Trenching and Drainage Excavation

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:

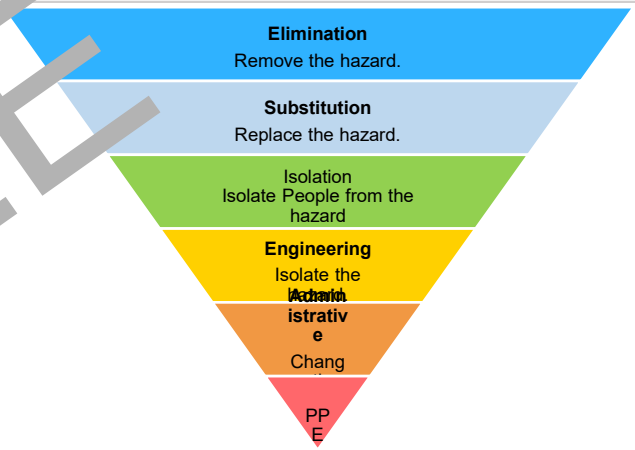
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

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 Governance, Planning and Legal Compliance	• Lack of documented WHS management plan specific to trenching and drainage excavation • Failure to identify and apply WHS Act 2011, WHS Regulations and relevant trenching/excavation Codes of Practice • Unclear PCBU, officer and worker duties regarding excavation activities • Inadequate consultation with workers and health and safety representatives on trenching risks • No process to verify that subcontractors' systems comply with Australian WHS legislation • Insufficient allocation of time and budget for safe trench design, shoring and inspections	4A	• Develop and maintain a project-specific WHS Management Plan that includes trenching and drainage excavation as a high-risk construction activity, in line with WHS Act 2011 and WHS Regulation requirements • Establish and document clear roles, responsibilities and accountabilities for officers, supervisors, engineers, and workers in relation to excavation and trenching risk management • Integrate legislative and Code of Practice requirements for excavation work into company WHS procedures, including triggers for competent person design and inspection • Implement a formal consultation process with workers and HSRs on trenching hazards, control selection and changes to methods, including toolbox talks and pre-start briefings • Introduce a contractor management procedure requiring review of subcontractor WHS systems, insurances, SWMS and past performance before engagement for trenching work • Ensure project planning includes budget and time allowances for engineered shoring, benching, shielding, traffic control and geotechnical assessment where required	3H
2. Design, Engineering and Geotechnical Assessment	• No geotechnical assessment of soil conditions for trench excavation depth and duration • Inadequate design of trench support systems, benching or battering for local ground conditions • Over-reliance on operator judgment instead of engineering design for deep or complex trenches • Failure to consider adjacent loads such as traffic, stockpiles, buildings and utilities in design • Lack of engineered designs for dewatering systems in high water table or wet ground • Insufficient consideration of long-term settlement risks affecting pipes and underground utilities	4A	• Implement a mandatory geotechnical and engineering assessment process for trenches exceeding defined depth or complexity thresholds, in accordance with relevant Australian Standards and Codes of Practice • Require engineered designs for shoring, shielding, benching, battering and dewatering systems, signed off by a competent engineer for high-risk or deep trenches • Develop design guidelines and decision trees for selection of trench support methods based on soil classification, depth, trench width and exposure time • Include assessment of external loads (traffic, plant, stockpiles, structures and services) in engineering calculations and specify exclusion or load limits where required • Ensure pipe and utility alignment, bedding and backfill specifications are documented and reviewed to minimise differential settlement or damage post-installation • Establish a design change management process whereby any field variation to trench depth, alignment or support triggers engineering review and approval	2M
3. Excavation and Trenching Planning (Method and Sequencing)	• Poor planning of sequencing for trench excavation, pipe laying and backfilling leading to unstable open trenches • Extended open trench lengths without staged support or backfill	3H	• Develop documented trenching methodology and staging plans that limit maximum open trench lengths and specify timeframes for support installation and backfilling • Include in planning the minimum number and location of safe access/egress points, ladders, ramps or controlled entry systems based on trench length and depth	2M

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	• Inadequate planning for access and egress points in long trenches • No clear methodology for working near existing underground utilities and structures • Failure to plan for progressive trench inspections during changing conditions • Insufficient integration of traffic, plant movement and trench stability considerations in the work plan		• Incorporate procedures for working around, exposing and protecting existing underground services within the planning documentation, including clear hold points • Establish planning requirements that account for interaction between mobile plant, truck movements, stockpiles and trench stability (e.g. minimum setback distances and haul routes) • Integrate scheduled inspection frequencies into the work plan, adjusted for rainfall, vibration, adjacent excavation and other changing site conditions • Ensure trenching and drainage excavation planning is reviewed and approved by a competent supervisor or engineer before commencement	
4. Underground Services and Asset Protection Systems	• Failure to identify buried utilities prior to trenching (gas, power, communications, water, sewer) • Inadequate use of Dial Before You Dig / Before You Dig Australia and asset location plans • No systematic process for verification of utility locations on site before mechanical excavation • Inadequate controls to prevent plant / hand tools striking live services • Poor coordination with owners resulting in unplanned outages or incidents • Lack of marking, recording of newly installed underground assets	4A	[redacted]	2M
5. Plant and Equipment Selection, Procurement and Maintenance	• Use of unsuitable excavators, trenchers or attachments for soil type, slope and trench depth • Inadequate safety features on trench diggers, excavators and compactors (e.g. ROPS/FOPS, interlocks) • Poorly maintained plant increasing risk of hydraulic failure or uncontrolled movement near trenches • Lack of standardisation and documentation for lifting accessories and pipe handling gear	3H	[redacted]	2M

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	• No system to manage introduction of new or hired plant and verify compliance with WHS requirements		[redacted]	
6. Operator Competency, Training and Supervision	• Operators of trench diggers and excavators lacking formal competency or verification of skills • Supervisors not adequately trained in excavation risk management and legislation • Insufficient training on trench support systems, collapse indicators and exclusion zones • No process to assess competency for working around underground services and confined trenches • Lack of mentoring or supervision systems for new or inexperienced workers	3H	[redacted]	2M
7. Traffic, Mobile Plant and Pedestrian Interface Management	• Uncontrolled inte ction bet mobile plant and w ar open trenches • Inadequate traffic managemen ound roadside or urban trench ation • Plant operating too close to trench edges increasing collapse risk • Poor visibility of workers and spotters in congested excavation areas • Insufficient controls for reversing vehicles and deliveries near trenches	4A	[redacted]	2M
8. Ground Stability, Shoring and Trench Access Systems	• Unprotected trench walls leading to sudden collapse and engulfment	4A		2M

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	• Inadequate or incorrectly installed shoring, shields or trench boxes • Overloaded trench edges from spoil piles, plant or structures • Insufficient or unsafe access/egress, ladders or ramps in deeper trenches • No system for removal of personnel during shoring adjustments or backfilling		[redacted]	
9. Environmental Conditions, Water Management and Dewatering	• Accumulation of water in trenches leading to wall instability and slip hazards • High water table or [illegible]epage undermining pipe b[illegible]ding and backfill • Uncontrolled disc[illegible]rge of [illegible] effluent causing eros[illegible] pollution • Inadequate monitoring of weather conditions, rainfall and flo[illegible]d ris[illegible] • Failure to adapt trench design and inspection frequency to changing environmental conditions	3H	[redacted]	2M
10. Trench Backfilling, Compaction and Reinstatement Systems	• Improper backfill selection or placement leading to settlement and pipe failure • Inadequate compaction processes causing surface subsidence or trip hazards	3H	[redacted]	2M

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	• Use of heavy compaction equipment too close to unsupported trench walls • Poorly controlled reinstatement of roads or pavements leading to traffic incidents • Lack of quality assurance records for backfill materials and compaction		[redacted]	
11. Health, Hygiene and Exposure Risks in Trenches	• Exposure to contaminated soil, sewage, hydrocarbons or asbestos-containing materials • Inadequate systems for managing airborne contaminants and odours in deep or narrow trenches • Heat stress, cold stress or dehydrati for workers in confined excavation are • Musculoskeletal disorders from repetitive manual handlin pipes, shoring and backfill t • Insufficient facilit for hygiene and decontamination a work contaminated trench	3H	[redacted]	2M
12. Fatigue, Work Scheduling and Workforce Management	• Long work hours, night shifts or compressed rosters affecting decision-making in trenching activities • Insufficient breaks leading to reduced vigilance around trench edges and mobile plant • Pressure to accelerate trench excavation and backfilling to meet program targets • Inadequate staffing levels for safe spotter, plant operator and labourer ratios	2M	[redacted]	1L

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	• Lack of procedures for recognising and managing fatigue-related impairment		[redacted]	
13. Documentation, Permits, SWMS and Change Management	• Lack of formal permit-to-excavate process for high-risk trenching work • SWMS for trenching and drainage excavation not developed, reviewed or understood by workers • Poor control of revisions to drawings, designs and trench layouts on site • Changes to trench depth, alignment or method not risk assessed or approved • Incomplete or inaccurate recording of inspections, defects and corrective actions	3H	[redacted]	2M
14. Communication, Consultation and Information Sharing	• Workers not inform[illegible]d of daily trench locations, depth ch[illegible]nges and new hazards • Inadequate communication betwee[illegible] operators, spotters and ground wo[illegible]rs • Limited opportunities fo[illegible]rs to raise WHS concerns about trench stability or systems of work • Subcontractors not integrated into principal contractor's WHS communications • Language or literacy barriers affecting understanding of trenching risks and procedures	2M	[redacted]	1L
15. Inspection, Monitoring and	• Infrequent or informal inspection of trench walls, shoring, access and adjacent loads	3H	[redacted]	2M

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Continuous Improvement	• No structured process for monitoring leading indicators such as near misses or minor trench failures • Failure to detect deterioration of controls over time (e.g. worn barriers, missing signage) • Limited learning from incidents, audits and external guidance relating to trenching • Over-reliance on individual supervisors rather than systematic verification		[redacted]	
16. Emergency Preparedness and Rescue from Trenches	• No specific emergency plan for trench collapse or engulfment incidents • Inadequate rescue equipment for trench emergencies kept on site • Workers attempting ad hoc rescue without proper training or equipment • Poor coordination wi[redacted]gency services regarding [redacted] access and trench hazards • Lack of drills or ex[redacted] test tr[redacted]ch emergency response arrangements	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

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