silos, tanks and agitated vessels leading to asphyxiation or toxic exposure	4A	[redacted]	2M

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	• Development of hazardous atmospheres from fermentation, fumigants, product decomposition or inert gas purging • Entrapment or engulfment in flowing or bridged product during entry • Lack of atmospheric testing and continuous monitoring where required • Inadequate rescue capability for persons entering silos or tanks • Use of agitated vessel interiors as informal workspaces without controls		[redacted]	
6. Silo Loading, Unloading and Overflow Management Systems	• Overfilling or over-pressurisation of silos during pneumatic or mechanical loading • Product overflow leading to structural damage, dust exposure or engulfment hazards at ground level • Miscommunication between drivers, control room and operators during loading and unloading • Incorrect selection [redacted] silo or tank connection point b[redacted]ransport operators • Insufficient contro[redacted] failure of high-level alarms and press[redacted]e relief devices • Uncontrolled product di[redacted] during unloading due to poor system design or procedures	4A	[redacted]	2M
7. Silo Extractor and Mechanical Handling System Controls	• Exposure to moving parts of silo extractor systems, augers, conveyors and rotary valves • Unexpected start-up of extraction equipment during inspection, cleaning or blockage clearing • Product hang-ups and bridging leading to uncontrolled release when disturbed	4A	[redacted]	2M

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	• Inadequate guarding or interlocks on hatches, access doors and inspection points • Use of ad-hoc tools or manual entry to clear blockages in extractors and discharge chutes • Lack of system diagnostics and monitoring for extractor performance		[redacted]	
8. Agitated Vessel and Mixing System Management	• Contact with moving agitators, paddles or impellers during inspection or cleaning • Unexpected energisation of agitators while workers are inside or on the vessel • Structural failure of baffles, mixers or shaft seals leading to loss of containment • Inadequate isolation of energy sources including electrical, hydraulic and pneumatic supplies • Agitation of hazardous chemicals causing off-gassing, exothermic reactions or pressure build-up • Confined space and engulfment hazards within agitated vessels not recognised or controlled	4A	[redacted]	2M
9. Hazardous Chemicals, Dust and Atmosphere Control	• Exposure to hazardous chemicals stored or processed within silos and tanks (dusts, liquids, gases) • Combustible dust accumulations leading to fire or explosion in and around silos • Inadequate ventilation and extraction in areas surrounding silo access points • Uncontrolled use of fumigants or inert gases in silos without appropriate monitoring and controls • Lack of Safety Data Sheet (SDS) information integrated into silo access planning	4A	[redacted]	2M

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	• Ignition sources introduced during maintenance or hot work on silos and vessels			
10. Training, Competency and Authorisation	• Workers and contractors accessing silos and vessels without adequate knowledge of risks and controls • Supervisors not competent to verify controls such as permits, isolation and gas testing • Inadequate training on silo extractor systems, agitated vessels and emergency procedures • Failure to refresh training leading to skill fade and normalisation of deviance • No formal authorisation system for high-risk roles such as confined space entry supervisor or gas tester	3H	[redacted]	2M
11. Procedures, Permits and Documentation Control	• Outdated or inconsistent procedures for silo access, agitated v[redacted]l work an[redacted] extractor operation • Lack of integrati[redacted]between risk assessments, SWI[redacted]and permit-to-work syste[redacted] • Workers not having easy access [redacted] current procedures at the [redacted]work • Permits becoming a 'tick and flick' exercise without meaningful risk review • Poor documentation of deviations, temporary repairs or non-standard operating conditions	3H	[redacted]	2M
12. Contractor, Transport and Third-Party Interface Management	• Contract drivers and maintenance contractors unaware of site-specific silo hazards and controls • Inconsistent standards between host site and third-party operators for loading, unloading and access	3H	[redacted]	2M

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	• Poor coordination during simultaneous operations (e.g. loading while maintenance is underway) • Uncontrolled access of visitors to silo areas and elevated platforms • Limited oversight of subcontractors performing high-risk activities such as tank cleaning and fumigation		[redacted]	
13. Monitoring, Auditing and Performance Review	• Failure to detect deterioration in control effectiveness over time • Lack of leading indicators for silo and vessel safety performance • Infrequent or superficial inspections of critical controls such as alarms, interlocks and permits • No systematic review of incidents, nea misses or overflow ev[illegible]olving silos • Complacency ari[illegible]g from long periods without a serious e[illegible]nt	3H	[redacted]	2M
14. Emergency Preparedness, Response and Rescue	• Delayed or ineffective re[illegible] engulfment, falls from heig[illegible] confined space incidents in silos and vessels • Emergency services unable to access silo tops or confined space entry points safely • Lack of specialised rescue equipment suitable for vertical and confined space rescue • Workers unaware of emergency procedures specific to silo overflows, structural instability or product releases • Emergency plans not accounting for after-hours or remote site operations	3H	[redacted]	2M

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			[redacted]	
15. Change Management and Project Implementation	• Unassessed risks introduced by modifications to silos, extractors, agitators or loading systems • Temporary bypassing of safety systems during projects becoming permanent practice • Lack of coordination between engineering, operations and WHS for upgrades or decommissioning • Introduction of new products or materials that alter silo behaviour (e.g. flow, dustiness, reactivity) without review • Insufficient commissioning and handover of new or modified silo systems	3H	[redacted]	2M
16. Health, Fatigue and Human Factors Management	• Worker fatigue leading to errors duri silo loading, unloading or access activities • Cognitive overload o[illegible]terface design on control p[illegible]els for extractor and agitation syste[illegible]s • Reduced physical [illegible]y or hea conditions affecting safe access to heights and confined spaces • Normalisation of unsafe [illegible]ces, short cuts or bypassing of controls • Inadequate consideration of shift work, remote operations and lone work in silo areas	3H	[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