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Asphalt Bitumen Patching

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:	

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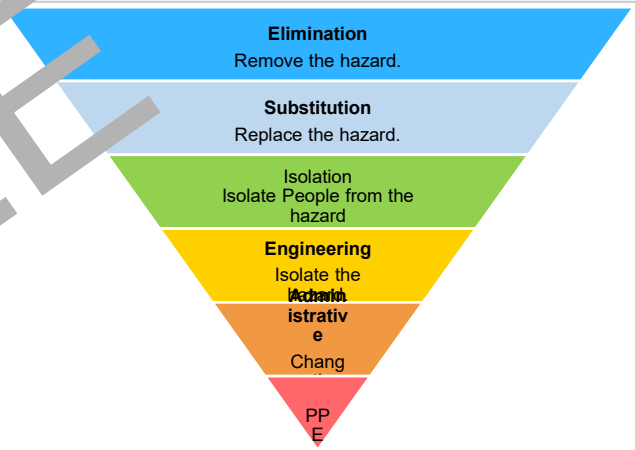
RISK MATRIX

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



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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.*

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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. Governance, WHS Duties and Legal Compliance	• Incomplete understanding by senior management of primary duty of care under WHS Act 2011 and relevant WHS Regulations for asphalt and bitumen patching activities • Absence of a documented WHS management system that explicitly addresses hot bitumen, asphalt heaters and associated plant • Inadequate consultation mechanisms with workers and Health and Safety Representatives (HSRs) on asphalt patching risks and controls • Failure to identify and control risks associated with contractor engagement for asphalt patching and asphalt heater operation • Lack of clear allocation of WHS responsibilities, authority and accountability for asphalt patching wo (including supervision of asphalt heate use) • Insufficient monitorin changes, standards d codes of practice relevant t oadwork, mobile plant, confined spa s nea hazardous atmosphe	High	• Establish, document and maintain a WHS anagement ystem aligned with the WHS Act 2011, WHS Regulations and ISO 45001, with specific ref nce t sphalt bitumen patching and asphalt heater use • Define and document WHS roles, responsibili and account ities for officers, line managers, supervisors and workers inv d in asphalt patch , includ duties relating to plant, hazardous chemicals and remote/roadside ork • Implement a form con ance ister that tracks applicable legislation, Australian Standards, codes of practice (e.g. M aging Ris of Pla in the W place, Traffic Management for Construction or Maintenance ork, Hazard s Chem ls) d relevant industry guidance for asphalt and bitumen • Dev and e rce WHS policy endorsed by the PCBU's officers, stating expectations regarding hot work, a rdous c icals, asphalt heater safety and fitness for work • Imple en tructur consultation arrangements including WHS committees, HSRs and toolbox talks that spe ifica addres emerging risks in asphalt patching and asphalt heater operation • Establis a co ctor management procedure requiring verification of contractor WHS systems, ins ce licences, training records and safe work documentation for asphalt and heater-related tasks • Integrat WHS due diligence reporting into regular board or executive meetings, including key indicators (idents, near misses, audits, training status) for asphalt patching activities • Periodically obtain independent WHS audits or gap analyses focusing on high-risk plant (including asphalt heaters), traffic interface risk and hot bitumen handling	Medium
2. Risk Management Framework and Change Management	• Inconsistent or informal risk assessments for asphalt g work, including inadequate consideration of hot bitumen, asphalt heaters and nearby services • Failure to systematically identify new or changed risks when asphalt heaters are introduced, modified, relocated or replaced • Lack of a structured process to review controls following incidents, near misses, equipment failures or operational changes • Poor integration of WHS risk assessments with planning, scheduling	High	• Implement a formal WHS risk management procedure consistent with WHS Regulations, requiring identification, assessment, control and review of risks for asphalt patching and asphalt heater operations • Standardise a high-level risk assessment template for asphalt patching projects that captures system risks (traffic interaction, plant interface, environment, heater type, product type, location and timing) • Require documented risk assessments and, where applicable, supporting procedures or SWMS for all high-risk elements including working near traffic, plant movement, hot bitumen handling and the use of asphalt heaters • Establish a management-of-change process that mandates risk review before the introduction or modification of asphalt heaters, plant configurations, new bitumen products or changes to work methods • Link risk assessment reviews to specific triggers, including incidents, regulatory changes, introduction of new equipment, new client requirements or recurring defects • Ensure risk assessment outcomes are integrated into job planning, resourcing and scheduling, including allocation of supervision, traffic management resources and appropriate heater capacity	Medium

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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
	and budgeting for asphalt patching works • Over-reliance on individual supervisor experience instead of a documented risk management methodology • Inadequate hazard identification for non-routine tasks such as night works, emergency repairs, isolated locations or extreme weather conditions		• Maintain a central register of key risks and critical controls for asphalt patching, with ownership assigned to nominated managers and periodic verification of control effectiveness • Provide training to supervisors and planners on formal risk assessment techniques, critical control management and documentation expectations	
3. Procurement and Design of Plant, Asphalt Heaters and Materials	• Procurement of asphalt heaters, trucks and associated plant that do not comply with Australian Standards or WHS Regulations • Selection of asphalt heaters that lack appropriate temperature controls, interlocks, flame failure protection or guards, increasing risk of overheating or bitumen boil-over • Use of materials (bitumen, additives, fuels, solvents, release agents) with inadequate safety information, or incompatibility with heater design and pump systems • Failure to consider ergonomics, manual handling and access requirements when procuring and configuring heater systems on vehicles • Insufficient engineering controls to manage fumes, combustion products and heat radiation around asphalt heaters • Lack of consideration of noise emissions from plant and heaters at procurement stage • Ignoring future maintenance and inspection access needs when specifying heater and plant layouts	High	• Implement a formal plant and equipment procurement procedure that requires WHS review and sign-off for asphalt heaters, trucks and associated equipment before purchase or hire • Specify compliance with relevant Australian Standards and regulatory requirements in procurement documents for asphalt heaters, including safety shut-off systems, flame detection, over-temperature protection, pressure relief and guarding • Require suppliers of asphalt heaters to provide detailed technical specifications, risk assessments, user manuals, maintenance schedules and evidence of compliance (e.g. certifications, performance tests) • Ensure selection of heaters with adequate and adjustable temperature control, agitation and insulation systems suitable for the bitumen grades and additives to be used • Mandate review of Safety Data Sheets (SDS) for all bitumen products, additives and fuels prior to approval, and verify compatibility with heater operating ranges and pumping systems • Integrate ergonomic assessment into plant design and fit-out, including hose reel locations, control heights, access steps, handrails and winches, to reduce manual handling and awkward postures • Specify noise performance criteria and, where practicable, select lower-noise plant and heater configurations, including acoustic shielding options • Ensure plant layout provides safe access for inspection, cleaning and maintenance of heaters, burners, tanks and associated pipework, with fixed platforms or fall prevention where needed • Include design provisions for fume and heat management (e.g. exhaust routing, shielding, location of burners away from operator standing zones) in vehicle layouts • Document and maintain an approved plant list including model numbers, safe operating envelopes and any restrictions on use for each asphalt heater in the fleet	Medium
4. Contractor, Supplier and Third-Party Management	• Use of contractors to operate asphalt heaters or undertake patching work without adequate WHS systems, licences or experience • Poor communication of client-site rules, traffic management arrangements and	High	[redacted]	Medium

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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
	local hazards to contractors and delivery drivers • Inconsistent standards between principal contractor and subcontractors regarding hot bitumen handling, asphalt heater checks and PPE • Reliance on suppliers' advice for bitumen and fuel use without independent verification or risk assessment • Lack of clarity around who controls and supervises work areas where multiple PCBUs operate simultaneously • Inadequate coordination of emergency arrangements between different organisations on shared worksites		[redacted]	
5. Training, Competency and Supervision	• Workers operating asphalt heaters or supervising hot bitumen tasks without formal competency assessment • Inadequate training on the specific model of asphalt heater, control systems, temperature limits and emergency shut-down procedures • Poor understanding of bitumen handling risks, including burns, fumes, flammable atmospheres and pressurised systems • Insufficient supervision of new or labour-hire workers performing asphalt patching or working near heaters and plant • Lack of refresher training leading to skill fade, incorrect assumptions and bypassing of controls	High	[redacted]	Medium

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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
	• Inadequate training for supervisors in WHS obligations, risk management and incident response for asphalt patching work		[redacted]	
6. Plant Management, Asphalt Heater Integrity and Maintenance Systems	• Failure of asphalt heaters due to inadequate preventative maintenance, leading to burner malfunction, overheating, loss of temperature control or bitumen boil-over • Unidentified defects in fuel systems, hoses, valves, pressure relief devices or electrical wiring on heaters and associated plant • Use of non-approved modifications or temporary repairs to asphalt heaters and vehicles (e.g. bypassed safety interlocks, unguarded hot surfaces) • Lack of formal inspection regimes to verify heater calibration, thermometer accuracy and control system functionality • Inadequate maintenance records and traceability for critical components of heaters and associated plant • Plant operating beyond design limit due to poor understanding of heater capacity, bitumen type or ambient conditions	High	[redacted]	Medium
7. Operational Control Systems and Procedures (Non-Task-Specific)	• Inconsistent application of standard operating procedures across crews and shifts for asphalt patching activities • Lack of clear rules around who can start, adjust or shut down asphalt heaters and other key plant • Informal or undocumented control measures for high-risk scenarios such as night work, high traffic volumes, school zones or confined urban sites • Insufficient administrative controls to manage simultaneous hot work, plant	High	[redacted]	Medium

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	movement, and public access near patching sites • Overly complex or inaccessible procedures resulting in non-compliance and workarounds • Failure to configure operational systems to limit unsafe heater settings or bypassing of alarms		[redacted]	
8. Traffic Interface, Journey Management and Site Access Control	• Systemic failure to manage interaction between live traffic, asphalt patching crews and operating heaters positioned on or near roadways • Inadequate planning for access, egress and positioning of vehicles and heaters in constrained road environments • Poor journey management leading to fatigue, rushed setups and pressure to work in marginal or unsafe conditions • Inconsistent application of traffic management plans, signage and speed restrictions across different jobs and locations • Insufficient control over public access into work zones, particularly near hot bitumen and exposed heater components • Failure to coordinate with road authorities, clients or other PCBUs regarding lane closures and detours	High	[redacted]	Medium
9. Hazardous Chemicals, Bitumen, Fuels and Fume Management	• Inadequate management of hazardous chemicals including bitumen, cutback products, diesel, LPG, solvents and release agents associated with asphalt patching and heater operation	High	[redacted]	Medium

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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
	• Insufficient control of exposure to bitumen fumes, combustion products and diesel exhaust for workers and members of the public • Improper labelling, storage or segregation of fuels and chemicals used with asphalt heaters • Lack of systems to manage ignition sources in proximity to flammable liquids, gases and hot bitumen surfaces • Incomplete or outdated SDS, leading to inadequate understanding of health effects, PPE requirements and emergency measures • Absence of atmospheric monitoring where heaters are used in semi-enclosed or poorly ventilated areas (e.g. under bridges, in cuttings)		[redacted]	
10. Heat Stress, Fatigue, and Health Monitoring	• Systemic underesti[redacted]ation of heat stress risks arising [redacted]om combined effects of climate, [redacted] bitume[redacted]lt heaters and PPE • Inadequate fatigue management f[redacted] crews undertaking early starts, l[redacted] shifts, night works or eme[redacted]y call-outs • Lack of health monitoring for workers exposed to prolonged heat, fumes or repetitive physical demands of asphalt patching • Insufficient policies on hydration, breaks and rotation of tasks during hot weather conditions • Failure to identify and address individual health factors (e.g. medications, pre-existing conditions) that may increase vulnerability to heat or fumes	High	[redacted]	Medium

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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]	
11. Emergency Preparedness, Fire and Incident Response	• Lack of coordinated emergency response planning for bitumen burns, fires involving heaters or fuel, and traffic incidents around work zones • Insufficient availability and maintenance of appropriate fire-fighting equipment near asphalt heaters and fuel storage • Poorly understood burn first aid and emergency treatment pathways among supervisors and workers • Inadequate communication systems t summon help in remote or dispersed worksites • Failure to learn fr previous incidents, near mi es or heat malfunctions due to estigat and corrective action processes	High	[redacted]	Medium
12. Consultation, Communication and Worker Engagement	• Inadequate involvement of frontline workers in identifying risks and improvements related to asphalt patching and heater operations • Poor communication of lessons learned from incidents, audits or manufacturer bulletins relating to heaters and hot bitumen • Language, literacy or cultural barriers that impact workers' understanding of WHS expectations, procedures and emergency information	Medium	[redacted]	Low

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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
	• Low reporting of hazards and near misses due to fear of blame, complex systems or lack of feedback		[redacted]	
13. Monitoring, Audit and Continuous Improvement	• Absence of systematic monitoring to verify effectiveness of WHS controls for asphalt patching and heater operations • Inconsistent or informal site inspections leading to unnoticed degradation of controls over time • Lack of meaningful WHS performance indicators specific to asphalt operation and hot bitumen risks • Failure to close out actions from audit inspections, incident inv ions and regulatory notificatio	Mediun	[redacted]	Low

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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

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