

Hazard Categories, examples, and control summary suggestions

This Hazard Category List provides a high-level framework to support consistent hazard identification across University activities. It is informed by applicable Work Health and Safety legislation, relevant NSW and Queensland Codes of Practice, and the University's high-risk procedures and Critical Risk Frameworks. Codes of Practice do not identify or address all hazards relevant to University operations; therefore, this framework is intended to be applied broadly to all hazards arising from University activities. The controls referenced are indicative only and must be selected, implemented, and verified through task-specific risk assessment, in accordance with applicable University WHS procedures.

Hazard Category	Hazards (examples)	Summary of Controls (grouped by category)
Animals	Bites and scratches; kicks, trampling and crushing; striking injuries (headbutting, charging, wing strikes); envenomation from land or marine animals; severe allergic or anaphylactic reactions to bites or stings; zoonotic diseases including handling of animal carcasses (e.g. Hendra virus, Q-fever, Lyssavirus); allergies to dander, fur or urine; manual handling injuries when lifting or restraining animals; slips/trips on contaminated surfaces. Exposure to animals capable of causing fatality during work, research, fieldwork, placements, private residences or public environments. Vehicle collision, loss of control, rollover or secondary incidents caused by animals entering roadways or attempts to avoid animals whilst driving or operating mobile plant.	Elimination: Avoid unnecessary animal handling or work with aggressive animals where possible; minimise exposure to animals capable of causing serious harm; avoid high-risk travel periods (e.g. dusk/dawn) where practicable. Substitution: Use models, videos, remote observation or samples instead of live animals where practicable; use lower-risk species or handling methods where feasible. Isolation (includes Critical Controls): Pens, barriers, raceways and exclusion zones to separate people from animals; designated animal-only areas; ensuring animals are controlled, restrained or isolated prior to entering private residences or work areas; separation of personnel from vehicle–animal interaction zones. Engineering (includes Critical Controls): Appropriate restraint systems, crushes, gates and handling equipment; non-slip flooring; mechanical aids for lifting animals; ● CC05 Fit-for-purpose vehicles allocated based on task, role and region; environmental or equipment design to reduce unpredictable animal contact. Administrative Controls (Critical

		and Supporting): Animal handling competencies; trained and approved handlers for high-risk animals (e.g. snake handlers); standard procedures for handling, feeding and cleaning; vaccination programs (e.g. Q fever); hygiene rules (no food/drink in animal areas); housekeeping and waste management; fieldwork risk assessments; ● CC03 pre-entry biological hazard verification using approved database; communication with property owners to confirm animals secured prior to entry; journey management planning including avoidance of high animal-risk travel conditions; awareness training and discouraging unnecessary interaction with animals. PPE (Critical where exposure cannot be eliminated): Gloves, boots, overalls, eye/face protection as required; ● CC01 Mandatory Australian Standard PPE for remote fieldwork (long pants, long sleeve breathable shirt, safety boots, waders where required); ● CC02 PPE for carcass handling/dissection including gloves, eye protection, P2 masks and protective clothing; ● CC04 stinger suits in tropical waters where required. Consequence Mitigation / Supporting Controls: ● CC06 Employees or students with known severe allergies carry EpiPens during remote work; ● CC07 first aid preparedness including snake-bite kits and trained responders; use of animal deterrents where appropriate.
Aviation	Helicopter or fixed-wing operations for fieldwork or charter; rotor wash and loose objects; strike or collision with aircraft or ground equipment; loading/unloading in propeller or rotor arcs; noise exposure; crash or hard landing; fuel handling and refuelling hazards; mechanical failure;	Elimination: Avoid air travel where safer ground transport is reasonably practicable; avoid unnecessary low-altitude or high-risk operations where feasible. Substitution: Use lower-risk

	fatigue; human error; propeller interaction on ground; fuel-related fire; incorrect weight and balance; fuel starvation; low and slow flying; collision with drones; forced landing and drowning risk.	transport modes (road/boat) where feasible. Isolation: Designated loading zones outside rotor/prop arcs; exclusion zones around aircraft; secure baggage/cargo; adherence to exclusion zone rules; separation of personnel from operating aircraft and rotating components. Engineering (includes Critical Controls): Certified aircraft and safety systems; properly maintained landing sites; hearing protection-compatible headsets; ● CC02 Minimum Equipment List — aircraft fitted with required minimum equipment for intended operation. Administrative Controls (Critical and Supporting): ● CC01 Approved aircraft operator with valid Air Operator Certificate; use only approved operators compliant with aviation regulations; pre-flight risk assessment and flight planning; passenger and cargo briefings; weather and visibility checks; fuel handling procedures; emergency response planning and drills; induction into SCU WHSMS and contracted operator SMS; nomination of Control Owner responsible for aviation risk oversight and training (Managing Contracted Aviation Risk); compliance with instructions from air crew; adherence to adverse weather warnings (avoid deliberate operation in unsafe weather). PPE: Hearing protection/headsets; lifejackets/PFDs when flying over water; appropriate footwear and protective clothing.
Asbestos Exposure	Disturbance of asbestos-containing materials during maintenance, drilling, cutting, or demolition; airborne asbestos fibres; uncontrolled access to contaminated areas; disposal of asbestos waste.	Elimination: Remove asbestos-containing materials where reasonably practicable under controlled conditions. Substitution: Use asbestos-free products and materials in new works. Isolation: Asbestos registers and labelling;

		restricted access to ACM areas; enclosures and barriers during work. Engineering: Negative-pressure enclosures; HEPA-filtered vacuum systems; appropriate tools and water suppression. Administrative: Asbestos management plan; prohibition on unauthorised disturbance; licensed assessors/removalists only; task-specific risk assessments and permits; air monitoring and clearance certificates; compliant waste disposal. PPE: Respiratory protection suitable for asbestos; disposable coveralls; gloves, and eye protection where required.
Biological Agents	Exposure to biological materials, infectious diseases or viruses that may cause serious illness or fatality, including exposure to blood, urine, faecal matter, effluent samples, soil samples, animal products, animal carcasses, zoonotic diseases, pathogenic bacteria, viruses, fungi, parasites, prions, allergens, irritants or biological toxins. Exposure pathways include contact, inhalation, ingestion, splashes, penetrating injuries, needlestick or sharps injuries, vector transmission, contaminated surfaces or environments, open wounds or cuts, standing or stagnant water, PC2 laboratory exposure, and exposure in field, placement, laboratory, private residence or public-premises settings where biological hazards may be present. Individual vulnerability, including comorbidities or other health factors, may increase the severity of biological exposure.	Elimination: Avoid work with biological agents, infectious materials or contaminated environments where reasonably practicable; use existing data, remote methods, non-infectious materials or non-biological alternatives where suitable. Substitution: Use lower-risk organisms, attenuated strains, non-pathogenic materials, preserved specimens or lower-risk field methods where suitable. Isolation (Critical and Supporting Controls): Containment facilities at the appropriate Physical Containment (PC) level; restricted access to laboratories and high-risk areas; physical separation of clean and contaminated areas; containment of infectious materials; quarantine/segregation arrangements; secure storage and transport of biological materials; ● CC02 Prohibitive entry into standing water when there are

		open cuts, unless wearing waterproof bandages and waders. Engineering (Supporting / Non-Critical Controls): Biosafety cabinets when working with known hazardous biological materials; ventilation and containment systems; sharps safety devices; sealed centrifuge rotors; decontamination equipment; hands-free handwashing where required; specialised equipment used where biological substances are present, stored, maintained and tested to Australian Standards; PC2 laboratory infrastructure subject to regular building assessments to ensure fittings and structures comply with Australian Standards. Administrative Controls (Critical and Supporting): Biological risk assessments; approved biosafety procedures/SOPs; training and induction on handling potentially infectious materials; supervision; hygiene and decontamination procedures; spill response; waste management; transport controls; incident reporting; medical declaration/suitability questionnaire for SCU employees and students where required; monitoring of workers/students with increased vulnerability; specified action as per the biological database to ascertain the potential presence of biological hazards or viruses before entering premises (Non-Critical); ● CC01 Risk-based vaccination of SCU employees and students dependent upon role; ● CC03 Risk-based vaccination of SCU employees and students dependent upon role. PPE: Gloves, laboratory coats/gowns, eye/face protection, masks or respirators where required, waterproof dressings, waders and other exposure-specific PPE. Monitoring/Review: Review vaccination records, suitability/medical declaration records, biological database checks,
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Boating	Capsize, swamping, collision, grounding or vessel breakdown; person overboard, drowning or immersion; propeller strike or entanglement; slips, trips and falls on wet or moving decks; adverse weather, sea state, tides or currents; poor visibility or navigation error; vessel instability, overloading or poor load restraint; fuel, battery, fire or explosion hazards; failed communications, emergency equipment or accountability systems; interaction with other vessels, swimmers, divers or marine fauna.	Elimination: Avoid boating where land-based, shore-based or remote methods are reasonably practicable; cancel or defer work in unsafe weather, sea state, tide or visibility conditions. Substitution: Use safer vessel types, suitable launch sites, lower-risk routes, approved commercial operators or alternative sampling/inspection methods where feasible. Isolation (includes Critical Controls): Designated passenger areas; exclusion from hazardous deck zones, propellers and moving parts; separation of fuel storage/refuelling from ignition sources; safe access/egress using fit-for-purpose gangways at marinas and pontoons. Engineering (includes Critical Controls): Seaworthy vessels; adequate buoyancy, stability, load restraint, non-slip decks and railings; required safety, navigation, communication, fire, bilge and emergency equipment. ● CC02 Licensed vessels and AMSA-compliant commercial operators only. ● CC04 Pre-departure checks confirming safety equipment is present and accessible and vessel systems are operational. ● CC06 Vessel loaded within capacity and stability requirements. Administrative Controls (Critical and Supporting): Field trip and boating risk assessments; vessel safety management system or vessel-specific procedures; qualified/skilled coxswain and competent crew; passenger briefings; journey/voyage plans with emergency contacts; supervision and accountability; person-

		overboard, overdue vessel and emergency response procedures; safe refuelling procedures; compliance with boating procedures; proper storage and handling of hazardous substances such as fuel and oils. ● CC03 Weather alerts/conditions checked before and during work in open bodies of water. PPE (Critical where exposure cannot be eliminated): Suitable footwear; sun protection; wet-weather, thermal and task-specific protective clothing. ● CC01 Personal flotation devices (PFDs) worn where required by law and for vessels less than 6 m. Consequence Mitigation / Critical Controls: ● CC05 Personal location beacons and EPIRBs carried during remote or isolated water activities. ● CC07 Marine Commercial F-scale first aid kit readily accessible when working on water. Monitoring/Review: Review vessel records, operator credentials, pre-departure checks, weather decisions, incident/near-miss reports, emergency drills, safety equipment maintenance and corrective actions.
Chemicals	Hazardous chemicals (corrosive, toxic, irritant, carcinogenic, sensitising); flammable and combustible liquids; compressed and liquefied gases; dusts, fumes, vapours and mists; reactive or incompatible substances; chemicals that may cause fire, explosion or environmental harm.	Elimination: Eliminate non-essential chemicals and processes. Substitution: Replace hazardous chemicals with safer alternatives or lower concentrations. Isolation: Segregation of incompatible chemicals; dedicated chemical stores; isolation of chemical processes from people. Engineering: Ventilation and fume cupboards; spill containment; safety showers and eyewash stations; explosion-proof equipment where required. Administrative: Chemical registers; access to SDS and correct labelling; task-based risk assessments and SOPs; decanting and waste disposal procedures; emergency spill response plans and training. PPE: Eye/face protection,

		chemical-resistant gloves, lab coats/aprons, respiratory protection where required.
Compressed Gases and Cryogenics	High-pressure cylinders and fittings; cylinder rupture or projectile hazards; leaks leading to oxygen displacement or toxic exposure; cryogenic liquids (e.g. liquid nitrogen) causing cold burns or embrittlement; over-pressurisation of vessels; transport and storage hazards.	Elimination: Remove unused or obsolete gas cylinders and cryogenic systems. Substitution: Use smaller cylinders, less hazardous gas types or alternative technologies where possible. Isolation: Gas cages and secure storage; restricted access to gas stores; segregation of incompatible gases. Engineering: Cylinder restraints; pressure relief devices; appropriate regulators and hoses; ventilation and oxygen monitoring; cryogenic-rated vessels. Administrative: Procedures for transport, storage, change-over and decanting; inspection/maintenance schedules; training in gas and cryogen handling; emergency response for leaks and spills. PPE: Safety glasses/face shields; insulated gloves and aprons for cryogenics; closed footwear; respiratory protection where indicated.
Confined Spaces	Oxygen-deficient or oxygen-enriched atmospheres; toxic or flammable atmospheres; engulfment in liquids or free-flowing solids; entrapment or restricted entry/exit; configuration that impedes rescue; employees unaware they are entering confined spaces; untrained emergency entry; irrespirable atmosphere; extreme heat; fatal concentrations of airborne contaminants (gases, vapours, dusts); ignition/explosion risk; electrocution; drowning or engulfment	Elimination: Redesign work to avoid confined space entry where practicable (e.g. external cleaning methods, use of drones or remote cameras). Substitution: Use less hazardous substances or processes to reduce atmospheric risk. Isolation (Critical Controls included): Physical isolation from contaminants; barriers and signage; ● CC05 isolation and lockout/tag-out of plant, services and stored energy; erection of confined space entry signs ● CC07; controlled access and restricted entry. Engineering (Critical Controls included): Ventilation systems; atmospheric monitoring equipment ● CC03; retrieval systems (tripods, winches); intrinsically safe equipment where required; purging or ventilation of contaminants ●

		CC08; ensuring flammable atmosphere maintained below exposure limits where practicable. Administrative Controls (Critical and Supporting): Confined space register and identification processes; ● CC01 confined space risk assessment and entry permit; trained standby person and communication ● CC06; emergency rescue planning and drills; awareness training to identify confined spaces; nationally accredited confined space competency requirements; review of confined space database; use of external emergency services where appropriate (e.g. QFRS); supervision and safe work procedures. PPE (Critical where required): Respiratory protection including air-supplied RPE ● CC02; protective clothing; harnesses and retrieval equipment; gloves and eye protection as required. Consequence Mitigation / Critical Controls: Administration ● CC09 Confined space emergency plan, including rescue and first aid procedures.
Diving	Drowning; decompression sickness and barotrauma; entanglement in nets, lines or underwater structures; separation from dive partner or vessel; marine animal hazards (sharks, crocodiles, jellyfish, stingrays); vessel strike or propeller injury; equipment failure; cold stress; poor visibility; severe weather events; undiagnosed or undisclosed medical conditions; lack of diving competency; falling from vessels including rafts or boats; being left behind in the water.	Elimination: Avoid diving where alternative methods (ROVs, pole sampling, or remote inspection) are reasonably practicable. Substitution: Use snorkelling, surface-supplied air, or other lower-risk methods where appropriate. Isolation (includes Critical Controls): Exclusion zones for vessel traffic; separation from underwater hazards; spotter utilised where crocodile presence is possible ● CC04; environmental limits applied (sea state, visibility). Engineering (includes Critical Controls): Well-maintained diving equipment; redundancy in gas

		supply; signalling devices; appropriate exposure suits; approved equipment checks and maintenance integrated into dive proposal and risk assessment ● CC05. Administrative Controls (Critical and Supporting): Compliance with diving standards and codes; ● CC01 approved dive plan before diving; ● CC02 current medical fitness certification in accordance with AS/NZS 2299.1; dive proposal and risk assessment including buddy system and equipment checks ● CC05; trained surface support person; communication procedures and lost-diver protocols; risk assessment training; monitoring of environmental conditions. PPE (Critical where exposure cannot be eliminated): Wetsuits/drysuits, gloves, hoods; masks and fins; buoyancy compensators; thermal protection; ● CC03 full-length stinger suits where marine stinger risk exists; approved shark deterrents where shark risk is identified. Consequence Mitigation / Critical Controls: Administration ● CC06 Marine commercial F-scale first aid kit, oxygen provision, and rescue equipment readily accessible.
Digital Systems (Psychosocial)	Poorly designed digital workflows increasing job demands; excessive monitoring or surveillance creating pressure or stress; algorithm-driven work allocation increasing pace or reducing autonomy; unclear expectations created by digital tools; constant notifications and interruptions; multiple systems creating conflicting instructions; poorly managed digital change introducing uncertainty; lack of consultation during implementation; inadequate training or support; automation or AI creating decision ambiguity or accountability confusion; digital tools increasing workload volume; inability to	Elimination: Remove unnecessary digital processes or duplicative platforms; eliminate unreasonable digital monitoring or performance pressures; redesign work to remove excessive digital administrative burden. Substitution: Replace complex or poorly designed systems with simpler, user-centred platforms; use digital tools that support workflow rather than increase administrative load.

	disconnect due to digital connectivity; poor usability causing frustration, fatigue or cognitive overload.	Isolation: Configure systems to reduce notification overload; limit exposure to monitoring dashboards when not required; separate automated recommendations from decision-making authority when human judgment is required. Engineering (Work Design/System Design): Human-centred system design; usability testing; configurable workflows; clear interfaces; workload management features; accessibility design to reduce cognitive strain. Administrative: Consultation during system design and rollout; psychosocial risk assessment for digital change; clear role definitions and expectations; structured change management; training and competency support; guidance on appropriate use of AI or automated outputs; workload monitoring; governance oversight of digital work impacts; feedback loops and continuous improvement processes. Worker Support: Digital wellbeing practices; screen-break guidance; ergonomic workstation setup; management support and escalation pathways where digital workload becomes excessive.
Electrical	Electric shock from faulty equipment or contact with live parts; arc flash and burns; fires from overloaded or damaged circuits; contact with overhead or underground services; unsafe use of portable electrical equipment and extension leads; working with unfamiliar equipment of unknown status; equipment failure from poor design or aging; uncertified equipment; exposure to alternate supply (e.g. solar); failure to isolate or test for dead; arc flash events; energised shock path; underground or overhead service strike; incorrect polarity testing.	Elimination: Remove redundant or unsafe electrical installations and equipment; avoid energised work where practicable. Substitution: Use low-voltage or battery-powered tools where practicable. Isolation (Critical Controls included): ● CC01 Electrical isolation — de-energisation, lockout/tag-out and prevention of unauthorised access; barriers and covers over live parts; ● CC05 exclusion zones and safe distances around energised equipment and overhead/underground services.

		Engineering (Critical Controls included): ● CC06 Residual Current Devices (RCDs) for circuits and equipment; compliant electrical design and installation; correct earthing and bonding; equipment guarding; proximity testing of energy sources ● CC04; certified equipment; appropriate battery storage; provision of underground cable records; correct labelling of switchboards. Administrative Controls (Critical and Supporting): Licensed electricians for electrical work; inspection and testing to AS3760 ● CC02; safe-use procedures for portable equipment; permit systems for work near live equipment; training and supervision including induction, refresher and emergency rescue training; visual confirmation and switching checks; obtaining expert advice (e.g. supply entity, ESO, Before You Dig); database review for service hazards; minimum two-person requirement for live testing; planning for underground or overhead service risks. PPE (Critical where exposure cannot be eliminated): ● CC03 appropriately rated PPE for energised work and arc flash protection (face shield, insulated gloves, arc-rated clothing, matting); safety footwear and eye protection. Consequence Mitigation / Critical Controls: Administration ● CC07 Low Voltage Rescue and CPR capability in accordance with national competency requirements.
Emergency Events	Campus fire, explosion, or hazardous materials release; extreme weather events (storms, floods, bushfires); medical emergencies; security threats, including active aggressor or bomb threats; utility failures or building outages; compound emergencies involving multiple concurrent	Elimination: Remove or minimise ignition sources and hazardous materials where practicable; avoid exposure to extreme weather hazards; restrict activities during severe conditions.

hazards. Risks include heat stroke; bushfire entrapment; drowning during flash flooding; lightning strikes; falling trees; severe storms/cyclones; structural collapse post-weather events; medical emergencies; search-and-rescue situations; chemical spills, fires, and explosions; campus lockdown; air contamination; improper evacuations.

Substitution: Use safer processes or materials that reduce emergency potential.

Isolation (includes Critical Controls): Fire compartmentation; separation distances; restricted access to high-risk areas; requirement for personnel to remain in adequate shelter during extreme weather ● CC04; prohibition on driving or walking through floodwaters ● CC03.

Engineering (includes Critical Controls): Fire detection and suppression systems; emergency lighting; alarms and PA systems; backup power; campus tree maintenance and audit programs ● CC05; building maintenance to maintain structural integrity; cooling/shade provisions ● CC02; provision of hydration infrastructure ● CC01; AED/defibrillators available on campus.

Administrative Controls (Critical and Supporting): Emergency management plans and local procedures; trained wardens and first aiders; drills and exercises; liaison with emergency services; business continuity planning; compliance with weather alerts and warnings; critical incident response plans (SCIM); evacuation centre flood planning; bushfire management plans; heat stress assessment tools; inspection/testing of emergency equipment; post-heat stress recovery protocols.

PPE: Fire and spill response PPE; heat exposure PPE (long sleeves, hats, etc.); first aid PPE.

Consequence Mitigation / Critical Controls: Administration ● CC06 First aid response applied as per training; ● CC07 affected persons placed in a cool environment with

		hydration; emergency medical response capability.
Emerging Technologies	Use of new or rapidly changing technologies such as drones, robotics, autonomous vehicles, battery energy storage systems, 3D printers, and laser cutters; uncertainty about long-term health effects; software or control system failures leading to unsafe operation.	Elimination: Avoid adoption of unnecessary technologies that introduce significant new risks. Substitution: Choose safer technology types or platforms with alternatives. Isolation: Guarding and barriers around robots and autonomous equipment; geofencing for drones; restricted access zones. Engineering: Interlocks, emergency stops, and fail-safe design; shielding (e.g., for lasers); system redundancy and automatic shutdown. Administrative: Technology-specific risk assessments; pilot phases and trials; manufacturer instructions and standards; change-management and training for operators/supervisors; software change control and cybersecurity where safety-critical; incident/near-miss review and continuous improvement. PPE: Eye protection (e.g., laser-rated), hearing protection, gloves or other PPE as required by the technology.
Ergonomic Hazards	Repetitive or forceful movements; sustained or awkward postures; poorly designed or adjusted workstations; manual handling of people, animals, or loads; inadequate task or job design; use of tools or equipment that require excessive force.	Elimination: Remove unnecessary tasks or handling steps; automate manual handling where practicable. Substitution: Use lighter-weight items, smaller pack sizes, or ergonomically designed tools and equipment. Isolation: Physically separate high-exertion tasks from other activities to limit exposure for individuals. Engineering: Adjustable workstations and seating; mechanical aids (trolleys, lifters, hoists); redesign of layout to reduce reaching, twisting, or carrying. Administrative: Hazardous manual task risk assessments; task rotation and micro-breaks; workload planning; training in safe postures and techniques; ergonomic self-assessment tools. PPE: Supportive footwear; task-specific gloves or braces where advised (not as primary control).

External Actors and Campus Security	Unauthorised access or trespass; theft and property damage; stalking or harassment by external parties; violence or aggression from members of the public; protest activity; threat to personal safety travelling to and from campus.	Elimination: Remove or reduce cash-handling and other high-risk practices where possible. Substitution: Use online or remote services instead of high-risk in-person interactions where appropriate. Isolation: Secure access control (swipe cards, locks); physical barriers and secure storage; safe rooms and separate staff-only areas. Engineering: CCTV, lighting, controlled entry points; duress alarms; intercoms; secure carparks. Administrative: Security patrols and incident response procedures; visitor sign-in and contractor management; personal safety guidance; liaison with police; reporting mechanisms via Security and Riskware. PPE: Not usually primary – may include body-worn cameras or protective equipment for security officers where required.
Falls	Falls from height when working on roofs, ladders, scaffolds, elevated work platforms or edges; falling through fragile surfaces; objects falling from height onto people below. Causes include: fall from unprotected edges (roofs, scaffolds, mezzanines, voids, loading bays, trees); non-compliant equipment; not-fit-for-purpose equipment; ladder falls; transition between structures; climbing onto vehicles or plant; dropped objects; ceiling space falls; unauthorised access to height; scaffold failure; EWP/scissor lift failure.	Elimination: Design out need to work at height where practicable (ground-level access, remote inspection); use drones or wireless cameras to remove exposure; avoid access to height where work can be completed from ground. Substitution: Use platforms, EWPs or engineered access systems instead of ladders where safer; use certified scaffolding instead of temporary or improvised systems. Isolation (Critical Controls): ● CC01 Edge protection or fall prevention systems implemented where working near open edges; ● CC04 exclusion zones established to prevent persons or plant entering areas beneath work at height; swipe-card controlled access restricting unauthorised access to height areas (Non-Critical). Engineering (Critical Controls): ● CC02 Preventive maintenance and structural integrity assurance of height equipment; compliant anchors and fall-arrest systems;

		secured tools and materials; temporary work platforms and scaffolds; ● CC06 crawl boards for ceiling work; transition systems when moving between structures ● Critical; regular inspection of arborist ropes (Non-Critical). Administrative (Critical and Supporting): Working-at-heights procedures and permits; ladder use rules; ● CC05 approved portable ladder requirements (secured, correct angle, three-point contact, non-conductive near electrical); competency-based training and supervision; certified scaffolders with 30-day sign-off (Non-Critical); inspections of anchors, ladders, scaffolds, and EWPs. PPE (Critical Controls): ● CC03 fall arrest/restraint systems tethered to approved anchor points; harnesses, lanyards, helmets, protective footwear. Consequence Mitigation / Recovery Controls: Administrative ● CC06 fall arrest rescue plan in place prior to work; ● CC07 first aid response capability.
Fatigue	Excessive hours of work, night work or irregular shifts; inadequate breaks and recovery time; driving long distances for work; mentally demanding tasks requiring sustained concentration; cumulative workload and stress.	Elimination: Remove unnecessary after-hours work and excessive overtime; minimise long solo drives where possible. Substitution: Use alternative transport (e.g., flights instead of very long drives) or share driving. Isolation: Shift design to avoid consecutive high-fatigue tasks for the same individual. Engineering: Fatigue-related alerts or monitoring systems where relevant (e.g. in vehicles). Administrative: Fatigue risk management procedures; maximum work/drive hours and minimum breaks; roster and workload design; journey planning; flexible work options; training on fatigue recognition and reporting; managers adjusting duties if fatigue

		is identified. PPE: Not a primary control (PPE is not effective against fatigue).
Fieldwork Hazards – Environmental and Biological	Exposure to extreme weather, heat or cold; difficult or unstable terrain; remote locations with delayed emergency response; dangerous flora and fauna (bites, stings, allergies); water crossings and flood risk; vector-borne diseases.	Elimination: Avoid the highest-risk locations or seasons where practicable. Substitution: Use remote sensing, existing data or local partners instead of direct field exposure where possible. Isolation: Establish exclusion zones around unstable ground or high-risk flora/fauna; avoid hazardous zones (e.g. floodways). Engineering: Suitable vehicles and equipment; communication devices (e.g. satellite phones, PLBs); shelters and shade. Administrative: Fieldwork risk assessments and approvals; weather and conditions checks; communication and check-in plans; local inductions; emergency response planning and rescue routes. PPE: Sun protection (hats, sunscreen), boots, insect repellent, long sleeves/pants, gloves and other environment-specific PPE.
Fire Hazards	Ignition of flammable liquids, gases or vapours; accumulation of combustibles and waste; hot-work activities (welding, grinding, cutting); electrical faults; bushfire exposure around campuses and field sites.	Elimination: Remove unnecessary flammable materials and ignition sources; cease high-risk practices where possible. Substitution: Use non-flammable or lower-flammability products and processes. Isolation: Segregated storage of flammables; fire compartments and separation distances; hot-work exclusion zones. Engineering: Fire detection and alarm systems; sprinklers; fire extinguishers; intrinsically safe equipment in hazardous areas; fire-resistant construction. Administrative: Hot-work permits; housekeeping and waste controls; maintenance of electrical systems; bushfire plans (triggers for closure/evacuation); training in fire response and extinguisher use. PPE: Fire-retardant clothing where needed; gloves, eye/face protection and respiratory protection for fire/spill response.
Hazardous Substances	Exposure to cleaning agents, pesticides, laboratory reagents and other hazardous	Elimination: Remove unnecessary hazardous substances; eliminate

	substances via inhalation, skin contact or ingestion; corrosive burns; sensitisation; chronic health effects including carcinogenicity and reproductive toxicity. Causes include inhalation or skin exposure; incorrect handling, storage or labelling; deliberate misuse; incompatible chemical mixing; unmanaged medical vulnerabilities; allergic reactions; emerging technology hazards (e.g. lithium batteries); flammable atmospheres; asphyxiation; explosive atmospheres; equipment failure.	non-essential chemical tasks; avoid use where safer alternatives exist. Substitution: Use less hazardous products (e.g. low-VOC cleaners, less toxic reagents); substitute safer processes where practicable. Isolation: Dedicated storage areas; segregation of incompatible substances; secured chemical storage; enclosed transfer systems; designed work areas built for hazardous substance use; restricted access to hazardous materials. Engineering (Critical Controls included): ● CC01 atmospheric testing and monitoring using calibrated devices; ● CC04 use of fume cupboards and local exhaust ventilation; ● CC05 emergency stops and shut-off valves on relevant equipment; spill containment systems and bunding; engineered exhaust ventilation; fit-for-purpose plant and equipment. Administrative Controls (Critical and Supporting): Chemical registers and SDS management; safe-use and decanting procedures; training in handling, storage and disposal; occupational hygiene risk assessments; review of databases before entry to identify hazardous substances; transportation procedures; emergency planning and liaison with external emergency services; health monitoring where required. PPE (Critical where exposure cannot be eliminated): ● CC02 respiratory protection as required; ● CC03 mandatory PPE including disposable coveralls, gloves, eye/face protection, protective clothing, and task-specific PPE (including asbestos-related protection where applicable). Consequence Mitigation / Recovery
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		Controls: Emergency plans and emergency equipment (eyewash stations, fire extinguishers); spill response capability; first-response actions following exposure.
Hot and Cold Exposure	Hot environments: heat stress, heat exhaustion, heat stroke (medical emergency), dehydration, reduced concentration, fatigue, burns from hot surfaces, slips from sweat/condensation. Cold environments: hypothermia, frostbite/cold burns, reduced dexterity and grip strength, slower reaction times, impaired judgment, slips on ice/frost/condensation, cold stress fatigue, equipment failure due to extreme cold.	Elimination: Avoid work in extreme temperatures where possible (e.g., reschedule non-essential tasks). Substitution: Use alternative methods or locations that reduce temperature exposure. Isolation: Enclosed/conditioned workspaces; separation from radiant heat sources or cold rooms. Engineering: Shade structures, ventilation, fans, air-conditioning; insulation of hot/cold surfaces; heating in cold areas; wind breaks; temperature-controlled work areas. Administrative: Heat/cold risk assessments; scheduling for cooler/warmer times; rest–work cycles; hydration and warm-up breaks; task rotation; buddy systems; training on heat/cold stress and acclimatisation. PPE: UV-protective clothing, hats, sunscreen, cooling vests; thermal layers, insulated gloves, socks, boots, waterproof outerwear, head protection in cold.
Injury and Illness (including pre-existing conditions, gyms, pools, cafés and field work)	Exacerbation or aggravation of pre-existing medical conditions (e.g., musculoskeletal disorders, asthma, cardiovascular conditions, allergies, diabetes); strains, sprains or fatigue due to physical activity in gyms or manual tasks; slips, trips and falls in wet areas such as pools or kitchens; burns or scalds from hot surfaces or liquids in cafés; drowning or near-drowning risks in pools; allergic reactions or illness from food handling or environmental exposures; heat stress, dehydration or fatigue during field work; insect bites or environmental exposure; reduced capacity to respond to hazards due to illness or medication; delayed treatment leading to medical complications.	Elimination: Avoid allocating tasks that may aggravate known medical conditions where reasonably practicable; remove hazardous activities where the risk cannot be adequately controlled. Substitution: Use alternative tasks, equipment, or work methods that reduce physical strain or exposure to environmental conditions. Isolation: Restrict access to high-risk areas where individuals may be particularly vulnerable (e.g., pool chemical storage, commercial kitchens, hazardous field sites). Engineering: Non-slip flooring and drainage in wet areas; ergonomic equipment in gyms and workspaces; mechanical aids for lifting; temperature controls; adequate lighting and safe walkways; pool safety systems and barriers; emergency communication systems

		for field work. Administrative: Health and fitness considerations in task allocation; confidential disclosure and support processes for pre-existing conditions where relevant; risk assessments for gym use, aquatic facilities, café operations and field work; supervision and training; emergency response and first aid arrangements; field work planning; fatigue management; incident reporting; clear procedures for managing illness or medical events. PPE: Slip-resistant footwear, gloves, eye protection, sun protection, weather-appropriate clothing for field work, and other task-specific PPE as required.
Lithium Batteries	Thermal runaway leading to fire or explosion; ignition from physical damage, puncture, swelling or overheating; short-circuit causing rapid heat generation; release of toxic gases during failure or fire; electrical shock; battery electrolyte leaks causing chemical burns; ignition during charging due to faulty chargers or incompatible equipment; fire spread from stored batteries; risks associated with transporting or disposing of damaged/degraded batteries.	Elimination: Remove unsafe or unnecessary lithium battery devices; discontinue use of high-risk battery types. Substitution: Use lower-risk chemistries (e.g., LiFePO4) or certified battery systems where practicable. Isolation: Fire-resistant cabinets or storage boxes; quarantine of damaged or swollen batteries in dedicated containers; designated charging areas away from exits and occupied spaces. Engineering: Temperature-controlled storage; ventilation around charging areas; approved chargers with overcharge/thermal protection; fire detection; suitable extinguishing media for lithium fires. Administrative: Battery inspection schedules; rules against unattended charging and unauthorised chargers; transport and disposal procedures; emergency response instructions and drills; staff training on failure signs and response. PPE: Gloves and eye protection when handling damaged or leaking batteries; respiratory protection if fumes or smoke are present; insulated gloves where an electrical contact risk exists.

Occupational Violence and Aggression	Violence or aggression towards SCU employees, students, visitors or contractors, including physical assault or threats from individuals experiencing mental ill-health, intoxication or malicious intent; armed individuals entering campus with intent to cause harm; remote or isolated workers being threatened or attacked; students or staff exposed to higher-risk environments during placements or fieldwork; domestic violence threats affecting employees working remotely or from home; physical aggression during emergency evacuations or large-scale events; weaponisation of items available on campus; road rage or public interactions escalating into violence; situations involving poor environmental security, lack of supervision, inadequate access control or insufficient situational awareness.	Elimination: Remove unnecessary exposure to known high-risk interactions where practicable; redesign work processes to minimise lone work or exposure to potentially violent situations. Substitution: Use remote engagement or alternate service delivery where face-to-face interaction presents elevated risk. Isolation (Critical Controls included): ● CC01 duress alarms installed and accessible; ● CC04 controlled campus access systems; physical barriers in student-facing environments; secure storage of tools or items that could be weaponised. Engineering (Critical Controls included): ● CC03 building security assessments with installation and maintenance of security equipment; improved lighting and environmental design for safety. Administrative Controls (Critical and Supporting): ● CC02 high-risk persons database and response actions; ● CC05 employee pairing for high-risk interactions or remote work; campus safety awareness training; de-escalation training; weekend security protocols; oversight of tenant security arrangements; campus lockdown procedures; security patrols; security escorts; relocation options for domestic violence situations. PPE: Situationally applied personal safety devices where required. Consequence Mitigation / Recovery Controls: Administrative ● CC06 trained first aid officers and emergency response capability.
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Person-Vehicle and Machinery Interaction	Pedestrians struck or crushed by vehicles, forklifts, mobile plant or moving machinery; people entering exclusion zones; poor visibility or reversing; entanglement in moving parts; collision or crushing injuries from reversing vehicles; limited visibility or blind spots; unexpected movement in shared work areas. Causes include entanglement in energised plant; uncontrolled operation; release of stored energy; loose clothing/hair entanglement; inspection of live plant; blunt trauma from vehicle strike; lack of specialist knowledge; tipping or rollout; asphyxiation from plant emissions; explosion; entrapment between moving and stationary objects.	Elimination: Remove or minimise vehicle and mobile plant movement in pedestrian areas; redesign workflows to reduce interaction between people and moving plant. Substitution: Use lower-risk equipment or alternative handling methods where practicable. Isolation (Critical Controls): ● CC01 Isolation and lockout of all energy sources during inspection, repair, maintenance, or cleaning; ● CC02 Establish and maintain exclusion zones, dedicated walkways, barriers, and controlled access arrangements (Non-Critical). Engineering (Critical Controls): ● CC03 Preventive maintenance and inspection of plant critical systems, including guarding, emergency stops and warning devices; speed limiting; reversing cameras/alarms; guarding of moving parts. Administrative Controls (Critical and Supporting): ● CC04 Spotter safety; traffic management plans; operator licensing and competency verification; competency-based inductions; safe work procedures aligned with manufacturer instructions; plant lifecycle risk management; quick reference guidance for exposure risks. PPE: High-visibility clothing; protective footwear; hearing and eye protection where required. Consequence Mitigation / Recovery Controls: ● CC05 First aid response capability.
Psychosocial	High or low job demands; low job control; poor support; poor organisational change management; poor role clarity; poor workplace relationships; bullying, harassment, sexual harassment, gender-based harassment or violence; traumatic events or material; remote or isolated work; violence and aggression; fatigue;	Elimination: Remove unreasonable job demands, unsafe systems of work, known sources of violence or repeated harmful behaviours where reasonably practicable. Substitution: Redesign work, resourcing, role allocation, workload, communication channels

	poor physical environment; inadequate reporting, response or consultation processes; retaliation or unsafe disclosure pathways. https://www.scu.edu.au/staff/hr-services/workplace-health-and-safety/psychosocial/	and reporting pathways to reduce psychosocial risk. Isolation: Separate affected persons from ongoing harmful interactions or unsafe environments where required, while maintaining procedural fairness and support. Engineering/System controls: Safe campus and accommodation design, secure work areas, duress and communication systems, workload systems and safe digital workflows. Administrative: Psychosocial risk assessment, consultation, prevention plans, respectful behaviour expectations, supervisor training, safe reporting and response processes, trauma-informed support, incident review and corrective actions. PPE: Not generally applicable except where physical security or emergency response PPE is required. Monitoring/Review: Monitor psychosocial hazards, reports, trends, consultation feedback, control effectiveness and recovery/support outcomes.
Lack of Oxygen	Asphyxiation risks caused by oxygen displacement in confined spaces, pits, tanks, plant rooms, laboratories or cold rooms; release of inert gases or cryogenic substances such as liquid nitrogen; work in poorly ventilated areas; failure or degradation of ventilation systems; malfunction or absence of oxygen monitoring sensors; failure of gas delivery systems including fittings, hoses or regulators; entry into environments where gas leaks have occurred; use of toxic or inert gases leading to oxygen displacement; failure of detection alarms or emergency shutdown systems; inadequate hazard awareness or uncontrolled access to oxygen-deficient environments.	Elimination: Remove or redesign processes that can displace oxygen where practicable; avoid unnecessary use of inert gases or cryogenic systems. Substitution: Use non-oxygen-displacing agents where practicable. Isolation: Restrict access to high-risk areas; secure gas systems; physically separate oxygen-displacing equipment; implement controlled entry procedures and signage (Non-Critical). Engineering (Critical Controls included): ● CC01 maintenance of ventilation systems in accordance with OEM requirements; ● CC02 installation and testing of low oxygen sensors; ● CC03 installation and monitoring of detection alarms; ● CC04

		emergency shut-off valves installed, maintained, and tested; leak testing of fittings and systems (Non-Critical). Administrative Controls (Critical and Supporting): Risk assessments; confined-space procedures where applicable; training in hazard recognition and emergency response; laboratory signage; emergency response planning across campuses. PPE: Respiratory protection where required, including supplied-air or SCBA for emergency response. Consequence Mitigation / Recovery Controls: ● CC05 first aid response capability; emergency response plans (Non-Critical).
Radiation	Exposure to ionising radiation from sealed or unsealed radioactive sources, X-ray equipment or accelerators; exposure to non-ionising radiation such as lasers and intense UV; scattered or reflected beams; incorrect handling or inadequate shielding; unknown radioactive sources introduced through uncontrolled procurement; inappropriate storage or handling of radiation sources; spills or discovery of unknown radioactive materials; exposure from handheld XRF devices or similar equipment; exposure to uranium or other radioactive materials; failure of monitoring or detection systems; insufficient governance or oversight of radiation activities.	Elimination: Remove unnecessary radiation sources; cease activities involving radiation where practicable; eliminate uncontrolled procurement pathways for radiation sources. Substitution: Use non-ionising methods or lower-intensity devices where appropriate (e.g., ultrasound or alternative analysis techniques). Isolation (Critical Controls included): Shielding and barriers; controlled and restricted access areas; beam enclosures; ● CC02 secure storage bunker with controlled access and security restrictions. Engineering (Critical Controls included): Interlocks; warning lights and alarms; collimation and shielding; laser safety design; timer controls; ● CC04 maintenance and monitoring of radiation equipment and detection devices; engineered containment and monitoring systems. Administrative Controls (Critical

		and Supporting): ● CC01 external audit and scan for unknown sources; ● CC03 personal exposure monitoring and dose records; ● CC05 qualified Radiation Safety Officer appointment; radiation safety program; licences/registrations; local rules and SOPs; training in radiation and laser safety; signage and labelling; quarterly inspections and internal audits; Radiation Safety Committee oversight; work unit induction training. PPE: Laser safety eyewear; UV protective clothing; gloves and protective clothing appropriate for radioactive materials handling. Consequence Mitigation / Recovery Controls: Emergency response procedures aligned with radiation safety program.
Pressurised Gas/Stored Energy	Unexpected release of stored energy from hydraulic, pneumatic, mechanical, electrical or gravitational sources; uncontrolled release of gas or stored pressure due to equipment failure, damaged cylinders, incorrect gas connections or mixed gas lines; implosion or explosion resulting from chemical reactions or pressurised vessels; unattended chemical reactions in closed systems; injection injuries from high-pressure gas or fluid; poisoning from gas exposure (e.g. CO, SO₂, CO₂); oxygen displacement; uncontrolled movement of plant or components; transport-related hazards involving pressurised cylinders; failure of hoses, fittings, regulators or containment vessels; lack of competency or inadequate maintenance leading to loss of containment or explosion.	Elimination: Design out stored-energy hazards where practicable; remove unnecessary pressurised systems or redesign processes to reduce stored-energy risks. Substitution: Use lower-pressure systems or safer mechanisms where practicable. Isolation (Critical Controls included): ● CC04: isolation and depressurisation of equipment prior to work using lockout/tagout procedures; physical barriers around high-risk components; exclusion zones during cylinder transport (Non-Critical). Engineering (Critical Controls included): ● CC01 structural integrity maintained across containment vessels, delivery lines and valves in accordance with Australian Standards; ● CC02 ventilation systems and fume cabinets where required; ● CC03 sensors and detectors installed and

		monitored; pressure relief valves maintained; blast shields; pressure testing of storage systems; airline gun protectors and hard covers; engineered containment systems. Administrative Controls (Critical and Supporting): Energy isolation procedures; maintenance and inspection schedules; competency requirements and training; correct storage and handling procedures; regulation of poisonous gases; ongoing inspection regime; transport controls for pressurised cylinders. PPE: Eye/face protection; gloves; protective clothing; safety footwear appropriate to pressurised systems work. Consequence Mitigation / Recovery Controls: Administrative ● CC05 emergency response procedures; fire containment systems (Non-Critical).
Lasers and Laser Products	Exposure to hazardous laser radiation, including direct eye or skin exposure, intra-beam viewing, specular or diffuse reflections, scattered beams, or magnified exposure through optical viewing aids. Hazards may arise from higher-risk Class 3R, Class 3B and Class 4 lasers, Class 1 systems containing embedded Class 3B or Class 4 lasers, unclassified, modified or inadequately labelled laser systems, inadequate beam control, uncontrolled access to laser controlled areas, or inadequate signage, training, supervision, SOPs or approvals. Associated non-beam hazards include electrical shock and stored energy, laser-generated fumes or air contaminants, fire or explosion, hazardous chemicals, cryogenic coolants, heat or cold exposure, noise, mechanical shock or vibration, beam misalignment and ergonomic hazards.	Elimination: Avoid laser use where the activity can be achieved by a safer non-laser method; remove or decommission unnecessary laser equipment only through the required LSO/HSW process. Substitution: Use lower-class, lower-power or enclosed laser systems where practicable; use the lowest practicable power, especially during alignment or testing. Isolation: Establish laser controlled areas where there is reasonably foreseeable risk of harm, particularly for Class 3 and Class 4 laser use; restrict access to nominated, trained and authorised persons; use beam enclosures/housings, beam stops, attenuators, barriers and flame-retardant screens; confine beams to the bench or controlled area; minimise reflective surfaces and separate lasers from flammable or combustible materials.

		Engineering: Protective enclosures/housings; fail-safe beam containment; interlocks or shutters; key-operated master controls for Class 3B and Class 4 lasers; emergency shut-off; warning lights and equipment labels; stable mounting to prevent misalignment; ventilation/local exhaust where fume or laser-generated air contaminants may be produced; electrical isolation and lockout/tagout controls for service or maintenance. Administrative Controls: Laser classification confirmed by the LSO for University-built or modified laser systems; registration/notification with HSW/LSO in accordance with SCU laser requirements; RSC/LSO/HSW approval where required before establishing new laser facilities or commencing higher-risk laser work; task-specific risk assessment before laser work and review after significant change, incident/exposure or scheduled review; local rules and SOPs for normal operation, alignment, emergency, maintenance and disposal; competency-based training, supervision and training records; equipment, approved user/operator, service, inspection and calibration records; signage and labelling for equipment, apertures and laser work areas; health monitoring and eye-examination arrangements where required. PPE: Laser eye protection selected for wavelength, maximum intensity and optical density; lab coats, gloves, face shields and skin protection where required; PPE for associated chemical, electrical, thermal, noise or other non-beam hazards. PPE is supplementary and must not be the only control. Consequence Mitigation / Recovery Controls: Immediate shutdown and isolation following suspected exposure or equipment failure; incident reporting and HSW/LSO
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		notification; eye examination where Class 3B or Class 4 exposure is suspected; first aid, emergency response and suitable firefighting/spill response equipment.
Remote and Isolated Work	Working alone or in locations distant from immediate assistance including home working, fieldwork, farms, remote campuses or isolated environments; delayed emergency response due to remoteness, environmental conditions or adverse weather; communication failures where mobile, satellite or radio services are unavailable; unsuitable or poorly maintained vehicles resulting in breakdown; vehicles not appropriate for terrain or climate; lack of recovery equipment leading to entrapment; working after hours in unoccupied locations; emergencies occurring without immediate assistance; increased exposure to violence or aggression when visiting homes or community locations; delayed rescue or medical treatment due to isolation or environmental hazards.	Elimination: Avoid high-risk work being performed alone where reasonably practicable; redesign work to reduce exposure to remote or isolated conditions. Substitution: Use team-based work, remote engagement, or alternative methods instead of solo visits where practicable. Isolation: Avoid high-risk locations where possible; arrange meetings in safer or public environments; and control access to isolated work areas. Engineering (Critical Controls included): ● CC01 mandatory lone worker communication devices (e.g., personal location beacon, satellite phone, EPIRB where required); vehicle safety equipment and recovery gear. Administrative Controls (Critical and Supporting): ● CC04 journey management plans including risk assessment, supervisor approval, and monitored check-in/check-out processes; remote-working and fieldwork procedures; escalation and emergency response planning; psychosocial risk considerations; on-call monitoring for after-hours work (Non-Critical). PPE: Environment-appropriate PPE such as sun protection, boots, and high-visibility clothing based on task and location. Consequence Mitigation / Recovery Controls: Administrative Controls ● CC02 suitable portable first aid kit, off-road motoring kit, and water provisions for remote travel; ●

		CC03 fixed duress alarms for workplaces with occupational violence risk; ● CC05 first aid response capability; ● CC06 marine commercial F-scale first aid kit and qualified first aiders for water-based work.
Falls from same level	Slippery or uneven walking surfaces; spills of water, chemicals or biological materials; poorly maintained floor coverings; clutter, cables and hoses across walkways; inadequate lighting; changes in level such as steps and thresholds.	Elimination: Remove trip hazards and unnecessary changes in level during design; avoid unnecessary hoses/cables across walkways. Substitution: Use slip-resistant flooring and mats instead of smooth finishes. Isolation: Physical barriers to keep people away from high-risk areas (e.g. wet floors, maintenance zones). Engineering: Adequate lighting; fixed cable management systems; drainage to prevent pooling; handrails on stairs. Administrative: Housekeeping standards; prompt spill clean-up with signage; regular inspections; maintenance of flooring and walkways; reporting of hazards. PPE: Appropriate slip-resistant footwear.
Traumatic Events	Exposure to or involvement in serious incidents such as fatalities, severe injuries, assaults, natural disasters, suicides or other critical events; repeated exposure to traumatic material.	Elimination: Avoid unnecessary exposure to traumatic content or events where possible. Substitution: Use de-identified or less graphic material in teaching/research where practicable. Isolation: Limit personnel exposed to traumatic scenes or content; rotate staff where possible. Engineering: Secure environments to reduce likelihood or impact of certain events (e.g. physical security measures). Administrative: Critical incident management procedures; timely debriefing; workload adjustments and additional breaks; access to EAP and other supports; training for leaders on post-incident support; clear reporting pathways and review processes. PPE: Not typically applicable beyond normal task-related PPE.
Vehicle Operation	Driving cars, utilities, 4WDs, buses or buggies for work including long-distance or rural driving, towing trailers or boats, and	Elimination: Remove unnecessary travel; use remote engagement options instead of travel where

	operating vehicles in varying environmental conditions. Hazards include speeding; distraction from passengers, mobile devices or unfamiliar vehicle controls; improper load restraint leading to impact from unsecured items or release of hazardous substances; collisions with other vehicles or road users; poor road or weather conditions such as flooding, storms or fire; fatigue from extended driving or on-call duties; lack of experience or training in specialist driving such as 4WD operation; use of vehicles not fit for purpose; driver impairment due to alcohol, drugs, fatigue or lack of fitness; failure of critical vehicle components including brakes, tyres or steering; wildlife strikes; and pedestrian interaction risks.	practicable. Substitution: Use safer vehicles with higher ANCAP ratings and safety technologies; utilise public transport where appropriate. Isolation: Separate vehicles from pedestrians where practicable; avoid high-risk routes or environments where possible. Engineering (Critical Controls included): ● CC01 maintenance of critical vehicle systems in accordance with OEM schedules; ● CC03 fit-for-purpose fleet vehicles with 5-star ANCAP rating; vehicle safety features including ABS, ESC, airbags and driver-assist technologies; load restraint systems ● CC05; regular vehicle inspection regimes (Non-Critical). Administrative Controls (Critical and Supporting): ● CC02 fatigue risk management including restricted driving hours and minimum rest periods; ● CC04 journey planning risk assessments approved by Head of Work Unit; driver licensing and verification; University Driver Safety Induction; specialist 4WD training where required; vehicle familiarisation training; trip planning and incident reporting; consideration of teleconferencing to reduce travel (Non-Critical). PPE: Mandatory seatbelt use; high-visibility clothing when working roadside; task-specific PPE as required. Consequence Mitigation / Recovery Controls: Administrative ● CC06 first aid response capability.
Vibration Hazards	Hand–arm vibration from powered hand tools; whole-body vibration from vehicles, plant or boats; long-term exposure leading	Elimination: Remove tasks requiring high vibration where possible. Substitution: Use low-vibration tools/equipment or alternative

	to musculoskeletal disorders or vascular/neurological effects.	methods. Isolation: Isolate operators from vibrating sources (e.g. remote controls, suspended seats). Engineering: Anti-vibration mounts and handles; tool maintenance and balancing; improved seating and suspension. Administrative: Exposure time limits; task rotation; training on vibration risks and reporting symptoms; health monitoring where indicated. PPE: Anti-vibration gloves where appropriate (as a supplementary measure).
Working in or around Water	Drowning risk when working at the water's edge or in streams, rivers, lakes or ocean environments; slips or falls on wet banks, rocks, jetties or structures; strong currents, tides or waves; cold water immersion; waterborne disease or contamination exposure; interaction with marine animals including sharks, crocodiles, jellyfish or sting rays; failure of vessels or mobile plant; fire on vessels; being left behind in open water; unreliable external or public vessels; severe weather events; access or egress hazards at marinas; night work around water; falling from vessels including rafts, boats or canoes; being swept from rock platforms or unstable surfaces during fieldwork activities.	Elimination: Avoid work near water where safer alternatives exist; redesign tasks to remove the need to enter or work close to water. Substitution: Use remote sampling devices, drones, or fixed platforms instead of entering water where practicable. Isolation: Barriers or railings at edges; restricted access to high-risk locations; designated safe access/egress points. Engineering (Critical Controls included): Safe access structures such as jetties or platforms; non-slip surfaces; rescue equipment, including throw lines and ladders; ● CC02 personal location beacons and EPIRBs for remote or isolated water activities. Administrative Controls (Critical and Supporting): Water-related risk assessments; swimming competency requirements; buddy systems; ● CC03 monitoring of adverse weather and environmental conditions; supervision arrangements; hygiene and immunisation controls where required; emergency response planning. PPE (Critical Controls included): ● CC01 personal flotation devices worn where risk of immersion

		exists; appropriate footwear; thermal protection where required. Consequence Mitigation / Recovery Controls: Administrative Controls ● CC04 spotter used where crocodile or wildlife risk exists; ● CC05 marine commercial F-scale first aid kit readily accessible.
Workshop Hazards	Use of fixed and portable machinery, power tools and hand tools; entanglement, cutting, crushing and amputation hazards; flying particles and projectiles; welding, grinding and hot-work hazards; noise, dust and fumes; poor housekeeping and storage.	Elimination: Remove obsolete or unsafe machinery and tools; eliminate unnecessary hot-work. Substitution: Use safer machinery, low-noise or low-dust tools and processes. Isolation: Guarding and barriers; segregated workshop areas; welding bays and screens. Engineering: Machine guarding and interlocks; local exhaust ventilation for dust and fumes; noise control measures; emergency stops. Administrative: Workshop inductions; SOPs and permits for high-risk work; pre-start checks; housekeeping and storage standards; restricted access for untrained persons; maintenance schedules. PPE: Eye/face protection, hearing protection, gloves, protective clothing, respiratory protection where required, safety footwear.
Sharps and Cutting Hazards	Needles, scalpels, broken glass, cutting tools causing lacerations or infections.	Elimination: Avoid sharps wherever possible (e.g. needleless systems). Substitution: Use blunt-fill needles, safety-engineered devices and plasticware instead of glass. Isolation: Sharps containers at point of use; designated sharps disposal points. Engineering: Safety-engineered sharps devices; guarded cutting equipment. Administrative: No recapping policy; training on sharps handling and disposal; lab/placement-specific procedures; incident reporting and follow-up. PPE: Gloves; eye/face protection where splashes are possible; closed footwear.
Food Safety Hazards	Cross-contamination, allergens, spoilage, burns/cuts in kitchen settings.	Elimination: Remove unused or high-risk menu items (e.g. allergens) where feasible; discard spoiled food. Substitution: Use pre-

		prepared, lower-risk ingredients where appropriate. Isolation: Separation of raw and cooked foods; dedicated storage areas; allergen segregation. Engineering: Temperature-controlled storage (fridges/freezers); food-grade surfaces; guards on cutting equipment; adequate ventilation. Administrative: Food safety plans (HACCP); allergen management protocols; temperature monitoring and recording; hygiene and food-handling training; cleaning schedules and pest control; maintenance of storage facilities. PPE: Aprons, gloves where appropriate, non-slip footwear, hair restraints.
Agricultural and Veterinary Chemicals	Exposure to pesticides, herbicides, fertilisers, veterinary medicines, disinfectants, anaesthetic agents, solvents or other agricultural/veterinary chemicals; spray drift, residues, contaminated equipment or treated areas; incorrect decanting, mixing, labelling, storage or disposal; incompatible chemicals; student, worker or animal exposure; environmental contamination.	Elimination: Avoid non-essential chemical use and remove obsolete or unapproved products. Substitution: Use less hazardous chemicals, lower-concentration products or non-chemical methods where suitable. Isolation: Segregated chemical stores, restricted treated areas, re-entry controls and separation from students, animals, food and waterways. Engineering: Local exhaust, closed transfer systems, spill containment, bunding, eyewash/showers and suitable application equipment. Administrative: Chemical approval, SDS and label compliance, risk assessment, spray planning, withholding/re-entry periods, training, supervision, inventory control, emergency and spill procedures, waste disposal and records. PPE: Chemical-resistant gloves, eye/face protection, respiratory protection, coveralls, aprons and boots as required. Monitoring/Review: Exposure, incident, spill, storage, disposal and health monitoring records where required.

Biosecurity and Gene Technology	Introduction, spread or release of pests, diseases, invasive species, biosecurity matter or biosecurity carriers; contaminated soil, water, plant, animal or marine material; unauthorised movement of specimens or biological material; loss of containment of genetically modified organisms; unauthorised or non-compliant GMO dealings; contaminated equipment, vehicles, footwear or waste.	Elimination: Avoid collection, movement or use of biosecurity matter or GMOs where reasonably practicable; use existing samples/data or non-GMO alternatives. Substitution: Use lower-risk organisms, preserved material or certified suppliers where suitable. Isolation: Quarantine, containment facilities, access control, segregation of clean/dirty zones and secure storage/transport. Engineering: Containment equipment, sealed transport containers, decontamination stations, autoclaves and waste containment. Administrative: Biosecurity risk assessment, permits/approvals, import/movement controls, IBC/authorised oversight where required, training, signage, traceability, hygiene, decontamination, disposal, incident and notification procedures. PPE: Gloves, coats/coveralls, footwear controls, eye/face and respiratory protection as required. Monitoring/Review: Inspections, containment checks, inventories, movement records, decontamination logs and incident reviews.
Dangerous Goods Transport, Storage and Waste	Fire, explosion, toxic exposure, chemical burns, asphyxiation or environmental release from dangerous goods during storage, handling, internal transfer, transport or disposal; incompatible goods, damaged packaging, leaks or spills; incorrect classification, labelling, segregation, placarding or documentation; unsecured loads; regulated or trackable waste exposure or release.	Elimination: Avoid unnecessary transport or storage of dangerous goods and remove obsolete stock. Substitution: Use less hazardous substances, smaller quantities or pre-prepared materials where suitable. Isolation: Segregated storage, separation distances, bunding, secure waste areas and exclusion zones during spill response. Engineering: Approved cabinets, ventilation, spill containment, compatible containers, load restraint, emergency equipment and fire protection. Administrative: Classification, SDS, manifest/register, labelling, packaging, placarding, segregation,

		transport documentation, waste tracking, licensed/approved contractors, emergency procedures, training and spill reporting. PPE: Chemical, respiratory, eye/face and skin protection matched to the substance and task. Monitoring/Review: Storage inspections, inventory reconciliation, transport/waste records, contractor records, spill trends and corrective actions.
Excavation, Trenching and Ground Disturbance	Ground collapse, trench collapse, engulfment or burial; falls into excavations or open trenches; falling objects, spoil or surcharge loads; contact with underground or overhead services; hazardous or oxygen-deficient atmospheres; airborne contaminants including silica, asbestos or contaminated soil; water ingress, flooding or unstable ground; mobile plant interaction; unstable adjacent structures; inadequate access, egress or edge protection.	Elimination: Avoid excavation where practicable by using existing service routes, non-invasive investigation or above-ground alternatives. Substitution: Use lower-risk methods such as hydro-vacuum or non-destructive digging where suitable. Isolation: Barricades, exclusion zones, service isolation, traffic separation and protection of adjacent structures. Engineering: Shoring, shielding, benching, battering, ground support, edge protection, safe access/egress, ventilation, dewatering and service locating controls. Administrative: Permit/planning process, competent supervision, service plans and locating, geotechnical advice where required, inspections, emergency rescue planning, consultation with contractors and affected workers, SWMS for high-risk construction work and records. PPE: Hard hats, high-visibility clothing, protective footwear, eye/hand/respiratory protection as required. Monitoring/Review: Pre-start and post-change inspections, ground/weather changes, service strikes, air monitoring where required and corrective actions.
Hazardous Noise	Exposure to noise levels capable of causing hearing loss, tinnitus, communication interference, fatigue, stress or reduced situational awareness; impulsive or impact	Elimination: Remove unnecessary noisy equipment, processes or exposure. Substitution: Purchase or

	noise; noisy plant, tools, workshops, laboratories, animal areas, events, construction or maintenance activities; inadequate hearing protection or poorly controlled noisy areas.	use quieter plant, tools, processes and materials. Isolation: Enclose or separate noisy equipment and establish hearing protection/noise zones. Engineering: Acoustic enclosures, barriers, silencers, damping, vibration isolation, maintenance and remote operation. Administrative: Noise assessment, exposure planning, purchasing standards, scheduling, restricted access, signage, training, supervision, audiometric testing where required and review of noisy work. PPE: Correctly selected, fitted and maintained hearing protection. Monitoring/Review: Noise surveys, audiometry outcomes, maintenance records, complaints, incident trends and control verification.
Respirable Crystalline Silica and Airborne Particulates	Inhalation of respirable crystalline silica or other harmful dusts and particulates from cutting, grinding, drilling, crushing, sanding, polishing, excavation or handling of stone, concrete, brick, mortar, tiles, ceramics, soil or contaminated materials; dry processing; ineffective dust extraction or water suppression; contaminated clothing, surfaces or waste.	Elimination: Avoid silica-generating work where practicable; use pre-cut/pre-fabricated materials or non-silica alternatives. Substitution: Use lower-silica materials and lower-dust methods. Isolation: Enclose dusty processes, restrict access and segregate clean/dirty areas. Engineering: On-tool extraction, local exhaust ventilation, wet methods, dust suppression, H-class vacuuming and suitable waste containment. Administrative: Dust risk assessment, task planning, prohibition of uncontrolled dry processing, exposure standards, air monitoring where required, training, supervision, housekeeping, laundering/decontamination, health monitoring where required and contractor controls. PPE: Fit-tested respiratory protective equipment, eye protection, gloves and protective clothing as required. Monitoring/Review: Air monitoring, health monitoring, inspections, maintenance of extraction systems

		and review after changes or exceedances.
Sexual and Gender-Based Harassment and Violence	Sexual harassment, gender-based harassment, gender-based violence, stalking, intimidation, coercive or threatening behaviour, image-based abuse, unsafe accommodation or campus environments, unsafe fieldwork or placement settings, retaliation, victimisation, poor disclosure pathways, inadequate response systems and trauma exposure associated with reports or incidents.	Elimination: Remove known unsafe situations, repeated exposure to perpetrators or unsafe work/study arrangements where reasonably practicable. Substitution: Redesign work, fieldwork, placement, accommodation, supervision or reporting arrangements to reduce exposure. Isolation: Separate affected persons from ongoing risk and secure physical or digital environments where required. Engineering/System controls: Safe campus and accommodation design, lighting, access control, duress systems, secure communications and privacy safeguards. Administrative: Prevention framework, clear behavioural standards, risk assessment, safe reporting pathways, trauma-informed response, support and referral processes, supervisor and staff training, consultation, procedural fairness, confidentiality and corrective actions. PPE: Not generally applicable. Monitoring/Review: Monitor reports, trends, response times, feedback, corrective actions and effectiveness of prevention controls.
Tree Work and Arboriculture	Falls from trees, ladders, elevated work platforms or roofs; falling branches, trunks, tools or debris; chainsaw and cutting injuries; contact with overhead or underground electrical services; unstable trees, stored energy in limbs or tensioned timber; mobile plant, vehicle or traffic interaction; manual handling, noise, vibration, dust, biological hazards, wildlife and adverse weather.	Elimination: Remove the need for climbing or cutting where practicable by redesigning work, isolating the area or using remote assessment. Substitution: Use lower-risk access methods, mechanical pruning/removal, qualified contractors or alternative vegetation management. Isolation: Exclusion zones, drop zones, traffic/pedestrian separation and electrical service isolation or approach-distance controls. Engineering: Suitable EWPs, lowering/rigging systems, guarding, tool safety features and

		communication equipment. Administrative: Competent arborists or contractors, site assessment, tree stability assessment, emergency/rescue plan, SWMS where applicable, traffic management, supervision, weather controls and pre-start checks. PPE: Helmet, eye/face and hearing protection, chainsaw protection, gloves, high-visibility clothing, protective footwear and fall protection where required. Monitoring/Review: Contractor records, equipment inspections, incidents, near misses, weather changes and post-work area checks.
Work Environment, Welfare Facilities and Accommodation	Unsafe or unsuitable work environments, amenities or accommodation; inadequate toilets, drinking water, washing, eating, change or rest facilities; poor hygiene, contamination, pests, mould or biological hazards; inadequate ventilation, lighting, thermal comfort or indoor air quality; overcrowding, unsafe access, poor housekeeping, poor security or emergency egress; fatigue or psychosocial stress arising from poor facilities.	Elimination: Remove unsafe or unsuitable facilities and avoid using accommodation or work areas that cannot be made safe. Substitution: Use safer facilities, alternative accommodation or remote work arrangements where suitable. Isolation: Separate clean and contaminated areas, restrict access to unsafe areas and provide secure accommodation arrangements. Engineering: Adequate ventilation, lighting, sanitation, drinking water, temperature control, pest control, safe access/egress, fire safety and maintenance. Administrative: Facility inspections, cleaning schedules, maintenance reporting, occupancy limits, accommodation checks, hygiene procedures, emergency information, consultation and corrective action tracking. PPE: Hygiene or task-specific PPE where exposure remains. Monitoring/Review: Inspection findings, maintenance records, complaints, illness reports, accommodation reviews and corrective actions.

Plant Hazards

- Plant hazards must be considered throughout the plant's lifecycle, including acquisition, installation, commissioning, operation, inspection, maintenance, modification, storage, and disposal.
- Use of manufacturer, supplier, and designer information to inform safe use, inspection, maintenance, and modification of the plant.
- Consultation with workers and health and safety representatives during hazard identification, control selection, and review.
- Periodic review and verification of control measures to ensure they remain effective.

Hazard Category	Hazards / Possible Causes	Summary of Controls (grouped by category)
Plant – Entanglement	A person's hair, clothing, gloves, jewellery, cleaning brush, or rag becomes entangled with the moving parts of the plant.	Elimination: Remove obsolete or unsafe plant; eliminate exposure to moving parts where practicable. Substitution: Select a plant with enclosed or low-entanglement designs. Isolation: Fixed guarding and physical barriers; isolation of all energy sources (including stored energy) with lockout/tag-out during cleaning, maintenance, and repair, and verification prior to work. Engineering: Interlocked guards; emergency stop systems; guarding of rotating components. Administrative: Pre-purchase and acquisition risk assessment; commissioning and verification prior to use; plant risk assessments; safe operating procedures; permits for maintenance; verification of operator competency and authorisation; training and supervision; planned inspection, testing, and maintenance with records retained. PPE: Close-fitting clothing; hair restraints; task-appropriate gloves (not near rotating parts).
Plant – Crushing	Crushing due to: material falling off the plant; uncontrolled or unexpected movement of the plant;	Elimination: Remove unsafe or unsuitable plants; eliminate tasks requiring exposure to crushing zones.

	lack of capacity for the plant to be slowed, stopped or immobilised; the plant tipping or rolling over; parts of the plant collapsing; coming into contact with moving parts during testing, inspection, operation, maintenance, cleaning or repair; being thrown off or under the plant; being trapped between the plant and materials or fixed structures; or other factors not mentioned.	Substitution: Use lower-risk plant or alternative processes. Isolation: Exclusion zones; barriers; separation of people and plant; isolation of all energy sources with lockout/tag-out where required. Engineering: Guarding; braking and immobilisation systems; load-holding and stability devices; emergency stops. Administrative: Pre-purchase and acquisition risk assessment; commissioning and recommissioning following installation, modification or relocation; traffic management plans; SOPs; pre-start checks; verification of competency, authorisation and licensing where required; inspection, testing and maintenance programs with records retained; supervision. PPE: Safety footwear; protective clothing; high-visibility PPE where required.
Plant – Cutting, Stabbing or Puncturing	Injury due to: contact with sharp or flying objects; contact with moving parts during testing, inspection, operation, maintenance, cleaning or repair; the plant, parts of the plant or workpieces disintegrating; workpieces being ejected; mobility of the plant; uncontrolled or unexpected movement of the plant.	Elimination: Remove unnecessary sharp components or hazardous tasks. Substitution: Use guarded or safer cutting systems. Isolation: Physical guarding and barriers. Engineering: Tool guarding; containment of workpieces; interlocks. Administrative: SOPs; maintenance and inspection; training and supervision. PPE: Cut-resistant gloves; eye and face protection.
Plant – Shearing	Body parts are being sheared between two parts of the plant, or between a part of the plant and a workpiece or structure.	Elimination: Design out shearing points where practicable. Substitution: Use alternative plant or processes. Isolation: Fixed guarding; exclusion zones. Engineering: Interlocks; two-hand controls. Administrative: Risk assessments; safe operating procedures; supervision. PPE: Task-appropriate PPE (supplementary only).
Plant – Striking	Injury due to: uncontrolled or unexpected movement of the plant or material handled by the plant; the plant, parts of the plant or workpieces disintegrating;	Elimination: Remove unnecessary exposure to moving plant. Substitution: Use automated or remote systems. Isolation: Barriers; exclusion zones. Engineering: Guards;

	workpieces being ejected; mobility of the plant; or other factors not mentioned.	containment systems; alarms. Administrative: Traffic management plans; training; SOPs. PPE: Helmets, eye protection and high-visibility clothing where required.
Plant – High-Pressure Fluids	Contact with fluids under high pressure due to plant failure or misuse of the plant (including hydraulics and radiators).	Elimination: Remove high-pressure systems where practicable. Substitution: Use lower-pressure alternatives. Isolation: Pressure isolation and lockout/tag-out. Engineering: Rated hoses and fittings; pressure relief devices. Administrative: Maintenance and inspection programs; training. PPE: Eye and face protection; gloves; protective clothing.
Plant – Electrical	Injury due to electrical shock or burns from: plant contacting live electrical conductors; plant operating in close proximity to electrical conductors; overload of electrical circuits; damaged or poorly maintained electrical leads and cables; damaged electrical switches; water near electrical equipment; lack of isolation procedures; or other factors not mentioned.	Elimination: Remove unsafe or non-compliant plant. Substitution: Use low-voltage or battery-powered equipment. Isolation: Electrical isolation and lockout. Engineering: RCDs; compliant electrical design; guarding. Administrative: Electrical inspection and testing; licensed electrical work only; procedures and training. PPE: Insulated tools and PPE where required.
Plant – Fire and Explosion	Injury due to explosion of gases, vapours, liquids, dusts or other substances triggered by operation of the plant or materials handled by the plant (including pressure vessels or vehicle tyres).	Elimination: Remove ignition sources and flammable materials where practicable. Substitution: Use lower-risk substances or systems. Isolation: Segregated storage; exclusion zones. Engineering: Fire suppression systems; intrinsically safe equipment. Administrative: Hot-work permits; emergency procedures; inspection and maintenance programs. PPE: Fire-resistant PPE; eye and hand protection.
Plant – Slips, Trips and Falls (same level)	Slips, trips or falls due to: uneven or slippery work surfaces; poor housekeeping such as offcuts, cables or hoses obstructing walkways; spills not cleaned up; or other factors not mentioned.	Elimination: Remove trip hazards and spill sources. Substitution: Fixed services instead of temporary leads or hoses. Isolation: Barriers around wet or maintenance areas. Engineering: Non-slip surfaces; drainage. Administrative: Housekeeping standards; inspections. PPE: Slip-resistant footwear.

Plant – Falls from Height	Falls due to: lack of a proper work platform; lack of proper stairs or ladders; lack of guardrails or suitable edge protection; unprotected holes, penetrations or gaps; poor floor or walking surfaces including lack of slip resistance; steep walking surfaces; collapse of supporting structures; or other factors not mentioned.	Elimination: Design plant for ground-level access. Substitution: Use EWP's or safer access systems. Isolation: Edge protection and barriers. Engineering: Fixed platforms, stairs and guardrails. Administrative: Working-at-heights procedures; permits; training. PPE: Fall-arrest systems where required.
Plant – Ergonomic	Injury due to: poorly designed seating; poorly designed operator controls; high forces; repetitive movements; awkward body postures or excessive effort; vibration; or other factors not mentioned.	Elimination: Remove unnecessary manual interaction. Substitution: Ergonomically designed plant. Isolation: Task rotation to limit exposure. Engineering: Adjustable controls and seating; vibration damping. Administrative: Ergonomic assessments; training; workload planning. PPE: Supportive footwear; anti-vibration gloves (supplementary only).
Plant – Combination / Unexpected Start-up	Injury due to unexpected start-up, over-run or over-speed from: failure or disorder of control systems (e.g. hydraulic systems); restoration of energy supply after interruption; external influences on electrical equipment; environmental factors such as gravity or wind; software errors; operator error.	Elimination: Design out stored energy where practicable. Substitution: Fail-safe systems. Isolation: Lockout/tag-out of all energy sources. Engineering: Interlocks; emergency stops; pressure relief. Administrative: Energy isolation procedures; permits; training. PPE: Task-specific PPE.
Plant – Other Hazards	Injury due to: noise; inadequate or poorly placed lighting; lack of visibility; entry into confined spaces of the plant; failure to select plant suitable for intended use; contact with hot or cold parts of the plant; exposure to hazardous chemicals, radiation or other emissions released by the plant; exposure to airborne particulates (including silica and lead); lack of operator competency; or other factors not mentioned.	Elimination: Remove unnecessary exposures. Substitution: Quieter, cleaner or safer plant. Isolation: Enclosures; restricted access. Engineering: Noise control; ventilation; shielding. Administrative: Competency requirements; inspections; health monitoring where required. PPE: Hearing, respiratory and protective PPE as required.
Plant – Psychosocial	Injury due to: noise; vibration; low job control; remote or isolated work location; poor physical environment.	Elimination: Remove harmful work practices. Substitution: Automation or team-based work. Isolation: Avoid lone work where practicable. Engineering: Improved plant design and environments. Administrative:

		Psychosocial risk assessments; supervision; fatigue and workload management; access to support services. PPE: Not a primary control.
Plant – Automated, Robotic and Presence-Sensing Safeguards	Unexpected or automatic start-up, movement or energisation of robotic, automated or remotely operated plant; failure, bypass or misalignment of interlocks, guards, light curtains, scanners, pressure mats or presence-sensing safeguarding systems; entry into hazardous zones; crushing, striking, entanglement, trapping, electrical or stored-energy exposure during operation, teaching, testing, maintenance, cleaning or fault finding.	Elimination: Design out hazardous human interaction with automated or robotic plant where practicable. Substitution: Use lower-force, lower-speed, collaborative or enclosed systems where suitable. Isolation: Physical guarding, restricted access, interlocked cells and exclusion zones. Engineering: Fail-safe control systems, emergency stops, monitored interlocks, validated presence-sensing safeguards, speed/force limits, lockout/tagout and energy isolation. Administrative: Risk assessment across operating modes, commissioning and change control, validation/testing of safeguards, SOPs, training, supervision, permit or authorisation for maintenance and bypass controls. PPE: Task-specific PPE where residual risk remains. Monitoring/Review: Safeguard inspections, validation records, maintenance, incident/near-miss review and review after modification.