Pipeline Construction			
Business Name:		ABN:	
Business Address:			
Contact Person:	Phone:	Email:	

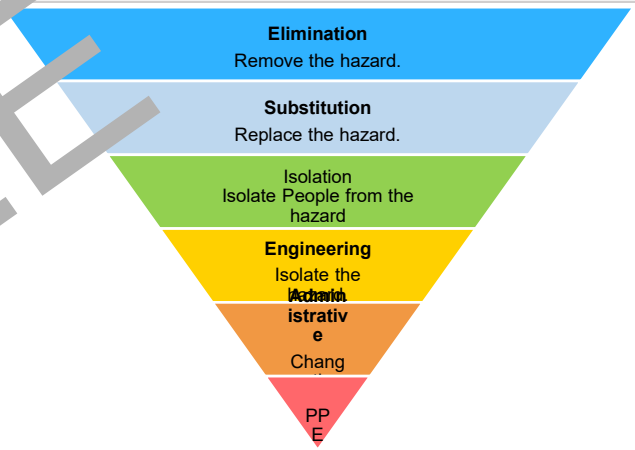
THIS RISK ASSESSMENT IS APPROVED BY THE PCBU OF THE PROJECT		
Under the Work Health and Safety Regulation (WHS Regulation), a person conducting a business or undertaking (PCBU) is required to ensure that a RISK ASSESSMENT is prepared before the proposed work starts.		
Full Name:		
Signature:	Title:	Date:

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 Leadership, Governance & Legal Compliance	• Inadequate WHS governance structure for multi-site pipeline projects • Failure to clearly allocate PCBU duties and officer due diligence responsibilities under WHS Act 2011 • Insufficient awareness of regulatory requirements for high-risk construction work, pipelines and pressure equipment • Poor integration of contractor WHS systems with principal contractor requirements • Inadequate consultation with workers and health and safety representatives on pipeline construction risks • Lack of systematic review of WHS performance, incidents and enforcement notices • Failure to plan for and obtain required licences, permits and approvals (e.g. high-risk work, hot work, pressure testing, confined spaces, dangerous goods, environmental pe... • No governance pr...ess for approving high-risk activities ...ch as hot tapping, drilling on pressuri...d pip..., ...ggin... and pressure testing	4A	• Establish a formal WHS governance frame...rk that c...nes roles, responsibilities and accountabilities for officers, managers, supervisors and worke... in ...eline construction • Implement a legal compliance register capturing ...plicable W...S, dangerous goods, environmental and pipeline regulations, codes an... Australian Standar... with ...heduled review dates and responsible persons • Ensure officers ...monstr... due ...gence thro...h regular WHS briefings, field leadership visits, documented ...iews of WH... perfor...ce d... and resourcing decisions • Deve...p and ...intain a ...HS manage...ent plan specific to pipeline construction and pigging operations, includ... ...pressur...g, hot tapping and dangerous goods transfer • Requ... a...principa... and subcontractors to align their WHS management systems with project WHS require...ents ...ia docu...ented pre-qualification and mobilisation processes • Implem...nt for...l consultation, cooperation and coordination arrangements with contractors, including W... coo...dinatio... meetings, issue-resolution procedures and communication protocols • Maintai... permit and licensing matrix for high-risk work (e.g. elevated work, pressure testing, hot ...ping, welding) and audit compliance against it at defined intervals • Introduce a management of change (MoC) procedure requiring risk assessment and approval for changes to design, methods, equipment, pressure regimes, pigging programs or operating envelopes	3H
2. Project & Design Risk Management (Pipeline Lifecycle)	• Pipeline alignment and design ... adequately considering co...tructability and WHS risks • Insufficient design review for high-elevation and vertical pipeline sections, resulting in complex access and lifting arrangements • Inadequate engineering design for hot tap operations, drilling on pressurised pipes and tie-ins to existing live systems • Poor segregation of slurry, dangerous goods and high-pressure lines from other services or work zones	4A	• Apply formal Safety in Design (SiD) processes for all pipeline projects, including structured risk workshops with engineering, construction, operations and WHS representatives • Ensure pipeline route selection accounts for geotechnical conditions, flooding, access constraints, existing underground services and public interface to reduce construction and operational risk • Require engineered designs and independent verification for high-elevation installations, vertical pipelines, hot taps and drilling on pressurised pipes, including structural, pressure and fatigue analysis • Design pigging systems with compliant pig launchers/receivers, isolation valves, vent points, pressure monitoring and safe access platforms, aligned to relevant Australian Standards • Provide engineered isolation, venting and drain arrangements to support safe purging, blow-down, pressure testing and de-energisation of pipelines • Specify corrosion protection systems (coatings, cathodic protection, field joint coating methods) with quality assurance measures and inspection hold points	2M

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	• Lack of engineered provisions for safe pigging, launching and receiving operations • Insufficient consideration of isolation points, vents and drains to enable safe purging, pressure testing and maintenance • Inadequate corrosion protection design increasing likelihood of leaks, failures and unplanned repair work • Failure to incorporate monitoring and control systems (SCADA, pressure relief, emergency shutdown) appropriate to pipeline contents and location		• Integrate SCADA, remote monitoring, pressure relief and emergency shutdown devices into the design based on pipeline contents, population density and environmental sensitivity • Document all WHS-critical design assumptions and operational limits, and ensure they are handed over to construction and operations teams through structured briefings and records	
3. Contractor Management & Competency	• Selection of contractors without adequate verification of WHS capability for pipeline construction and pressure work • Subcontractor chains leading to unclear accountability for supervision and safety standards • Insufficient verification of licences, qualifications and competencies for specialised tasks (e.g. hot tapping, pressure welding, pressure testing, pigging operations) • Inadequate supervision ratios for high-risk operations such as dangerous goods connection/disconnection and work near flowing liquids or gases • Mismatch between contractor procedures and principal contractor WHS management system • Language, literacy or cultural barriers leading to miscommunication of critical safety information	4A	• Implement a structured contractor pre-qualification system that assesses WHS management, relevant pipeline experience, incident performance and high-risk work controls • Require contractors to submit project-specific WHS plans and evidence of procedure alignment with principal contractor standards for pipeline construction activities • Establish competency and licensing matrices for key roles (welders, hot tap technicians, pigging operators, pressure testing supervisors, elevated work platform operators) and verify evidence prior to mobilisation • Define minimum supervision levels and competency for supervisors overseeing dangerous goods transfers, drilling on pressurised pipes, pipeline purging and pressure testing • Include WHS performance and compliance history as weighted criteria in contractor selection and ongoing performance reviews • Conduct mobilisation inductions and interface meetings to clarify responsibilities, reporting lines, permit processes and emergency arrangements • Provide translated safety critical documents or interpreter support where needed, and verify understanding via toolbox discussions and confirmation questions • Audit contractor field practices and documentation (permits, inspections, training records) and apply corrective action processes for non-conformance	2M
4. Pipeline Construction Planning & Scheduling	• Compressed schedules driving unsafe work practices and inadequate risk assessment for high-risk pipeline activities • Poor planning of work sequencing leading to concurrent incompatible	3H	[redacted]	2M

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	activities (e.g. hot work near purging or pressure testing operations) • Inadequate time allocated for pigging, pressure testing, purging and commissioning phases • Insufficient planning for remote or difficult access sites, including logistics for emergency response • Failure to plan for seasonal weather, flooding, cyclones, heat or cold stress impacts on pipeline work • Inadequate coordination of shutdown windows, hot taps and tie-ins with operations, leading to pressure or flow conflicts		[redacted]	
5. Pressure Systems & Energy Isolation Management	• Inadequate isolation of pipelines and associated equipment during construction, hot tap operations and repairs • Incorrect identification of pipelines, valves and pressure zones leading to unplanned pressurisation • Deficient lock-out/tag-out (LOTO) and verification processes for pressure systems • Back-flow or cross-connection between live and isolated sections during drilling on pressurised pipes or hot tapping • Unexpected pressure surges during pigging, pipeline pressure testing or slurry pumping • Failure of pressure relief devices and gauges due to poor selection, maintenance or calibration	4A	[redacted]	2M
6. Process Safety & Dangerous Goods Management	• Release of flammable, toxic or corrosive substances during dangerous	4A		2M

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	goods pipe connection and disconnection • Loss of containment during work near flowing liquids or gases, including slurry pipeline operations • Inadequate classification and labelling of pipeline contents (hydrocarbons, chemicals, slurries, gases) • Insufficient hazardous area classification for hot work and hot tap operations on live lines • Failure to control ignition sources during purging, pigging, venting and hot work • Poorly managed changes to product specification, pressure or flow rates increasing process safety risks		[redacted]	
7. Work at Height & Elevated Pipeline Access Systems	• Inadequate desig[redacted] for high-elevation installation of pipeline[redacted] and vertical pipelines • Reliance on ad-hoc sca[redacted], ladders or plant without engineering verification • Insufficient planning for installation of supports, hangers and brackets at height • Lack of engineered access for future maintenance of elevated or vertical sections, pigging equipment and valves • Inadequate edge protection and fall prevention systems around above-ground pipe racks, bridges and crossings	3H	[redacted]	2M

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			[redacted]	
8. Welding, Hot Work & Coating Systems Management	• Non-compliant welding procedures leading to structural or pressure boundary failure in pipelines • Inadequate control of hot work around flammable atmospheres during welding jobs for pipework and hot taps • Poorly managed field joint coating works leading to coating defects, corrosion and unplanned repairs • Insufficient welder qualifications and procedure qualification records for pressure pipelines • Lack of quality assurance and inspection for welds and coating repair at critical locations such as bends, tie-ins and hot tap fittings	4A	[redacted]	2M
9. Pigging, Launching & Pipeline Cleaning Operations Management	• Uncontrolled release of pressure or product during launching pigging operations and receiver opening • Incorrect pig selection or configuration resulting in pig becoming stuck or causing pipeline damage • Inadequate procedures for pig tracking and location during pipeline pigging activities • Failure to manage venting, depressurisation and product handling during pigging, cleaning or gauging runs • Lack of clarity on responsibilities between construction and operations teams for pigging campaigns	4A	[redacted]	2M

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			[redacted]	
10. Pressure Testing, Purging & Commissioning Controls	• Over-pressurisation of pipelines during hydrostatic or pneumatic pressure testing • Inadequate barricading and exclusion zones during testing resulting in personnel exposure to stored energy • Incorrect test media selection or contamination of process lines during testing or purging • Insufficient control of venting and discharge leading to environmental harm or exposure to hazardous atmospheres • Poorly planned transition from construction to operations during commissioning increasing risk of mis-valving or unexpe[redacted]	4A	[redacted]	2M
11. Traffic, Mobile Plant & Lifting for Pipeline Construction	• Poor traffic management around trenching, pipe laying and elevat[redacted] installations • Inadequate lifting plans for handling long pipe strings, vertical pipeline sections and heavy fittings • Interface risks between mobile plant and personnel during pipe placement, pig launcher installation and repairs • Use of unsuitable lifting equipment or accessories for handling coated pipe or heavy valves • Insufficient planning for lifting near live pipelines, overhead services or during hot tap and repair works	3H	[redacted]	2M

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SPECIFIC WORK STEPS	HAZARDS THAT MAY ARISE	INITIAL RISK	SPECIFIC MEASURES TO BE PUT IN PLACE TO ELIMINATE OR CONTROL THE RISKS	RESIDUAL RISK
			[redacted]	
12. Land Disturbance, Excavation & Third-Party Asset Protection	• Damage to existing underground pipelines, cables or services during trenching and excavation for new pipelines • Inadequate survey and locating processes for existing infrastructure prior to construction • Poor control of access to open trenches, pit excavations and areas around vertical pipeline shafts • Insufficient protection of newly installed pipelines from third-party interference, vehicle crossings or unauthorised excavation • Failure to manage subsidence, erosi or wash-outs affecting buried or partiali buried pipelines	3H	[redacted]	2M
13. Field Joint Coating, Corrosion Control & Integrity Management	• Improper removal of field joint coati leading to coating damage and corr on initiation • Inadequate surface preparation and application during field joint recoating • Lack of integration between construction quality data and long-term integrity management systems • Failure to monitor cathodic protection and coating performance post-construction • Poor documentation of repairs and modifications to pipelines affecting future integrity assessment	3H	[redacted]	2M

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			[redacted]	
14. Slurry Pipeline & Flowing Liquids/Gases Operations Interface	• Mismanagement of slurry rheology and solids content leading to blockages, pressure spikes or line wear • Inadequate controls for work near flowing liquids or gases during tie-ins, repairs or inspection activities • Insufficient understanding of transient conditions (start-up, shutdown, flushing) in slurry and liquid pipelines • Uncontrolled changes in flow regime during pigging campaigns overlapping with slurry or gas transport	3H	[redacted]	2M
15. Health, Fatigue, Remote Work & Environmental Exposure	• Fatigue and long[redacted]stance travel associated with re[redacted]te pipeli[redacted] construction sites • Environmental exposure to heat, c[redacted], UV and adverse weather affectin[redacted] workers installing or repai[redacted]pipelines • Limited access to medical support and emergency services in remote or difficult terrain • Psychosocial risks associated with remote work, FIFO/DIDO arrangements and extended rosters	3H	[redacted]	2M
16. Emergency Preparedness, Incident Response & Learning	• Inadequate planning for pipeline-specific emergencies such as leaks, ruptures, fires, explosions and	4A	[redacted]	2M

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	uncontrolled releases during construction and commissioning • Lack of clarity on roles, responsibilities and communication during emergencies involving dangerous goods or pressurised systems • Insufficient integration of project emergency plans with local emergency services and asset owner response plans • Failure to learn from incidents, near misses and non-conformances across different pipeline work fronts		[redacted]	

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