

Micro Tunneling Procedures Risk Assessment

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:								Notes on Hierarchy of Controls:	
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.								Remember to apply controls in the preferred order shown by the coloured pyramid:	
3H Review and approve additional controls before task starts. Senior supervisor sign-off needed.								1. Eliminate	
2M Ensure all nominated controls are in place and effective. Proceed with caution; monitor conditions.								2. Substitute	
1L Proceed, following standard operating procedures. Monitor and keep records.								3. Isolate	
								4. Engineering	
								5. Administrative	
								6. PPE	
Consequence Scale:								Always document why a lower-order control is accepted if elimination or substitution is not reasonably practicable.	
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				
								<i>aligned with Safe Work Australia's Managing the risk of fatigue at work (2023) and ISO 45001:2018 clauses 6–8.</i>	

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. Preparation	Incorrect equipment setup, Insufficient site inspection	3H	<ul style="list-style-type: none"> - Conduct a thorough site inspection prior to work - Ensure all equipment is checked and setup by qualified personnel - Verify all equipment is compatible with site conditions - Identify and mark underground utilities - Review site plans and procedures with the team - Ensure all permits and regulatory requirements are in place - Schedule work to avoid peak times - Train workers on site-specific hazards - Ensure availability of safety gear - Confirm communication devices are operational 	2M
2. Deliver Equipment to Site	Traffic hazards, Incorrect unloading	3H	<ul style="list-style-type: none"> - Utilize traffic management plans - Schedule deliveries during off-peak hours - Use trained personnel for unloading - Employ spotters during unloading - Use correct unloading equipment - Secure site with barriers - Ensure delivery vehicle paths are clear - Provide adequate lighting - Implement communication protocols with drivers - Conduct a toolbox talk on unloading procedures 	2M
3. Site Setup	Tripping hazards, Inadequate fencing	3H	<ul style="list-style-type: none"> - Mark and clear designated pathways - Install fencing around the work area - Use non-slip surfaces where necessary - Post warning signs around hazards - Inspect fencing stability regularly - Provide adequate lighting for night work - Ensure emergency exits are clear - Conduct site setup safety briefing 	2M

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
			<ul style="list-style-type: none"> - Use high-visibility clothing - Store materials safely to prevent falls 	
4. Equipment Assembly	Pinch points, Falling components	3H	<ul style="list-style-type: none"> - Ensure all components are properly secured before assembly - Use proper lifting techniques to avoid injury - Wear safety glasses to protect eyes from falling objects - Keep work area clear of obstacles - Use appropriate tools and equipment - Follow manufacturer's instructions for assembly - Communicate with team members to coordinate movements - Use fall protection when working at heights - Ensure adequate lighting in the work area - Use proper body mechanics to avoid strain - Keep hands and feet clear of pinch points - Use proper storage techniques for components - Perform regular safety checks on equipment - Use proper tie-off techniques when working at heights - Ensure all safety features are functioning properly - Use proper communication protocols - Keep emergency exits clear - Use proper hand signals when working with machinery - Ensure all personnel are trained in safety procedures - Use proper fall arrest systems - Keep work surfaces clean and free of debris - Use proper bracing techniques - Ensure all safety barriers are in place - Use proper communication when working in confined spaces - Keep all safety equipment accessible - Use proper tie-off techniques when working at heights - Ensure all safety features are functioning properly - Use proper communication protocols - Keep emergency exits clear - Use proper hand signals when working with machinery - Ensure all personnel are trained in safety procedures - Use proper fall arrest systems - Keep work surfaces clean and free of debris - Use proper bracing techniques - Ensure all safety barriers are in place - Use proper communication when working in confined spaces - Keep all safety equipment accessible 	2M
5. Entry and Exit of Micro Tunnel	Confined space, Oxygen deficiency	4A	<ul style="list-style-type: none"> - Perform air quality testing before entry - Use proper ventilation techniques - Wear oxygen supply equipment - Establish communication protocols - Use proper entry and exit procedures - Keep emergency exits clear - Use proper hand signals when working with machinery - Ensure all personnel are trained in safety procedures - Use proper fall arrest systems - Keep work surfaces clean and free of debris - Use proper bracing techniques - Ensure all safety barriers are in place - Use proper communication when working in confined spaces - Keep all safety equipment accessible - Use proper tie-off techniques when working at heights - Ensure all safety features are functioning properly - Use proper communication protocols - Keep emergency exits clear - Use proper hand signals when working with machinery - Ensure all personnel are trained in safety procedures - Use proper fall arrest systems - Keep work surfaces clean and free of debris - Use proper bracing techniques - Ensure all safety barriers are in place - Use proper communication when working in confined spaces - Keep all safety equipment accessible - Use proper tie-off techniques when working at heights - Ensure all safety features are functioning properly - Use proper communication protocols - Keep emergency exits clear - Use proper hand signals when working with machinery - Ensure all personnel are trained in safety procedures - Use proper fall arrest systems - Keep work surfaces clean and free of debris - Use proper bracing techniques - Ensure all safety barriers are in place - Use proper communication when working in confined spaces - Keep all safety equipment accessible 	2M
6. Operating Micro Tunnel Boring Machine (MTBM)	Mechanical failure, Operator error	4A	<ul style="list-style-type: none"> - Perform pre-operation checks - Use proper operating procedures - Monitor machine status closely - Keep clear of moving parts - Use proper emergency stop procedures - Keep emergency exits clear - Use proper hand signals when working with machinery - Ensure all personnel are trained in safety procedures - Use proper fall arrest systems - Keep work surfaces clean and free of debris - Use proper bracing techniques - Ensure all safety barriers are in place - Use proper communication when working in confined spaces - Keep all safety equipment accessible - Use proper tie-off techniques when working at heights - Ensure all safety features are functioning properly - Use proper communication protocols - Keep emergency exits clear - Use proper hand signals when working with machinery - Ensure all personnel are trained in safety procedures - Use proper fall arrest systems - Keep work surfaces clean and free of debris - Use proper bracing techniques - Ensure all safety barriers are in place - Use proper communication when working in confined spaces - Keep all safety equipment accessible - Use proper tie-off techniques when working at heights - Ensure all safety features are functioning properly - Use proper communication protocols - Keep emergency exits clear - Use proper hand signals when working with machinery - Ensure all personnel are trained in safety procedures - Use proper fall arrest systems - Keep work surfaces clean and free of debris - Use proper bracing techniques - Ensure all safety barriers are in place - Use proper communication when working in confined spaces - Keep all safety equipment accessible 	2M

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7. Monitoring and Adjustments	Instrumentation failure, Incorrect calibration	3H		1L
8. Removal of Spoil	Dust emissions, Uncontrolled spoil	4A		2M
9. Tunnel Support Installation	Structural collapse, Falling objects	4A		2M

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10. Utilities Detection	Service strikes, Inaccurate locations	4A		2M
11. Environmental Management	Chemical spills, Endangerment of wildlife	4A		2M
12. Communication and Coordination	Communication failure, Coordination errors	3H		1L

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13. Emergency Response Preparation	Delay in response, Lack of resources	4A		2M
14. Machine Shutdown	Residual energy, Incorrect shutdown	3H		1L
15. Demobilisation	Equipment damage, Site contamination	3H		2M

[illegible]

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 IF 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 2017

Legislation NSW: <https://www.safework.nsw.gov.au/legal-obligations/legislation>

Codes of Practice NSW: <https://www.safework.nsw.gov.au/resource-library/lis>

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>

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