Gas Pipeline Installation and Maintenance			
Business Name:		ABN:	
Business Address:			
Contact Person:	Phone:	Email:	

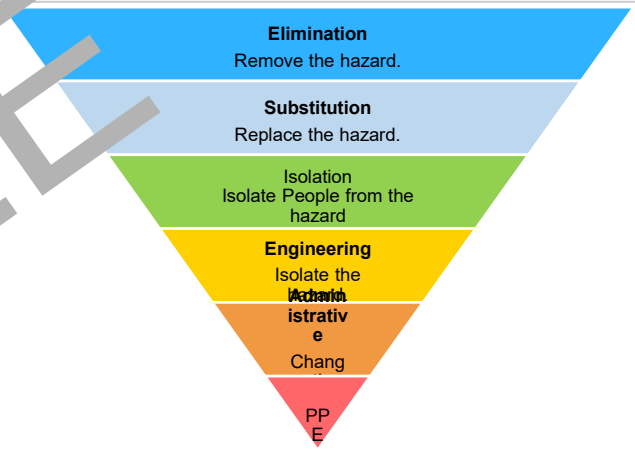
THIS RISK ASSESSMENT IS APPROVED BY THE PCBU OF THE PROJECT		
Under the Work Health and Safety Regulation (WHS Regulation), a person conducting a business or undertaking (PCBU) is required to ensure that a RISK ASSESSMENT is prepared before the proposed work starts.		
Full Name:		
Signature:	Title:	Date:

CLIENT OR PRINCIPAL CONTRACTOR DETAILS	SCOPE OF WORKS
Client:	
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, Legal Compliance and Consultation	• Failure to align gas pipeline activities with WHS Act 2011, WHS Regulations and relevant Australian Standards (e.g. AS/NZS 1596, AS/NZS 5601, AS 2885 series) • Lack of clearly defined WHS responsibilities between PCBUs (principal contractor, gas utility, subcontractors) • Inadequate consultation, cooperation and coordination arrangements between multiple duty holders on shared worksites • Insufficient worker participation in WHS decision-making and risk assessment for gas pipeline works • Outdated or missing WHS policies and procedures specific to compressed gas fitting and pipeline maintenance • Failure to monitor legislative changes relating to gas safety, high risk construction work and hazardous atmospheres	4A	• Establish a WHS governance framework that clearly defines duties under the WHS Act 2011, including PCBU, officer and worker obligations for gas pipeline installation and maintenance • Develop, implement and periodically review a Gas Pipeline WHS Management Plan incorporating legal register, compliance obligations and links to AS 2885 / AS/NZS 5601 and relevant codes of practice • Formalise consultation arrangements via WHS committees, HSRs and toolbox talks specifically addressing gas-related risks (flammable atmospheres, pressure systems, confined spaces) • Implement documented processes for coordination between principal contractor, gas network owner, designers and subcontractors, including interface agreements and pre-start coordination meetings • Maintain legislation and standards register with scheduled reviews and nominate a responsible officer to track and implement relevant changes • Require senior leaders to demonstrate due diligence through regular WHS performance reviews, site walks and verification of control effectiveness for gas safety systems	3H
2. Design, Engineering and Change Management for Gas Pipelines	• Inadequate pipeline and gas system design not compliant with AS 2885 and relevant gas installation standards • Failure to consider hazards from gas pressure, flammable atmospheres and surrounding utilities at design stage • Poorly engineered isolation points, valves and vents leading to difficulty in safely isolating gas supply • Uncontrolled design modifications or changes in gas flow paths during construction or maintenance • Inaccurate or incomplete as-built drawings leading to future damage to gas lines or incorrect connections • Lack of independent design verification for high-pressure and high-risk gas installations	4A	• Ensure all gas pipeline and associated infrastructure are designed by competent engineers in accordance with AS 2885, AS/NZS 5601 and relevant industry guidelines for compressed gas fitting • Include formal hazard identification and HAZOP / design risk workshops focused on gas pressure regulation, flammable sources and emergency isolation during design stages • Standardise design of isolation valves, pressure regulators, vents and purge points to ensure safe isolation, depressurisation and purging during installation and maintenance • Implement a formal Management of Change (MoC) procedure for any modification to gas flow paths, operating pressures or pipeline routes, including risk assessment and approval • Require independent design review and verification for higher pressure systems, complex pressure regulation or critical gas distribution assets • Mandate accurate as-built documentation and digital asset models updated at project completion and accessible to operations, maintenance and emergency response teams	2M

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3. Contractor, Competency and Training Management	• Engagement of contractors or workers without appropriate gas fitting licences or competency for compressed gas systems • Inadequate verification of competencies for high-risk tasks such as gas pressure regulation adjustment or hot work on gas lines • Lack of training in recognition and control of gas-related hazards (leaks, odour recognition, explosive limits) • Insufficient understanding of site-specific procedures for isolating gas supply and performing repair work on live systems • Poor induction processes for new workers or contractors, leading to inconsistent application of WHS systems • No refresher training or verification of ongoing competency for critical roles (authorised gas controllers, permit issuers)	4A	• Implement a competency management sy m that defi s qualification, licensing and experience requirements for all roles involved in gas pipe e inst ation and maintenance • Require and verify trade licences, gas fitting e rsements an vidence of experience working with compressed gas and high-pr ure pipelines prio engag ent • Deliver comprehensive induct that include gas m overview, gas hazard awareness, emergency response to gas le s an pecific olation/lock-out procedures • Provide tar ed training gas pre ure r ation systems, regulator adjustment protocols and manufacturer quirement ncluding p ition of unauthorised adjustments • Esta a form ication of competency (VOC) process for key activities such as isolation of gas supply ification f gas flow paths and commissioning • Sched e p odic re sher training and reassessment for critical roles including permit issuers, authoris gas ontrol s, emergency response team members and supervisors	2M
4. Asset Information, Location and Underground Services Management	• Inaccurate or outdated s of existing gas pipeline nd underground services leading to rikes during excavation • Failure to identify al gas lines, including abandoned or undocumen d services, before installation or maintenance work • Poor system for controlling and communicating live gas line locations to field personnel and contractors • Inadequate integration between GIS, as-built drawings and site marking practices • Uncontrolled changes to pipeline routes or depth during installation that are not reflected in asset systems of record • Inadequate coordination with other utilities and local authorities when	4A	[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
	modifying paths for gas flow or installing new pipelines			
5. Gas Isolation, Lock-Out and Permit-to-Work Systems	• Failure to fully isolate gas supply prior to maintenance, repair or modification work • Unclear ownership of isolation points and authority to operate valves and regulators • Inadequate lock-out/tag-out (LOTO) controls leading to inadvertent re-energisation of gas lines • Poor communication about the status of isolations, purging and re-pressurisation activities • Deficient permit-to-work processes for hot work, confined spaces and other high-risk tasks in the presence of gas • Inconsistent use of gas detection and verification of gas-free conditions befor work starts	4A	[redacted]	2M
6. Gas Pressure Regulation, Testing and Commissioning Controls	• Incorrect gas pressure regulation adjustment leading to over-pressurisation o under-pressurisati of downstream systems • Failure to follow pr ed testing d commissioning procedures for new modified gas pipelines • Use of unsuitable test media (e.g. compressed air where not permitted) creating explosion or rupture risk • Inadequate pressure relief provisions in system design or temporary works arrangements • Poor control over temporary bypasses, blanks and jumpers during maintenance or modification works • Lack of calibrated instrumentation and gauges for verifying gas pressure and integrity	4A	[redacted]	2M

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7. Hazardous Atmospheres, Fire and Explosion Risk Management	• Uncontrolled release of gas from damaged, leaking or poorly maintained pipelines or fittings • Formation of flammable or explosive atmospheres around gas pipes and confined or low-lying areas • Ignition sources from plant, vehicles, static electricity or hot work in proximity to gas lines • Insufficient classification and control of hazardous areas around gas installations • Inadequate monitoring of gas concentrations and oxygen levels during installation and maintenance works • Poor management of compressor stations, regulators and other equipment handling compressed gas	4A	[redacted]	2M
8. Pipeline Integrity, Inspection and Preventive Maintenance Systems	• Degradation of gas pipelines due to corrosion, mechanical damage or ground movement • Failure of valves, regulators and fittings as a result of inadequate preventive maintenance • Undetected leaks in ageing infrastructure or poor-quality repairs • Lack of systematic inspection programs for above-ground and buried gas assets • Inadequate follow-up and close-out of defects and non-conformances found during inspections • Inconsistent maintenance standards across different contractors and regions	4A	[redacted]	2M
9. Work Planning, Scheduling and Fatigue Management	• Inadequate planning of gas installation and maintenance leading to rushed work and errors	3H	[redacted]	2M

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	• Fatigue from extended hours, night shifts or emergency call-outs for gas leak repairs • Insufficient time allocated for safe isolation, purging, testing and reinstatement of gas supply • Poor coordination between operations, construction and maintenance teams during complex works • Last-minute design changes or scope creep increasing risk during live gas work • Inadequate contingency planning for high-risk tasks such as major cut-ins or tie-ins		[redacted]	
10. Plant, Equipment and Materials Management for Gas Work	• Use of inappropriate or non-approved fittings, valves, regulators or pipe materials for the gas type and pressure • Failure of plant (e.g. fusion equipment, compressors, testing rigs) due to poor maintenance or incorrect configuration • Inadequate control over hire plant and subcontractor-supplied equipment • Improper storage or handling of compressed gas cylinders and flammable materials near gas pipelines • Lack of standardisation of critical components leading to assembly errors during installation or repair • Poor equipment inspection and pre-use checks for leak detection, pressure testing and isolation tools	3H	[redacted]	2M
11. Emergency Preparedness, Incident Response and Business Continuity	• Delayed or ineffective response to gas leaks, pipeline ruptures or fires involving gas utilities • Lack of clear roles, responsibilities and communication pathways during gas-related emergencies • Insufficient coordination with emergency services and regulators for major gas incidents	4A	[redacted]	2M

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	• Inadequate drills or scenario-based training specific to gas pipeline emergencies • Poor notification and escalation processes for significant gas safety incidents or near misses • Failure to incorporate learnings from previous events into systems and procedures		[redacted]	
12. Health, Hygiene and Exposure to Gas-Related Risks	• Worker exposure to hazardous gases (e.g. natural gas, LPG, combustion products) causing asphyxiation or acute health effects • Chronic exposure to low-level gas leaks or associated contaminants in poorly ventilated spaces • Psychological stress for workers dealing with high-risk gas leak responses and emergency repairs • Inadequate management of hot and cold work environments around buried or elevated pipelines • Insufficient health monitoring for workers regularly performing confined or enclosed space gas tasks • Lack of systems to support workers after critical gas-related incidents or near misses	3H	[redacted]	2M
13. Traffic, Public Interface and Third-Party Damage Control	• Third-party damage to gas pipelines from external works (construction, excavation, fencing, landscaping) • Inadequate traffic management around pipeline works exposing workers and public to impact or collision risk • Poor communication with landowners, tenants and the public about gas pipeline locations and hazards	3H	[redacted]	2M

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	• Unauthorised access to gas installations, valve compounds or meter sets by members of the public • Failure to control ignition sources from nearby businesses, vehicles or the public during gas leak incidents • Insufficient management of contractors working near gas assets without full understanding of gas-related risks		[redacted]	
14. Documentation, Records, Audit and Continuous Improvement	• Incomplete or inaccurate documentation of gas installations, maintenance, repairs and modifications • Loss of critical records relating to inspections, pressure tests and isolation events • Failure to audit WHS and technical controls for gas pipeline safety on a regular basis • Inadequate close-out of audit findings, incident corrective actions and recommendations • Poor integration between WHS systems, asset management systems and field records • No systematic review of performance data to drive improvements in gas safety management	3H	[redacted]	1L

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