

Marine Construction

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

Risk Rating & Required Action:	
4A	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.
3H	Review and approve additional controls for the task parts. Senior supervisor sign-off needed.
2M	Ensure all nominated controls are in place and effective. 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, Roles and Legal Compliance	<ul style="list-style-type: none"> Lack of clearly defined WHS responsibilities for marine construction and cofferdam works under WHS Act 2011 and associated Regulations Failure to identify the project as high-risk construction work (work in or near water, work at height, use of plant, concrete pumping) and apply corresponding WHS management duties Inadequate systems for consultation, cooperation and coordination between PCBU's (principal contractor, marine contractor, concrete supplier, barge operator, divers, tug operators) Absence of a WHS management plan specific to marine construction and cofferdam/concreting activities Inadequate review of compliance with Australian Standards, codes of practice and marine authority requirements (e.g. AMSA, port authorities, maritime safety regulations) No formal process for ensuring that subcontractors have competent WHS systems for marine work and concrete operations 	High	<ul style="list-style-type: none"> Develop and implement a project-specific WHS Management Plan that explicitly covers marine construction, cofferdams and marine concreting as high-risk construction work, in line with the WHS Act 2011 and WHS Regulation Define and document WHS roles, responsibilities and reporting lines for officers, project managers, construction managers, marine superintendents, supervisors and E advisors and workers Establish formal WHS governance arrangements including a WHS steering committee or project safety leadership team that manages marine risk issues, emerging hazards and leading indicators Implement documented processes for PCBU and CBU consultation, cooperation and coordination (e.g. interface agreements, WHS coordination plans, shared risk registers) between all marine and concrete-related contractors Maintain legal standards register referencing relevant WHS legislation, marine safety legislation, Australian standards (e.g. for concrete, formwork, lifting, vessels, work at height) and applicable codes of practice Embed due diligence duties for officers through regular WHS performance reporting, site walks focusing on cofferdam and marine concrete activities, and documented review of critical control effectiveness Implement a pre-qualification and onboarding process for all subcontractors that includes review of WHS systems, marine safety management systems, licences, insurances and previous marine project performance Schedule periodic independent or internal WHS audits focused on marine construction governance, ensuring non-conformances are tracked to closure within defined timeframes 	Medium
2. Marine Project Planning and Design Risk Management	<ul style="list-style-type: none"> Insufficient design risk assessment for cofferdams, formwork, falsework and temporary works in a marine environment Failure to consider hydrodynamic loads, tides, currents, wave action, vessel wash and scour in cofferdam and marine concrete design Inadequate allowance in design and planning for construction sequencing, dewatering, flooding scenarios and emergency egress Lack of integration between marine engineering design, structural design, geotechnical data and construction methodology 	High	<ul style="list-style-type: none"> Implement a formal Safety in Design (SiD) process for all marine structures, cofferdams and concrete works, with documented risk registers and design review workshops including engineering, construction and WHS stakeholders Ensure designs for cofferdams, marine formwork, work platforms and falsework are prepared and certified by suitably qualified and experienced engineers with marine and geotechnical expertise Integrate hydrological, tidal and metocean data into design assumptions and planning, with conservative safety factors and documented design basis criteria Incorporate safe access/egress (gangways, ladders, handrails, escape routes) and inspection/maintenance access into the design of cofferdams and marine works Specify design provisions for emergency depressurisation, controlled flooding, dewatering, and stability under partial construction or accidental loading conditions Conduct constructability reviews that examine barge positioning, crane duties, line-of-sight, concrete delivery routes, and simultaneous operations with other marine traffic 	Medium

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	<ul style="list-style-type: none"> Omission of safe access/egress and maintenance requirements in design of temporary and permanent marine structures Design not considering constructability under adverse weather, reduced visibility, or restricted marine traffic windows 		<ul style="list-style-type: none"> Require written construction methodologies, including staging of cofferdam installation and concrete placement, to be reviewed and endorsed by the design engineer and principal contractor prior to implementation Establish a change management process so that any field modifications to cofferdams, marine formwork or construction sequences are assessed, engineered and approved prior to implementation 	
3. Contractor and Workforce Competency Management	<ul style="list-style-type: none"> Use of personnel without appropriate marine construction, confined space, and marine concreting experience Inadequate verification of licences, high-risk work tickets and maritime qualifications (e.g. crane operators, doggers, riggers, vessel masters, deckhands, divers) Insufficient supervision capacity and competency for high-risk marine and cofferdam works Lack of competency in understanding concrete behaviour in tidal and submerged conditions (setting, washout, pumping pressures) Insufficient training on project-specific hazards such as cofferdam failure, rapid water ingress, hypoxemia and marine fauna risks 	High	<ul style="list-style-type: none"> Develop a competency matrix specific to marine construction and concreting activities, listing required qualifications, tickets and experience levels for each role (including supervisors and leading hands) Implement formal verification of competency (VOC) program for plant operators, marine crew and key personnel involved in cofferdam and concrete placement activities Ensure supervisors for marine construction and cofferdam works hold demonstrable experience in similar projects and have completed relevant WHS and leadership training Require marine personnel to hold appropriate maritime licences and endorsements consistent with jurisdictional and port authority requirements Provide targeted training on marine concrete placement (including use of tremie pipes, anti-washout admixtures, underwater curing, pump line management and cold joint risks) Deliver project-specific induction and refresher training covering marine hazards, tidal effects, emergency response, man overboard procedures, confined space hazards in cofferdams, and interaction with marine fauna Maintain training and competency records electronically, with expiry alerts for licences, medicals and mandatory refresher training Audit subcontractor training and competency systems periodically to ensure ongoing compliance with project and legislative requirements 	Medium
4. Marine Plant, Vessel and Equipment Management	<ul style="list-style-type: none"> Inadequate selection, inspection and maintenance of barges, winches, cranes, pumps and concrete delivery equipment used over water Failure of mooring systems, spud piles or anchoring leading to barge drift, collision with structures or cofferdams Incompatibility between plant capacity and marine construction loads (e.g. crane reach and lift over water, concrete pump pressures, boom stability on barges) Insufficient redundancy and reliability of dewatering pumps for cofferdams and work areas below water level 	High	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	Medium

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	<ul style="list-style-type: none"> Improper storage and maintenance of marine safety equipment such as life rings, retrieval gear and personal flotation devices (PFDs) 		[REDACTED]	
5. Marine Environment, Weather and Tidal Management	<ul style="list-style-type: none"> Rapid changes in weather, wind, swell, storms or flood flows impacting marine construction stability and worker safety Incorrect tidal predictions or failure to plan for tidal windows affecting cofferdam erection, dewatering and concrete placement quality Inadequate monitoring of water levels leading to overtopping of cofferdams, loss of stability or uncontrolled flooding of work areas Failure to manage marine traffic interactions resulting in wash, collision or damage to cofferdam and work systems Insufficient environmental controls for fuel, concrete washout and sediment leading to pollution incidents and regulatory breaches 	High	[REDACTED]	Medium
6. Systems for Work at Height and Over Water	<ul style="list-style-type: none"> Uncontrolled risk of falls from barges, pontoons, cofferdam edges, formwork platforms and access structures into water or onto lower levels Inadequate system-level controls for selection, inspection and use of fall 	High	[REDACTED]	Medium

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	<p>protection equipment in a marine environment</p> <ul style="list-style-type: none"> • Lack of integrated planning for simultaneous work at height and marine concrete operations, including overhead work and crane lifts • Insufficient consideration of rescue and retrieval of workers using fall arrest systems over water 		[REDACTED]	
7. Concrete Supply, Pumping and Placement Management	<ul style="list-style-type: none"> • Mismatch between concrete mix design and marine placement requirements (e.g. setting time, anti-washout properties, temperature, slump retention) • Inadequate coordination between batching plant, transport, barge operations and pump crew leading to delays, cold joints or rushed work • Failure of concrete pumping systems (blockages, hose bursts, over-pressurisation) due to poor system management rather than operator error alone • Lack of system-level controls for quality assurance and testing of marine concrete under variable tidal and temperature conditions • Insufficient planning for placement sequences within cofferdams, leading to 	High	[REDACTED]	Medium

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	instability, uplift, or unbalanced loads on temporary works		[REDACTED]	
8. Cofferdam Integrity, Dewatering and Structural Monitoring Systems	<ul style="list-style-type: none"> Loss of cofferdam stability due to inadequate monitoring of pressures, movements, seepage and structural performance Over-reliance on single dewatering systems with no redundancy, resulting in uncontrolled flooding of work areas Lack of formal inspection and sign-off processes for critical stages such as completion of sheet piling, bracing installation and dewatering commencement Inadequate change control when modifying bracing, access points or penetrations through concrete walls for services or concrete pipelines Insufficient monitoring of ground conditions and scouring of cofferdams affecting long-term stability 	High	[REDACTED]	Medium
9. Traffic, Marine Vessel and Interface Management	<ul style="list-style-type: none"> Poorly controlled interaction between land-based plant, delivery vehicles and marine vessels during construction and concrete delivery Conflicting movements of barges, tugs, supply vessels and third-party marine traffic near cofferdams and work platforms Inadequate communication systems between shore-based supervisors, marine crew and concrete pumping teams 	High	[REDACTED]	Medium

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	<ul style="list-style-type: none"> Lack of integrated planning for berth access, loading/unloading operations and passenger transfers to work platforms or cofferdams 		[REDACTED]	
10. Health, Fatigue, Remote and Environmental Exposure Management	<ul style="list-style-type: none"> Prolonged exposure to cold, wet, windy conditions during marine works leading to hypothermia, reduced dexterity and impaired decision making Fatigue due to extended shifts, night work aligned with time zones, and remote marine sites Limited access to medical support, first aid and emergency services in remote or over-water locations Exposure to noise, vibration and whole-body vibration from vessels, pumps and construction plant Psychosocial hazards including isolation, shift work, and high-pressure concrete pour windows 	High	[REDACTED]	Medium
11. Emergency Preparedness and Response for Marine	<ul style="list-style-type: none"> Inadequate preparedness for man overboard events, vessel collisions, 	High	[REDACTED]	Medium

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and Cofferdam Incidents	<p>cofferdam breaches or rapid flooding of work areas</p> <ul style="list-style-type: none"> Lack of coordinated emergency response arrangements between multiple PCBUs and emergency services in a marine environment Insufficient drills and training for workers in marine evacuation, water rescue and cofferdam emergency procedures Poorly maintained or inaccessible emergency equipment (life-saving appliances, spill kits, emergency lighting, communication devices) 		[REDACTED]	
12. WHS Consultation, Communication and Documentation Systems	<ul style="list-style-type: none"> Poor flow of safety information between management, supervisors, marine crew and subcontractors Workers not engaged in hazard identification for marine and cofferdam operations, leading to unreported issues Inadequate documentation and record keeping for high-risk decisions, inspections and permits Language, literacy or cultural barriers preventing effective understanding of WHS expectations for marine construction 	Medium	[REDACTED]	Low

SAMPLE

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			[REDACTED]	
13. Monitoring, Audit and Continuous Improvement of WHS Systems	<ul style="list-style-type: none"> • Failure to detect declining WHS performance in marine and cofferdam operations until a major incident occurs • Inadequate analysis of incidents, near misses and non-conformances specific to marine concrete works • Lack of systematic follow-up on corrective actions, leading to repeated issues • Over-reliance on lag indicators (injury statistics) without sufficient monitoring of critical factors 	Medium	[REDACTED]	Low

SAMPLE

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.