

Air Conditioner Maintenance

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:	



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

Risk Rating & Required Action:	
4A	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.
3H	Review and approve additional controls before task starts. Senior supervisor sign-off needed.
2M	Ensure all nominated controls are in place and effective. 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. Governance, Legal Compliance and Duty of Care	<ul style="list-style-type: none"> Lack of clear WHS governance structure for air conditioner maintenance in buses, trains and aircraft, leading to unclear allocation of WHS duties under WHS Act 2011 and associated regulations Failure to identify and comply with relevant WHS, rail safety, and civil aviation regulations, codes of practice and Australian Standards relating to HVAC systems and confined spaces in transport vehicles Inadequate integration of HVAC maintenance risks into the organisation's WHS management system and risk register Inadequate consultation with workers, HSRs, contractors and unions on HVAC-related risks and changes to procedures or equipment Poor change management for design modifications, new HVAC technologies, refrigerants or maintenance methods within bus, train or aircraft fleets Lack of formal processes for due diligence and verification in multi-PCBU environments (e.g. operator, depot maintenance contractor, OEM, rolling stock or aircraft lessor) 	High	<ul style="list-style-type: none"> Establish and document a WHS governance framework that explicitly covers HVAC maintenance in bus, train and aircraft operations, including defined roles, responsibilities and reporting lines for PCBUs, officers, workers and contractors Maintain an up-to-date legal and standards register covering WHS Act 2011, WHS Regulations, relevant Rail Safety National Law, Civil Aviation Safety Regulations and applicable Australian Standards (e.g. AS/NZS 5149, AS 13000, AS/NZS 3000, electrical safety, confined space and hazardous chemicals standards) and ensure they are referenced in HVAC maintenance procedures Integrate HVAC system risks (including within bus, train and aircraft HVAC compartments and ducts) into the organisation's formal WHS risk management procedure, corporate risk register and assurance program Implement a structured consultation process with workers, health and safety representatives and contractors on HVAC system design, maintenance methods, scheduling, and any proposed changes, in line with WHS best consultation duties Adopt a formal management of change (MoC) procedure for any introduction of new HVAC systems, refrigerant, access platforms or maintenance strategies across bus depots, rail yards and hangars, including pre-implementation risk assessments Document and agree PCBU-to-PCBU interface arrangements (e.g. operator, depot maintenance provider, rolling stock maintainer, aircraft maintenance organisation) specifying WHS responsibilities for HVAC maintenance, supervision, incident notification and emergency management Require officers to demonstrate due diligence by regularly reviewing HVAC risk controls, audit findings, competence data and incident trends in board or executive WHS reports 	Medium
2. Design, Engineering and Asset Management of HVAC Systems	<ul style="list-style-type: none"> HVAC plant in buses, trains and aircraft designed or installed without adequate access for safe inspection, testing and maintenance (e.g. units on high vehicle roofs, within narrow ceiling voids or on rolling stock rooftops) Poor segregation of electrical, moving and high-temperature components within HVAC plant, increasing risk of electric shock, entanglement or burns during maintenance Inadequate design of isolation points, lockable switches and tagging facilities 	High	<ul style="list-style-type: none"> Specify, during procurement and retrofit projects, that HVAC systems for buses, trains and aircraft must be designed with safe access and egress for maintenance (e.g. service panels at ground level where practicable, adequate spacing, fixed ladders, safe roof walkways, handrails and anchor points) Require engineered isolation and lock-out facilities for HVAC systems on mobile plant and rolling stock, including clearly labelled lockable isolators, local disconnects and test points that comply with electrical safety standards Standardise engineering specifications for HVAC units across the fleet, including preferred OEMs, refrigerant types, filtration systems and maintenance intervals, to simplify safe work procedures and training Ensure HVAC plant compartments in buses, train cars and aircraft include adequate permanent lighting, ventilation and drainage, and are designed to minimise manual handling, awkward postures and contact with sharp edges 	Medium

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
	<p>for HVAC systems mounted on mobile or elevated plant</p> <ul style="list-style-type: none"> • Use of refrigerants, filters and materials incompatible with the operating environment, leading to leaks, corrosion, fire load, or exposure to hazardous substances within passenger vehicles • Insufficient ventilation and lighting engineered into HVAC plant spaces within buses, train carriages, locomotives or aircraft, increasing risks when workers access roof cavities and service compartments • Inconsistent asset information for HVAC units across mixed fleets (ageing buses, multiple train sets, different aircraft types), causing uncertainty about safe maintenance requirements • Lack of engineered fall prevention or secure work platforms for accessing rooftop or elevated HVAC modules of buses and rolling stock 		<ul style="list-style-type: none"> • Implement an asset management system that maintains accurate records of all HVAC units (model, age, location, refrigerant type, critical hazards, past incidents and engineering modifications) and makes this information accessible to planners and maintenance personnel • Include fall-prevention engineering controls (guardrails, walkways, fixed access systems, tie-off points and engineered roof access platforms) in the design of depots, rail yards and hangars where rooftop or elevated HVAC modules are maintained • Apply formal engineering review and sign-off for any major modifications to HVAC installations on buses, trains or aircraft, ensuring compliance with OEM instructions, relevant Australian Standards and, where applicable, rolling stock and aviation design approval requirements 	
3. Procurement, Contractor Management and Supply Chain	<ul style="list-style-type: none"> • Selection of HVAC equipment, spare parts or consumables that do not meet Australian safety standards or are incompatible with bus, rail or aviation operating conditions • Engagement of HVAC contractors without appropriate licences, rail or aviation accreditations, qualifications or demonstrated competence in working on passenger transport vehicles and aircraft • Lack of pre-qualification and WHS evaluation of contractors performing maintenance in depots, rail corridors, workshops and aircraft hangars • Poorly defined scopes of work and risk allocation in contracts for HVAC servicing of buses, trains and aircraft, leading to gaps in safety responsibilities and supervision • Inadequate management of supply chain issues for critical safety 	High	<ul style="list-style-type: none"> • Implement procurement standards requiring all HVAC equipment and parts for buses, trains and aircraft to comply with relevant Australian Standards, OEM instructions, refrigerant regulations and transport sector technical requirements • Develop contractor pre-qualification criteria that include WHS performance, trade and refrigerant handling licences, rail safety or aviation approvals where applicable, and evidence of competence in HVAC work on passenger vehicles and aircraft • Include in all HVAC maintenance contracts clear WHS clauses covering risk management expectations, incident reporting, induction, supervision, training, PPE, and responsibilities for isolations and permits in depots, rail yards and hangars • Use a formal contractor management system to verify licences, insurances, training records, fatigue management arrangements and compliance with rail corridor and aviation security requirements before work is allocated • Establish a controlled approved-parts list for HVAC systems and prohibit use of non-approved alternatives without engineering review and risk assessment, particularly for filters, refrigerants, control components and safety interlocks • Develop procedures and communication protocols for after-hours and on-route HVAC call-outs (e.g. to buses in layover, trains in stabling, aircraft on stands), including site access, supervision arrangements and interaction with the public and other PCBU's 	Medium

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
	<p>interaction with vehicle movements, other trades and passengers</p> <ul style="list-style-type: none"> Lack of formal work authorisation processes (e.g. permits, safe work instructions) for high-risk HVAC maintenance such as work at heights, electrical isolation, confined spaces or work near energised rail infrastructure Poor coordination between operations and maintenance leading to buses, trains or aircraft being moved or energised while HVAC maintenance is underway Insufficient consideration of environmental conditions (heat, wind, rain, noise, lighting) when planning external rooftop or trackside HVAC work on vehicles Gaps in alignment between maintenance schedules and regulator or OEM requirements for HVAC servicing intervals on specific bus, rolling stock and aircraft models 		<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	
6. Isolation, Energy Control and Vehicle Movement Management	<ul style="list-style-type: none"> Inadequate lock-out, tag-out and test procedures for isolating HVAC electrical supplies on buses, train carriage, locomotives and aircraft Risk of unexpected movement of buses, trains or aircraft while HVAC maintenance is in progress (shunting in rail yards, towing of aircraft, bus relocation in depot) Poor control of stored energy in HVAC systems, including rotating components, pressurised refrigerant, compressed air and batteries Lack of standardised vehicle immobilisation procedures across depots, stabling yards and hangars during HVAC work Confusion about control of work when multiple parties (e.g. depot operations, 	High	<p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p> <p>[REDACTED]</p>	Medium

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
	<ul style="list-style-type: none"> rail control, ground handling) interact around the same bus, train or aircraft Inadequate signage and barricading to warn others that HVAC work is underway on or in a vehicle or aircraft 		[REDACTED]	
7. Confined, Restricted and Difficult Access HVAC Spaces	<ul style="list-style-type: none"> Work in or around HVAC spaces within bus, train or aircraft structures that are confined or restricted (e.g. roof cavities, underfloor compartments, ceiling voids, avionics bays) with limited access and egress Risk of exposure to oxygen-deficient, hot, humid or poorly ventilated conditions when accessing internal ducts and compartments Difficulty in emergency retrieval or rescue of workers from tight spaces within bus and train bodies or aircraft fuselage sections housing HVAC components Manual handling and awkward postures required to enter and work within restricted HVAC spaces, increasing muscular/skeletal risks Unclear classification of confined or restricted compartments (confined space versus restricted space), leading to inconsistent application of controls Potential accumulation of dust, mould, biological contaminants or chemical residues within ducts and enclosures, increasing health risks during intrusive inspections or cleaning 	High	[REDACTED]	Medium
8. Hazardous Substances, Refrigerants and Biological Contaminants	<ul style="list-style-type: none"> Exposure to refrigerants (including high-pressure or low-GWP alternatives) used in bus, train and aircraft HVAC systems, with risks of asphyxiation, frostbite or toxicity Handling and storage of cleaning chemicals, biocides, coil cleaners and other hazardous substances used for 	High	[REDACTED]	Medium

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
	<p>HVAC maintenance without adequate controls</p> <ul style="list-style-type: none"> • Potential for growth of mould, bacteria or other biological contaminants in filters, condensate systems and ducts, particularly in high-use passenger environments • Inadequate labelling, segregation and disposal systems for waste refrigerants, used filters and contaminated materials from buses, trains and aircraft • Insufficient monitoring of indoor air quality incidents linked to HVAC performance in passenger cabins, leading to under-recognised health issues • Lack of awareness of chemical compatibility issues between cleaning products and materials used in bus, rail and aircraft interiors 		[REDACTED]	
9. Working at Heights, Access Equipment and Fall Prevention	<ul style="list-style-type: none"> • Need to access rooftop HVAC units on buses and rolling stock, or elevated HVAC components on aircraft, creating fall risks for workers and potential dropped objects on people or critical equipment below • Use of temporary and unstable access equipment (ladders, makeshift platforms) for reaching HVAC units on high vehicles, train roofs and fuselage sections • Inadequate systems to control simultaneous activities beneath elevated HVAC work zones in depots, rail yards and hangars • Insufficient inspection and maintenance of fixed access systems, roof walkways and platforms associated with HVAC maintenance areas • Inconsistent application of fall-prevention and dropped-object controls between different depots, stabling yards and hangars 	High	[REDACTED]	Medium

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
	<ul style="list-style-type: none"> Limited planning for height-related risks during emergency repairs to HVAC systems on buses, trains or aircraft that are away from main maintenance facilities 		[REDACTED]	
10. Fatigue, Workload, Environmental and Psychosocial Factors	<ul style="list-style-type: none"> Long shifts, irregular hours and call-outs for HVAC faults on buses, trains and aircraft leading to worker fatigue and impaired decision-making Pressure to return vehicles and aircraft to service quickly, encouraging short-cuts in safety systems such as isolations, permits and testing Exposure to extreme temperatures, noise, diesel or jet fumes and vibration in depots, rail yards, workshops and hangars while performing HVAC maintenance Psychosocial stress associated with working in time-pressured, safety-critical environments (rail operations, airside areas, public transport depots) Limited break facilities, hydration options and rest areas near HVAC work locations on large rail or aviation sites Under-reporting of near-miss hazards due to production pressure or fear of blame 	Medium	[REDACTED]	Low
11. Monitoring, Inspection, Incident Management and Continuous Improvement	<ul style="list-style-type: none"> Lack of systematic inspections and preventive maintenance of HVAC systems on buses, trains and aircraft, leading to undetected deterioration in safety-critical components Inadequate WHS inspections of depots, stabling yards, workshops and hangars focusing on HVAC maintenance environments and practices Poor incident and near-miss reporting, investigation and analysis relating to HVAC work (e.g. refrigerant leaks, minor shocks, slips and trips, falls from height, confined space issues) 	Medium	[REDACTED]	Low

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
	<ul style="list-style-type: none"> Limited use of data from telematics, building management systems or aircraft health monitoring to identify systemic HVAC safety issues Failure to close out audit and inspection actions relating to HVAC maintenance risks in a timely manner Inconsistent management review of HVAC-related WHS performance and control effectiveness 		[REDACTED]	
12. Emergency Preparedness, Passenger Safety and Public Interface	<ul style="list-style-type: none"> Inadequate emergency procedures for HVAC-related events on buses, trains and aircraft such as smoke, fire, refrigerant leaks or loss of cabin ventilation Poor coordination between HVAC maintenance personnel and operations staff during in-service incidents involving passengers or the travelling public Confusion over responsibilities for evacuation, emergency isolation and communication when HVAC issues arise in depots, rail stations, train carriages, bus interchanges or aircraft Insufficient training of maintenance personnel in site-specific emergency arrangements for rail evacuation precincts, including mustering, communication and interface with emergency services Lack of clear communication to passengers and public when HVAC failures affect comfort or perceived safety (e.g. very high temperature in cabins, odours) Inadequate drills or simulations that test integrated response to HVAC-related emergencies across PCBU's 	Medium	[REDACTED]	Low

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/laws-and-compliance/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.