

Hydro Excavation

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:	

SAMPLE

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

  

Risk Rating & Required Action:	
<b>4A</b>	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.
<b>3H</b>	Review and approve additional controls before task starts. Senior supervisor sign-off needed.
<b>2M</b>	Ensure all nominated controls are in place and effective. Proceed with caution; monitor conditions.
<b>1L</b>	Proceed, following standard operating procedures. Monitor and keep records.

  

Consequence Scale:			
Consequence	People (injury/illness)	Project / Assets	Compliance / Reputation
<b>Catastrophic</b>	Fatality or permanent total disability	project shutdown	Significant regulator intervention; criminal prosecution
<b>Major</b>	Serious injury/illness (hospital > 5 days)	critical delay	Improvement notice; major media coverage
<b>Moderate</b>	Medical-treatment injury; lost-time > 1 day	moderate delay	Minor breach; adverse client comment
<b>Minor</b>	First-aid only, no lost time	negligible delay	Isolated non-conformance
<b>Insignificant</b>	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, Legal Compliance & PCBU Duties	<ul style="list-style-type: none"> <li>Lack of formal WHS governance structure for hydro excavation operations</li> <li>Failure to identify and comply with WHS Act 2011 and WHS Regulation requirements specific to excavation and underground services</li> <li>Unclear allocation of WHS duties between PCBU, principal contractor, subcontractors and labour hire providers</li> <li>No process to monitor changes in legislation, standards and Codes of Practice relevant to hydro excavation and excavation work</li> <li>Insufficient consultation with workers and health and safety representatives regarding system changes and risk controls</li> <li>Inadequate documentation or retention of risk assessments, permits and consultation records</li> </ul>	4A	<ul style="list-style-type: none"> <li>Establish a WHS management system aligned to WHS Act 2011, WHS Regulation and relevant Australian Standards (e.g. AS/NZS 4801 or ISO 45001 equivalent) specifically referencing hydro/vacuum excavation activities</li> <li>Define and document PCBU WHS duties, officer/director obligations and site management responsibilities within organisational charts, role descriptions and WHS responsibilities matrices</li> <li>Develop and maintain a formal another requirements register covering excavation work, plant, hazardous chemicals, traffic management, electrical safety and confined space interfaces</li> <li>Implement a formal consultation process requiring involvement of workers, HSRs and contractors in development and review of hydro excavation procedures and risk assessments</li> <li>Schedule periodic management reviews (e.g. annually) of WHS performance for hydro excavation, including legal compliance checks, incident trends and audit outcomes</li> <li>Maintain controlled WHS documentation (risk assessments, policies, permits, service location records) with defined version control, retention periods and secure storage</li> </ul>	3H
2. Project Planning, Client Interface & Scope Definition	<ul style="list-style-type: none"> <li>Poorly defined scope of hydro excavation works leading to unanticipated hazards (e.g. deeper excavation, different soil conditions, unknown services)</li> <li>Client or principal contractor providing incomplete or inaccurate information about underground services, ground conditions or site restrictions</li> <li>Hydro excavation selected inappropriately where alternative methods would present lower overall risk</li> <li>Last-minute scope changes without re-assessment of system risks and resourcing needs</li> <li>Inadequate review of design documentation, service drawings and dial-before-you-dig information</li> </ul>	4A	<ul style="list-style-type: none"> <li>Implement a formal project initiation and scope review process for hydro excavation, including documented pre-start planning meetings with client and relevant PCBUs</li> <li>Require written scope descriptions, design drawings, utility service plans and asset owner requirements prior to mobilisation of hydro excavation plant</li> <li>Introduce a hydro excavation suitability checklist to assess whether hydro/vacuum excavation is the preferred control compared with mechanical excavation or hand digging for each task</li> <li>Mandate re-assessment and approval of WHS risks and resourcing whenever significant scope, location or methodology changes occur</li> <li>Ensure dial-before-you-dig and asset owner information is obtained, reviewed and cross-checked against site conditions by competent personnel before work authorisation</li> <li>Document any client constraints that may affect safety (e.g. time pressures, noise limits, access restrictions) and incorporate them into the risk assessment and project plan</li> </ul>	3H

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	<ul style="list-style-type: none"> <li>Conflicting requirements between client, asset owners and PCBU WHS policies</li> </ul>			
3. Service Location, Isolation & Damage Prevention Systems	<ul style="list-style-type: none"> <li>Reliance solely on client-supplied service information without independent verification</li> <li>Absence of a documented service location and verification procedure for hydro excavation</li> <li>Inadequate competence or training of personnel undertaking electronic service locating or potholing</li> <li>No system for positive identification and marking of underground services prior to excavation</li> <li>Lack of formal isolation and permit processes when working near live services (electricity, gas, high-pressure water, fibre optic)</li> <li>Inadequate communication and approval process with utility owners for work in proximity to critical infrastructure</li> </ul>	4A	<ul style="list-style-type: none"> <li>Develop and implement a formal underground services management procedure covering information gathering, electronic locating, physical confirmation and no-go zones</li> <li>Require use of accredited or competent service locators with evidence of training, calibration of locating equipment and clearances when locating critical services</li> <li>Introduce a standard service verification checklist mandating potholing or non-destructive confirmation of key services before bulk excavation with hydro/vac equipment</li> <li>Establish a marking and mapping protocol (paint, flags, digital mapping) to clearly identify service locations and exclusion corridors on site plans and in the field</li> <li>Implement a permit to work system for excavation within specified clearance distances of underground electrical, gas, compressed services, including isolation and asset owner approvals where required</li> <li>Maintain records of service locations, permits and communications with asset owners, and require sign-off by the principal contractor or PCBU representative prior to commencing hydro excavation</li> </ul>	2M
4. Plant & Equipment Selection, Procurement & Design	<ul style="list-style-type: none"> <li>Use of hydro excavation trucks, trailer-mounted units or suction excavators that are unsuitable for the intended task or site conditions</li> <li>Lack of engineering controls such as emergency stops, interlocks and guarding on vacuum and pressure systems</li> <li>Procurement decisions based solely on cost without WHS specifications or performance criteria</li> <li>Inadequate design consideration for operator access, fall protection, noise and vibration control, and manual handling</li> <li>Non-compliance of imported or modified hydro excavation units with Australian Standards and plant regulations</li> </ul>	4A	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M

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	<ul style="list-style-type: none"> <li>Failure to ensure compatibility of attachments, hoses and nozzles with system pressures and materials</li> </ul>		[REDACTED]	
5. Maintenance, Inspection & Pre-Start Systems	<ul style="list-style-type: none"> <li>Absence of a structured preventive maintenance program for hydro excavation vehicles and pressure systems</li> <li>Unreported or unrepaired defects on high-pressure pumps, hoses, fittings, valves and vacuum systems</li> <li>Failure to inspect safety-critical items such as emergency stops, isolation points, pressure relief valves and hose restraints</li> <li>Inconsistent or informal pre-start checks due to lack of standardised tools or supervision</li> <li>Poor record-keeping of maintenance, inspections, calibrations and repairs</li> <li>Use of non-genuine or incompatible replacement parts for high-pressure or vacuum systems</li> </ul>	4A	[REDACTED]	2M
6. Hydro Excavation Operating Procedures & Work Method Governance	<ul style="list-style-type: none"> <li>Lack of documented standardised operating procedures for diverse hydro excavation configurations (truck-mounted, trailer-mounted, suction excavators, hydrovac)</li> <li>Reliance on informal or verbal instructions leading to inconsistent practices between crews and shifts</li> <li>Procedures not reflecting current plant capabilities, site rules or regulatory requirements</li> <li>Failure to integrate hydro excavation procedures with broader site systems (confined spaces, hot works, lifting, traffic management)</li> <li>No formal review process for procedures following incidents, audits or equipment changes</li> </ul>	3H	[REDACTED]	2M
7. Competency, Training & Verification	<ul style="list-style-type: none"> <li>Operators of hydro excavation and vacuum equipment lacking formal</li> </ul>	4A	[REDACTED]	2M

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of Operators and Supervisors	<p>training or assessment for the specific plant model and pressure system</p> <ul style="list-style-type: none"> <li>Supervisors not competent to oversee complex excavations near services or in congested urban corridors</li> <li>No structured induction for new workers or subcontractor crews on company-specific hydro excavation systems and expectations</li> <li>Outdated training materials not reflecting changes in plant, legislation or procedures</li> <li>Failure to verify licences, tickets and medical fitness (e.g. for commercial driving, working in heat, working long shifts)</li> <li>Limited understanding by workers of service location principles, permit requirements and emergency procedures</li> </ul>		<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	
8. Traffic Management, Mobile Plant Interaction & Journey Management	<ul style="list-style-type: none"> <li>Hydro excavation trucks and trailers operating in high-traffic environments without adequate separation from public vehicles and pedestrians</li> <li>Poorly planned access and egress routes for vacuum trucks and support vehicles, leading to reversing incidents or collisions</li> <li>Lack of a formal traffic management plan when working on roads, verges or within depots</li> <li>Inadequate journey management for long-distance travel between sites, increasing fatigue and crash risk</li> <li>Interface risks between hydro excavation plant and other construction machinery (excavators, cranes, loaders)</li> <li>Insufficient consideration of turning circles, vehicle weights and stability on soft or sloping ground</li> </ul>	4A	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M

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9. Fatigue, Work Scheduling & Remote/Isolated Work	<ul style="list-style-type: none"> <li>Extended shifts, night works or irregular rosters for hydro excavation crews leading to fatigue-related incidents</li> <li>Pressure to complete works rapidly due to client or traffic constraints resulting in shortened breaks and excessive overtime</li> <li>Hydro excavation conducted in remote or sparsely populated areas with limited emergency support</li> <li>Inadequate check-in systems for crews working in isolated locations or after hours</li> <li>Insufficient training of supervisors to recognise and manage fatigue risks</li> <li>Lack of contingency planning for delayed works, breakdowns or weather events that extend work hours</li> </ul>	3H	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M
10. Exposure to High-Pressure Water, Vacuum, Noise & Hazardous Substances	<ul style="list-style-type: none"> <li>Inadequate system controls to prevent contact with high-pressure water jets leading to injection or laceration injuries</li> <li>Uncontrolled exposure to negative pressure and suction points on vacuum systems</li> <li>Excessive noise levels from engine pumps and blowers not managed at system level</li> <li>Aerosolisation of contaminated soil, sewage or hazardous materials during hydro excavation</li> <li>Lack of assessment and control of hazardous substances encountered (e.g. contaminated soils, asbestos-containing materials, hydrocarbons)</li> <li>Inadequate procedures for decontamination, tank cleaning and disposal of spoil and wastewater</li> </ul>	4A	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	2M

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11. Ground Stability, Excavation Geometry & Structural Interfaces	<ul style="list-style-type: none"> <li>Hydro excavation undermining structures, roads, utilities or existing excavations due to poor planning of dig geometry</li> <li>Uncontrolled ground collapse or subsidence where soil type and water interaction are not adequately assessed</li> <li>Inadequate engineering input for excavation near foundations, retaining walls, poles, pits or trench shoring</li> <li>Failure to monitor and control accumulation of water in excavations contributing to instability</li> <li>Lack of triggers for stopping work when ground conditions differ from expectations or deterioration is observed</li> </ul>	4A	[REDACTED]	2M
12. Environmental Management, Waste Handling & Community Impact	<ul style="list-style-type: none"> <li>Uncontrolled discharge or spills of slurry and wastewater from hydro excavation tanks or hoses</li> <li>Improper classification, transport or disposal of spoil leading to environmental contamination or regulatory breach</li> <li>Noise, dust, traffic and access disruptions affecting nearby residents and businesses</li> <li>Insufficient planning for stormwater protection around excavation and spoil stockpiles</li> <li>Lack of contingency planning for plant fluid leaks (hydraulic oil, fuel) during hydro excavation operations</li> <li>Negative community perception due to poor communication regarding works, duration and impacts</li> </ul>	3H	[REDACTED]	2M
13. Emergency Preparedness, Incident Management & First Aid	<ul style="list-style-type: none"> <li>Lack of tailored emergency response plans for high-pressure injection, service strikes, plant fires or environmental spills associated with hydro excavation</li> </ul>	3H	[REDACTED]	2M

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	<ul style="list-style-type: none"> <li>Inadequate communication systems and location information for rapid emergency response, particularly in remote areas</li> <li>Insufficient first aid capability or equipment onsite to manage likely injuries from hydro excavation activities</li> <li>Poorly defined roles and responsibilities during emergencies, leading to delayed response or further harm</li> <li>Failure to investigate and learn from incidents, near misses and service damage events</li> </ul>		[REDACTED]	
14. Contractor Management, Subcontracting & Labour Hire Controls	<ul style="list-style-type: none"> <li>Use of subcontractor or labour hire personnel who lack appropriate hydro excavation experience or WHS competence</li> <li>Inconsistent standards where multiple PCBUs share control of the workplace without clear coordination mechanisms</li> <li>Commercial arrangements that incentivise unsafe shortcuts, such as penalty clauses for delays without reference to WHS obligations</li> <li>Inadequate pre-qualification and ongoing performance monitoring of hydro excavation contractors</li> <li>Poor integration of contractor systems (permits, procedures, training) with principal contractor requirements</li> </ul>		[REDACTED]	2M
15. Documentation, Records, Monitoring & Continual Improvement	<ul style="list-style-type: none"> <li>Critical hydro excavation information (permits, service plans, plant records) not readily accessible or up to date</li> <li>Lack of systematic monitoring of WHS performance indicators specific to hydro excavation activities</li> <li>Inconsistent recording of inspections, training, incidents and corrective actions</li> </ul>	3H	[REDACTED]	1L

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	<ul style="list-style-type: none"> <li>• Failure to act on audit findings or repeated issues identified in hydro excavation operations</li> <li>• No structured process for worker feedback or suggestions to improve hydro excavation systems</li> </ul>		<div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div> <div style="background-color: black; height: 15px; width: 100%;"></div>	

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/factsheets-and-resources/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.