Flammable Materials Handling and Hot Work Fire Safety

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:

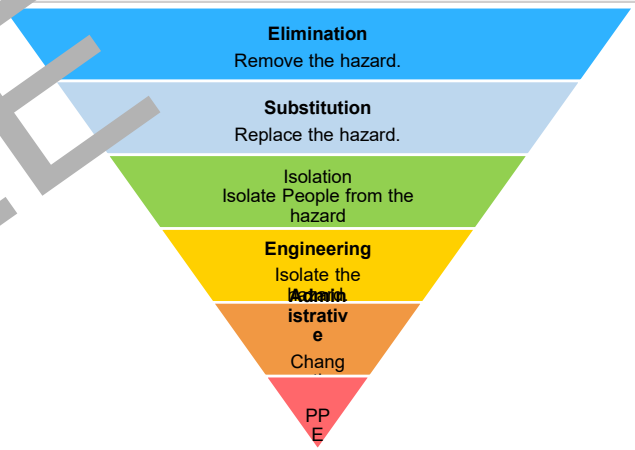
CLIENT OR PRINCIPAL CONTRACTOR DETAILS

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, Legislative Compliance and Accountability	• Lack of a documented WHS management system addressing flammable materials and hot work in line with WHS Act 2011 and WHS Regulations • Unclear duties, roles and reporting lines for Persons Conducting a Business or Undertaking (PCBUs), officers, managers and supervisors in relation to fire and explosion risks • Failure to integrate AS 1940 (storage and handling of flammable and combustible liquids), AS/NZS 60079 and relevant fire standards into organisational policies • Inadequate consultation with workers and Health and Safety Representatives (HSRs) on fire and explosion risk controls and changes to processes • Insufficient due diligence by officers verifying that adequate resources and processes are in place to manage fire-related risks • Gaps in contractor management system leading to inconsistent fire safety standards across different [illegible] and sites	4A	• Establish and maintain a certified WHS management system (e.g. aligned with ISO 45001) that explicitly includes flammable materials handling and hot work fire safety requirements • Develop and approve a corporate Fire and Explosion Risk Management Policy endorsed by senior management, defining expectations, responsibilities and performance indicators • Map and document legal and other requirements (WHS Act 2011, WHS Regulations, AS 1940, AS 1674.1, AS 1851, AS 2419, AS 4332, building codes and insurer requirements) and integrate them into procedures, standard contracts • Define and document clear roles, responsibilities and authorities for officers, line managers, supervisors, workers and contractors regarding fire prevention, fire control measures, hot work permits and emergency response • Implement a formal governance process (e.g. quarterly WHS leadership review meetings) to review fire and explosion risk performance, incident trends and control effectiveness • Embed WHS consultation mechanisms (HSR forums, toolbox talks, safety committees) with specific standing agenda items on flammable materials and hot work risks • Establish a contractor and supplier pre-qualification system requiring evidence of compliant fire safety management, hot work procedures and training before engagement • Include fire and explosion risk obligations and performance requirements in contracts, service agreements and project briefs • Assign a competent fire safety coordinator or advisor to oversee consistency of fire-related systems across all sites and projects	3H
2. Hazard Identification, Fire and Explosion Risk Assessment Processes	• Inadequate or inconsistent processes to identify flammable, combustible and explosive atmospheres across workplaces • Failure to recognise emerging fire-related risks from new materials, new plant, changes in production, storage or workflows • No formal assessment of simultaneous or interacting hot work and flammable materials activities (e.g. nearby welding and fuel transfer) • Over-reliance on informal knowledge instead of structured fire and explosion	4A	• Implement a formal hazard identification and risk assessment procedure specifically addressing fire, explosion and spontaneous combustion risks related to flammable and combustible materials • Require documented pre-start and periodic fire risk assessments for all areas where flammable materials are stored, handled or where hot work and fire-related tasks are undertaken • Adopt structured methodologies (e.g. HAZOP, bow-tie analysis, what-if analysis) for higher-risk operations, including work near flammable materials and high heat sources • Engage competent persons (e.g. fire safety engineers, process safety specialists) to conduct or review fire and explosion risk assessments for complex or higher-risk operations • Implement a change management process that triggers a review of fire and explosion risks whenever new substances, new plant, or changes to layouts, ventilation or processes are proposed • Classify hazardous areas and zones (e.g. Zone 1, Zone 2) for flammable vapours and gases in accordance with applicable Australian Standards and document them in site drawings	2M

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	risk assessments (HAZID, HAZOP, bow-tie analysis) • Lack of area classification and zoning for flammable atmospheres in line with relevant Australian Standards • Insufficient involvement of competent persons (fire engineers, chemists, process safety specialists) in risk assessment • Failure to consider seasonal conditions and environmental factors (e.g. heatwaves, bushfire risk, ventilation changes) in fire and explosion risk assessments		• Ensure risk assessments consider concurrent activities (e.g. simultaneous hot work and flammable material transfers) and establish rules to separate or schedule conflicting tasks • Schedule periodic re-assessment of fire and explosion risks (at least annually or after any fire-related incident) and record actions and outcomes • Maintain a central risk register for fire and explosion risks, capturing causes, controls, residual risk ratings and responsible persons	
3. Flammable and Combustible Materials Inventory, Classification and Labelling	• Incomplete or inaccurate inventory of flammable, combustible and reactive substances on site • Misclassification of materials leading to underestimation of fire and explosion risks (e.g. combustible dusts not identified as an explosion hazard) • Inadequate labelling and signage on containers, storage areas and process lines, causing misuse or incorrect handling • Use of unapproved or unlabelled containers for decanting or temporary storage of flammable liquids • Failure to maintain current Safety Data Sheets (SDS) and supplier hazard information for all relevant substances • Lack of control over quantities of flammable and combustible materials held on site, exceeding design, storage licence or fire safety system capacities	3H	• Establish and maintain a central, up-to-date hazardous chemicals and flammable materials register, including classification (GHS), quantities, locations and key fire and explosion properties • Implement procurement controls so that new flammable or combustible materials cannot be introduced without GHS review, SDS assessment and risk evaluation • Require suppliers to provide current SDS compliant with Australian requirements prior to use, and ensure SDS are readily accessible to all workers (physically and electronically) • Standardise approved containers for flammable and combustible liquids and prohibit use of unauthorised or improvised containers through documented procedures and audits • Develop and enforce labelling and signage standards for all containers, storage cabinets, tanks and transfer lines in accordance with GHS and Australian Standards • Set maximum inventory levels for flammable and combustible materials by area, aligned with fire safety system design (e.g. bunding, fire rating, ventilation and suppression capacity) • Implement periodic inventory verification and reconciliation to confirm actual holdings are within approved limits and match the register • Provide training to supervisors and storepersons on classification of flammable, combustible, oxidising and reactive materials and their segregation requirements	2M
4. Storage, Segregation and Housekeeping of Flammable and Combustible Materials	• Improper storage of flammable and combustible materials near ignition sources, hot work areas or high heat plant • Failure to segregate incompatible substances (e.g. oxidisers, oxidising	4A	[redacted]	2M

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	acids, peroxides) from flammable and combustible materials • Inadequate use of fire-rated cabinets, flammable liquid stores, bunding and spill containment systems • Accumulation of combustible waste, packaging, rags and offcuts leading to increased fuel load and potential for fire spread • Poor housekeeping in flammable storage and use areas including blocked egress paths, obstructed fire systems and dust build-up • Storage of flammable materials in unventilated or poorly ventilated areas leading to accumulation of vapours • Uncontrolled temporary storage of gas cylinders, fuel drums and combustible materials in work areas and corridors		[redacted]	
5. Hot Work and Fire-Related Tasks Management System	• Uncontrolled performance of hot wor (welding, cutting, grinding, soldering, heat guns) near flammable or combustible materials • Inadequate hot w permitting system or failure to consis ntly apply th permit process • Lack of assessment of work near flammable materials when plannin re-related tasks (e.g. roofing it works, furnace maintenance) • Failure to implement fire watches and post-work monitoring in areas where smouldering or delayed ignition is possible • No clear criteria prohibiting hot work during high fire danger days or where fire protection systems are impaired • Poor coordination of hot work with operations, maintenance and contractors, leading to conflicting activities and increased fire risk	4A	[redacted]	2M

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			[redacted]	
6. Ignition Source Control, Plant Design and Engineering Safeguards	• Uncontrolled ignition sources in areas with flammable vapours, gases or combustible dusts (e.g. electrical equipment, static discharge, hot surfaces, friction) • Use of non-rated electrical equipment in hazardous zones contrary to area classification requirements • Inadequate earthing and bonding of tanks, lines and mobile plant during transfer of flammable liquids and gases • Design of plant and equipment that allows hot surfaces, sparks or flame impingement near flammable material • Failure of interlocks, gas detection, temperature monitoring or shut-down systems that prevent ov[redacted]ng or fire • Lack of explosion [redacted]nting, suppression or containment sy[redacted]ems where combustible dust o[redacted]plosi risk exists	4A	[redacted]	2M
7. Fire Protection, Detection and Fire Control Measures Implementation	• Inadequate or poorly maintained fire detection, alarm and suppression systems in areas where flammable materials are stored or used • Mismatch between fire control equipment (extinguishers, hose reels, sprinklers, foam) and the classes of fires likely from flammable and combustible materials • Compromised fire compartments, fire doors and fire-rated penetrations allowing rapid spread of fire and smoke • Unclear responsibilities for testing, inspection and maintenance of fire	4A	[redacted]	2M

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	systems across landlord, tenant and contractor interfaces • Failure to provide sufficient portable fire-fighting equipment for work near high heat or fire (e.g. hot work, furnaces, kilns) • Fire hydrant, booster and water supply systems not capable of supporting credible worst-case fire scenarios		[redacted]	
8. Spontaneous Combustion, Heat Build-Up and Combustible Dust Management	• Spontaneous combustion in stockpiles of combustible materials (e.g. coal, mulch, oily rags, organic waste, textiles, some chemicals) • Heat build-up in stored flammable and combustible materials due to inappropriate stacking, insulation or la of ventilation • Accumulation of comb dust on surfaces, roofs, ledg and inside plant creating explosion d secondary fire potential • Inadequate temperature monitoring and inspection of bulk storage, proc s vessels and enclosed conveyors • Lack of documented controls for drying, heating and curing processes associated with combustible materials • Ineffective management of oily rags, solvent-soaked materials and polishing pads prone to self-heating	3H	[redacted]	2M
9. Safe Systems of Work, Procedures and Work Planning for Fire-Related Tasks	• Absence of formal procedures for routine fire-related tasks involving flammable materials (e.g. tank cleaning, product transfers, loading and unloading, confined space work with flammable residues)	3H	[redacted]	2M

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	• Inadequate integration of fire and explosion controls into planning of maintenance shutdowns and project works • Poor coordination of work near high heat or fire sources (e.g. furnaces, kilns, boilers) and combustible materials • Failure to manage simultaneous operations where one activity could introduce ignition sources near flammable environments • Reliance on undocumented practices and informal instructions, leading to variability in controls across shifts and crews		[redacted]	
10. Training, Competency, Supervision and Fire Safety Culture	• Workers and contractors not competent in handling flammable materials, hot work fire safety and emergency response • Insufficient understanding of fire and explosion hazards, including spontaneous combustion and combustible dust risks • Lack of role-specific training for supervisors responsible for authorising hot work, permits and isolations for fire-related tasks • Inadequate supervision of new or inexperienced workers in high fire-risk environments • Complacency and risk normalisation leading to bypassing of fire controls, especially during routine tasks • Limited practice and confidence in use of fire-fighting equipment, evacuation procedures and communication systems	3H	[redacted]	2M

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11. Emergency Preparedness, Response and Recovery for Fire and Explosion Events	• Emergency management plans not tailored to specific fire and explosion scenarios associated with flammable and combustible materials • Confusing or inadequate evacuation routes, assembly points and communication methods during fire events • Insufficient coordination with emergency services regarding site fire risks, layouts and hazardous materials inventories • Lack of clear criteria and procedures for when to attempt initial fire control versus immediate evacuation • Inadequate business continuity and recovery plans for aftermath of a significant fire or explosion, including environmental and community impacts • Failure to revise emergency plans following drills, near misses or actual fi incidents	4A	[redacted]	2M
12. Incident Reporting, Investigation and Continuous Improvement of Fire Safety Systems	• Under-reporting fire-related incidents, near mis and ion events, leading to mi learning opportunities • Superficial investigation that us on immediate causes rather than underlying system and management failures • Lack of trend analysis for fire-related events across sites, shifts and contractors • Failure to implement, verify and sustain corrective and preventive actions arising from fire incidents and audits • Poor communication of lessons learned from fire safety breaches to the broader workforce	3H	[redacted]	1L

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			[redacted]	
13. Inspection, Monitoring, Assurance and Audit of Fire Risk Controls	• Deterioration of fire protection and control measures over time due to lack of systematic inspection and monitoring • Reliance on informal inspections that fail to detect critical shortcomings in storage, housekeeping and hot work management • No performance indicators or targets for fire and explosion risk management effectiveness • Inadequate internal or external auditing of compliance with WHS Act, WHS Regulations and relevant Australian Standards • Failure to include fire and explosion controls in routine management safety observations and field leadership activities	3H	[redacted]	2M
14. Contractor, Visitor and Third-Party Interface Management	• Contractors perform[illegible] work near flammable material[illegible] or conducting hot work without align[illegible] to site fire [illegible]ty systems • Inadequate induction of contractors and visitors on site-specific fire an[illegible] explosion risks and emer[illegible] procedures • Conflicting procedures and standards between principal contractor and subcontractors regarding flammable material handling and fire control • Third-party tenants, neighbours or co-located businesses introducing additional fire loads or ignition sources not considered in site risk assessments • Insufficient oversight of contractor hot work permits, equipment and training	3H	[redacted]	2M

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15. Design, Procurement and Change Management for Fire and Explosion Risk	• Introduction of new plant, equipment or materials that increase fire or explosion risks without adequate assessment • Procurement of cheaper but non-compliant or substandard fire protection equipment and flammable storage infrastructure • Design changes that inadvertently increase fuel loads, obstruct fire systems or create new ignition sources • Inadequate consideration of fire and explosion risks during project design, layout planning and decommissioning • Failure to engage WHS and fire safety specialists during early design and change planning stages	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