Safely Managing Building and Maintenance Works on University Property Guideline

Purpose and Scope

The Property, Development and Commercial Services Office (PDCSO) is responsible for managing new and existing buildings and facilities. Works are carried out on University premises by internal University maintenance personnel as well as external contractors. PDCSO is responsible for ensuring that all works it manages are conducted safely, as far as practicable, and in accordance with relevant building legislation.

This guideline supports the safety aspects of the Managing Building and Maintenance Works on University Property Policy. It replaces the following: Isolation, Lock out and Tag Out Procedure; Confined Space Procedure; Hot Work Procedure; Isolation of Fire Services Procedure; Working at Heights; Plant Rooms Procedure; Spill Kits Procedure; Workshop Procedure; Out of Commission / Out of Service Policy; Excavation Policy and Procedures.

New national occupational safety and health legislation is due for release in 2012 and these guidelines will be reviewed after that time. During this period users of these guidelines are encouraged to review the most recent legislation and codes of practice available from WorkSafe Western Australia (http://www.worksafe.wa.gov.au) and Safe Work Australia (http://safeworkaustralia.gov.au).

This procedure applies to all staff and students.

Overarching Policy

Managing Building and Maintenance Works on University Property Policy

Guidelines

1. Management of Safety During Works on University Property

1.1 PDCSO staff and maintenance personnel (including maintenance contract staff) act as 'Responsible Officers' for the maintenance and project work they are managing.

2. High Risk Work and The Permit to Work System

2.1 The following types of work are deemed high risk and these require a permit to work coordinated by PDCSO. PDCSO maintenance personnel and contractors undertaking work involving the following are required to submit a Job Safety Analysis (JSA) and obtain a permit to work from their Responsible Officer or PDCSO Manager:

2.1.1 Work requiring access to roofs and roof spaces

2.1.2 Excavation work

2.1.3 Hot work

2.1.4 Work involving the isolation of fire services

2.1.5 Work involving the isolation of electrical, mechanical and other energised systems

2.1.6 Work in confined spaces

2.1.7 Work at heights

2.1.8 Work involving hazardous materials

2.1.9 Work involving asbestos removal or work that may disturb asbestos containing material

2.1.10 Electrical work

3. Access to Roofs and Roof Spaces

3.1 A permit is required for access to roofs and roof spaces to ensure the identification of:

3.1.1 points of ingress and egress;

3.1.2 areas that previously contained asbestos roofing material;

3.1.3 the appropriate personal protective equipment and clothing (PPE) to be worn during the work; and

3.1.4 methods to ensure the roof is left secure once work is complete.

4. Managing Excavation on Murdoch University Property

4.1 Any proposed excavation within Murdoch University (MU) boundaries is subject to an Excavation Permit to minimise the risk of personal injury, damage to property and system interruptions from accidentally striking underground services.

4.2 Excavation Permits

4.2.1 The University requires an excavation permit to be issued for utilities infrastructure for which MU has direct responsibility within its boundaries, such as electric cables, communications (copper/fibre optic cables), gas, oil, water, sewerage and storm water pipelines. In cases where the requirement may be unclear, the Manager Campus Projects and Maintenance determines whether an Excavation Permit should be issued.

4.2.2 A Job Safety Analysis (JSA) must be completed by the contractor and provided to the Responsible Officer prior to issuing an Excavation Permit.

4.2.3 The person actually carrying out the excavation must always hold the authorised Excavation Permit and drawing(s) on-site whenever excavation work is in progress.

4.2.4 Hand digging only will be permitted within 1 metre of any identified electrical or gas service.

4.2.5 Excavation shall only be undertaken in the approved area and by the approved excavation method as authorised on the Excavation Permit.

4.2.6 An Excavation Permit shall be deemed invalid if excavations have not commenced within one week (7 days) of the Excavation Permit issue date.

4.2.7 No Excavation Permit shall be duplicated or transmitted by facsimile.

4.2.8 Specific oil company conditions do apply for excavations near identified oil pipelines. To ensure that oil transportation pipelines are not damaged, hand excavated proofings shall be carried out – in the presence of an authorised oil company representative – to determine the exact location of the pipelines prior to excavation, drilling, blasting or any activity which may disturb soil adjacent to the pipelines.

4.3 Roles and Responsibilities of Responsible Officers

4.3.1 The Responsible Officer must advise contractors and Murdoch personnel requiring an excavation permit for works within MU boundaries to allow for minimum of three (3) working days from the time of application to the proposed commencement of the excavation to enable identification of underground services. No excavation can commence until the applicant is issued with an Excavation Permit, duly authorised with attached drawing(s).

4.3.2 The Responsible Officer is responsible for:

a) Ensuring that tender and quotation documentation for projects which have an element of excavation make reference to these Guidelines so that Tenderers are in a position to incorporate any impacts into their offer.

b) Ensuring the preparation of and amendments to service drawings are specified in tender documents and relevant agreements.

c) Receiving and processing all Excavation Permit application forms.

d) Coordinating all processes required to identify the location of underground services.

e) Coordinating the marking out of the proposed excavation site.

f) Ensuring relevant drawing(s) are correctly marked and attached to authorised Excavation Permits.

g) Authorising and issuing Excavation Permits.

h) Approving backfilling.

i) Ensuring a Job Safety Analysis (JSA) has been completed for jobs that involve excavation within MU boundaries.

j) Ensuring all employees/contractors have undergone a MU Safety Induction prior to the commencement of works on-site.

4.4 Responsibilities of the General Manager, Assets and Maintenance

4.4.1 In consultation with MU Project Leaders, the General Manager, Assets and Maintenance is responsible for ensuring that all MU service drawings, including the completion of "as constructed" drawings are updated. Updating of drawings is undertaken by the Corporate Information Coordinator at PDCSO.

4.5 Responding to Issues and Emergencies Relating to Excavation Work

4.5.1 In the event that an unidentified service is located when excavation work is being performed, or an emergency occurs, the Responsible Officer must ensure the following:

a) The contractor ceases excavation work immediately.

b) The area is secured and made safe as far as practicable.

c) The Occupational Safety and Health Manager is notified of the event.

d) Attempts are made to identify the service(s) by contacting the services listed on the reverse side of the authorised Excavation Permit. Never presume what the service may be. If it cannot be identified the Responsible Officer must report this to the General Manager Assets and Maintenance.

e) Record identified/unidentified service(s) on MU drawings in consultation with the General Manager Assets and Maintenance.

f) If after hours contact is required, please phone the Facilities Management (FM) Helpdesk on 9360 2262 which will connect to Campus Security.

5. Hot Work

5.1 A permit is required for 'hot work' to minimise the risk to personnel who are required to carry out hot work on University premises and to eliminate the risk of fire resulting from hot works. 'Hot work' is all work with the potential to create a source of ignition. This includes grinding, welding, thermal or oxygen cutting or heating, and other related heat producing or spark producing operations.

5.2 Responsible Officers should assess if work is 'hot work' and therefore requires a permit. Maintenance personnel or contractors should complete a Job Safety Analysis (JSA) for the task to be carried out that considers the following hazards:

5.2.1 Flammable liquids or materials;

5.2.2 Explosive or toxic gas atmosphere;

5.2.3 Dust or particle generating activities;

5.2.4 Confined space environment (note: a Confined Space Permit and procedures will also be required in this case),

5.2.5 Any other potential hazards.

5.3 Responsible Officers are responsible for issuing a Hot Work Permit before any work starts on the site. Only approved work designated on this permit is to be performed.

5.4 Responsible Officers should ensure that a Confined Space Permit is also issued if applicable.

5.5 Responsible Officers should ensure that an Isolation of Fire Systems Permit is issued if applicable.

5.6 Hot works require that hazards are assessed and precautionary measures put in place as required. These measures may include:

5.6.1 Warning all personnel in the vicinity of hot work;

5.6.2 Removing combustible materials from the work area;

5.6.3 Testing the atmosphere for explosive gas;

5.6.4 Wetting down non-removable combustible items;

5.6.5 Putting warning signs in place;

5.6.6 Covering drains or penetrations with fire blankets;

5.6.7 Erecting barricades or fences;

5.6.8 Keeping appropriate fire extinguishers on hand;

5.6.9 Isolating air conditioning units;

5.6.10 Containing sparks from work at heights;

5.6.11 Assuring safe access and egress;

5.6.12 Ensuring welders earthed to work at weld point;

5.6.13 Inspecting adjacent areas and making safe;

5.6.14 Ensuring Exhaust spark guards are fitted to machinery;

5.6.15 Using ventilation or dust extraction units;

5.6.16 Placing electrical leads correctly; and

5.6.17 Isolating electrical traces on pipelines.

WARNING: Fire protection and detection systems must not be isolated by unauthorised persons. A Permit for *Isolation of Fire System Permit* must be completed at least 24 hours before work is started. Permits can be obtained from the Responsible Officer.

5.7 All personnel involved in hot work should use Personal Protective Equipment (PPE) as necessary. Some or all of the following PPE may be required:

5.7.1 Eye protection

5.7.2 Respiratory protection

5.7.3 Hand protection (gloves, gauntlets)

5.7.4 Hearing protection

5.7.5 Safety footwear

5.7.6 Protective clothing (overalls/apron)

5.7.7 Safety helmets

5.8 The person completing the hot works must remain at the work area for at least 30 minutes after work has been completed to ensure that there is no possibility of fire. During this period the employee/contractor is to clean up the workplace; contact the Responsible Officer to reactivate the fire alarm and perform a final inspection of the workplace to ensure there is no possibility of fire or other hazards resulting from the work.

6. Work Involving the Isolation of Fire Services

6.1 A permit is required for the isolation of fire services to prevent false alarms and unnecessary callouts caused by interference with fire systems. A permit also ensures that personnel performing such work are fully aware of their responsibilities to protect the integrity of fire services and equipment, and allows for unprotected areas to be patrolled in the event of extended isolations.

6.2 All contractors who need to conduct work that could interfere with any part of a fire alarm system or fire fighting system must request an Isolation Permit from their Responsible Officer 24 hours before any proposed interruption to the fire system.

6.3 Contractors should be advised by their Responsible Officer that any failure to isolate which results in FESA attendance may result in penalties, callout fees and isolation/reinstatement costs being charged to the contractor.

6.4 The request for isolations must identify:

6.4.1 the building and area or location requiring isolation;

6.4.2 the reason for isolation and details of work being performed;

6.4.3 the extent and duration of disruption to the fire system.

6.5 The contractor should specify which components of the fire system are required to be shut down, and also list any that can remain operational. Consideration should be given to all the following:

6.5.1 Fire Detection Systems (smoke/thermal)

6.5.2 Fire Mains

6.5.3 Emergency or Exit Lighting

6.5.4 Fire Sprinkler System

6.5.5 Hydrant Services

6.5.6 Fire and Egress Doors & Routes

6.5.7 Early Warning Indication System [EWIS]

6.5.8 Hose Reel Service

6.5.9 Auto FESA callout

6.6 When the isolation permit has been approved by the Responsible Officer, the Responsible Officer must:

6.6.1 Lodge a job docket with Security Services, who will isolate the system in consultation with the contractor.

6.6.2 Inform the contractor that the work may start.

6.7 PDCSO Security Services will notify FESA of the isolated areas in the event of a call-out.

6.8 Overnight isolations are not permitted except in exceptional circumstances. If overnight isolation is unavoidable, the contractor must advise the PDCSO responsible officer. The PDCSO responsible officer must then liaise with Security Services to arrange after-hours security patrols of disconnected areas if required.

6.9 When the work is completed:

6.9.1 The contractor is to formally notify their Responsible Officer that the systems can be restored.

6.9.2 The Responsible Officer is to inform Security that the systems can be restored.

6.9.3 Security is to restore the isolated systems and perform functional testing.

7. Work Involving the Isolation of Electrical, Mechanical and Other Energised Systems

7.1 Isolations and 'lock out' devices are used to prevent energised systems from operating, and an Isolation permit, issued by the Responsible Officer, is required for this type of work. Both PDCSO maintenance personnel and external contractors are responsible for locking and / or tagging out plant and equipment as and when required. For safety reasons only authorized personnel can apply and remove a lock or tag.

7.1.1 **Lock out** is the process of using a locking device/s (including a padlock) which prevents an energised system from operating when that operation is potentially dangerous. All plant and equipment undergoing servicing must be locked out.

7.1.2 **Tag out** is the process of attaching a 'danger' or 'out of service' tag to indicate that the energised system, plant or equipment is unsafe or unserviceable and must not be operated until the problem is fixed and the tag is removed.

a) The Danger Tag is applied to an isolation or lockout point to indicate that the system, plant or equipment is not to be switched on.

b) The Out of Service Tag is used when the system, plant or equipment has been assessed as unsafe or out of service.

7.2 Before maintenance or cleaning of plant or equipment, complete a risk assessment considering all potential sources of energy including;

7.2.1 Electrical mains power;

7.2.2 Batteries;

7.2.3 Pressurised liquids and gases;

7.2.4 Mechanical devices that could move, such as shafts, belts, chains, springs, gears, etc.; and

7.2.5 Gravity (danger for suspended loads, etc.).

7.3 Isolate all energy sources to the system, plant or equipment and lock them in the OFF position using lockout devices. Figure 1 shows some examples of these.

WARNING: Items such as electrical stop buttons, emergency stops, electrical trip switches, electrical interlock switches, photoelectric activated switches, pressure relief valves, etc. are not isolating devices.

7.4 Where practicable, each person who would be at risk if the system or equipment were to be energised must fit their own padlock to the lockout device.

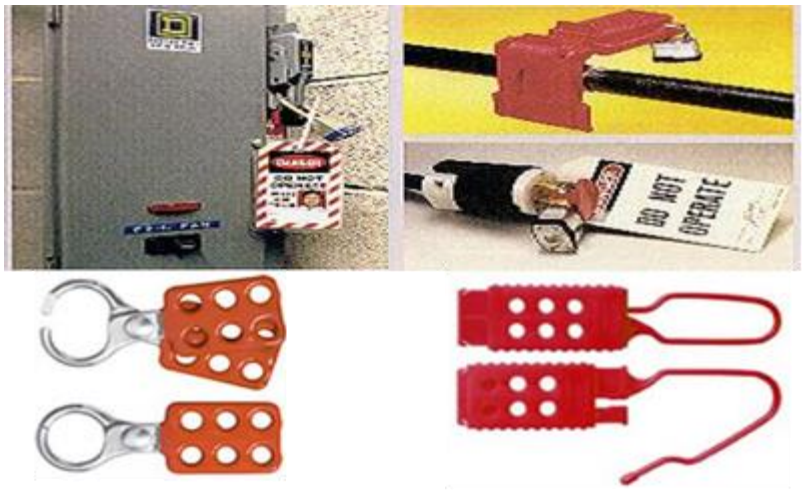

Figure 1: Lockout Devices

7.5 Attach red and white Danger Tags to all lockout devices or isolation points. The Danger Tag must clearly show the person's name, department or company name, and date. Figure 2 shows an example of a Danger Tag.

Figure 2: Example of Danger Tag

7.6 Every person in danger of injury if the installation or equipment is operated is to place his/her own danger tag on the equipment.

7.7 Dissipate or isolate any stored energy, then check the installation, plant or machinery to ensure it is safe and cannot be activated. Test by:

7.7.1 Visual inspection;

7.7.2 Opening drain valves;

7.7.3 Attempting to start or operate the equipment;

7.7.4 Use of test instruments;

7.7.5 Observing indicator lights; and

7.7.6 Any and all other appropriate means.

7.8 Only two people are permitted to remove any Lock or Tag from tagged installation or equipment:

7.8.1 the person/s who tagged the machine for cleaning or maintenance; or

7.8.2 in his/her absence only, the General Manager Assets and Maintenance (in consultation with the Project Leader/s and Maintenance personnel involved), after checking and testing confirms that it is safe to do so.

Under no circumstances should any other person remove Tags or Locks from any machine. Failure to comply with this is a serious breach of safety regulations.

7.9 When repairs or cleaning are complete, and when considered safe to do so, the owner(s) of each tag and lock are to:

7.9.1 remove the tags and lockout devices, and make the equipment usable; and

7.9.2 advise the appropriate personnel of the affected department that the plant is safe to operate. Do not operate danger tagged equipment until the work is finished and all danger tags have been removed.

7.10 Attach a yellow and black Out-of-Service Tag if an installation or equipment is not safe to use because:

7.10.1 it is faulty or damaged;

7.10.2 it is inoperable; or

7.10.3 its use could cause injury or further damage.

Figure 3: Out of Service Tag

8. Work in Confined Spaces

8.1 Regulation 3.82 of the Occupational Safety and Health Regulations 1996, defines a confined space as an enclosed or partially enclosed space which:

8.1.1 is not intended or designed primarily as a workplace;

8.1.2 is at atmospheric pressure during occupancy; and

8.1.3 has restricted means for entry and exit;

and which either:

8.1.4 has an atmosphere containing or likely to contain potentially harmful levels of contaminant;

8.1.5 has or is likely to have an unsafe oxygen level; or

8.1.6 is of a nature or is likely to be of a nature that could contribute to a person in the space being overwhelmed by an unsafe atmosphere or contaminant.

8.2 Maintenance personnel and contractors should consider whether it is feasible to perform the work without entering the confined space, by:

8.2.1 modifying the confined space itself so that entry is not necessary, or to simplify egress; or

8.2.2 doing the work from outside, for example by:

a) clearing blockages by use of remotely operated devices, air or water pressure;

b) using appropriate equipment and tools to perform inspection, sampling and cleaning operations from outside the space; or

c) using remote cameras for internal inspections.

8.3 If entry is necessary, at least two people must be present when performing work in a confined space at all times. One will enter the confined space to perform the work. The other will function as the attendant.

8.4 Complete a Job Safety Analysis (JSA) for the task to be carried out. Review the potential hazards associated with confined spaces. These include:

- 8.4.1 Lack of oxygen, presenting a suffocation hazard.
- 8.4.2 Fire or explosion hazards from an accumulation of flammable vapours.
- 8.4.3 Health hazards from toxic gases or vapours.
- 8.4.4 Difficulty exiting the space in the event of an emergency.
- 8.4.5 Cramped workspaces, resulting in a risk of being caught in equipment.
- 8.4.6 Poor visibility.
- 8.4.7 High levels of noise.
- 8.4.8 Temperature extremes.

WARNING: Internal combustion engines can rapidly produce lethal levels of carbon monoxide in a confined space. This is so dangerous that use of such equipment in confined spaces is prohibited.

8.5 Complete a Confined Space Permit. This permit must be completed and approved by relevant management personnel or Responsible Officer before any work starts on the site. Only approved work designated on this permit is to be performed.

8.6 Brief and appoint the attendant. The attendant must be in place and in contact with the person in the confined space at all times. The attendant must be well trained, trusted, and briefed to perform specific duties during the entry. Training of attendants must include:

- 8.6.1 detailed knowledge of the permit entry program;
- 8.6.2 duties of attendants (see below);
- 8.6.3 possible symptoms of hazardous atmosphere exposure; and
- 8.6.4 actions to take in the event of a prohibited condition or emergency.

8.7 Duties of the attendant include:

- 8.7.1 Remaining outside of the space at all times.
- 8.7.2 Performing no duties or activities that interfere with the ability to diligently execute all attendant duties.
- 8.7.3 Preventing unauthorised entry. Only those personnel listed on the permit and briefed by the Entry Supervisor are authorised to enter.

8.7.4 Remaining in contact with all entrants at all times and monitoring their safety at regular intervals.

8.7.5 Ensuring that all conditions of the permit are followed, such as continuous air monitoring, ventilation, PPE and work practices.

8.7.6 Evacuating the space and contacting the Entry Supervisor if a prohibited condition occurs.

8.7.7 In the event of an emergency, notifying the proper emergency responders. If provisions for external rescue are in place, they may retrieve entrants this way.

WARNING: Under no circumstances must the Attendant enter the confined space.

8.8 Prepare the confined space for work according to the conditions and the work to be performed. This may involve the following:

8.8.1 Monitoring air quality.

8.8.2 Providing mechanical ventilation.

8.8.3 Providing low-voltage lighting.

8.8.4 Locking out any mechanical devices in the space that could move and cause a hazard.

8.8.5 Removing liquids and stabilising any material in the space that could shift and cause a hazard.

8.8.6 Installing approved retrieval devices, such as tripods, stanchions, or derrick devices, and harnesses with shoulder rings, as appropriate to the situation.

8.9 During the work:

8.9.1 Be prepared to instantly stop the work and evacuate the personnel if any unsafe condition arises.

8.9.2 Monitor the air quality as necessary for fumes or dust caused by the work. Toxic gas, fumes or vapour can arise from welding or by use of solvents and adhesives. These substances may also create a fire or explosion hazard. If necessary, evacuate the personnel and use ventilation or dust extraction appliances as appropriate.

8.9.3 Monitor the temperature in the space if using welding or heating processes (note that hot work requires a hot work permit).

9. Work at Heights

9.1 Safety precautions and preparation:

9.1.1 Before starting work, carry out a risk assessment. Identify all risks including location of overhead electrical wires.

9.1.2 Check that personnel required to carry out the work hold the appropriate qualifications and competencies.

9.1.3 Itemise the Plant and Equipment that will be used to carry out this activity.

9.1.4 Identify relevant legislation, standards and codes of practice relating to the work.

9.1.5 Lock out or tag out and isolate all energised systems and equipment.

9.1.6 If working at heights in excess of 1.8 metres, ensure appropriate fall protection is in place.

9.1.7 Ensure plant and equipment is placed on a flat firm surface.

9.1.8 Use approved barricades and signs warning personnel to keep away from work area.

9.1.9 Check communication with employees on the ground at all times.

9.1.10 Visitors are prohibited from being in a position to be working from height.

9.2 Ladders

9.2.1 Use of ladders is to be in accordance with AS 1892.5:2000 Portable Ladders Part 5: Selection, safe use and care.

9.2.2 Visually inspect ladders for damage. Only use ladders in good condition. Faulty ladders are to be tagged as unsafe and reported to Site Services for repairs/replacement.

9.2.3 Ensure three point contact at all times while on ladder.

9.2.4 Secure the top of the ladder.

9.2.5 Fall arrest safety harness must be worn and correctly adjusted.

9.2.6 Lanyard of Safety Harness must be secured to an anchorage point of sufficient load bearing capacity to arrest the wearers fall.

9.2.7 The feet of an extension ladder must be positioned on cleared level ground.

9.2.8 Approved safety foot wear must be worn at all times whilst on a ladder and working at height.

9.2.9 Whenever a ladder is erected in a walkway, driveway or any traffic area, a physical barrier and signage must be provided around the work area to alert personnel to the hazard and prevent them from entering.

9.3 Scissor Lifts

9.3.1 Use of the Scissor Lift is to be in accordance with AS 2550.10-1994 Cranes – Safe use, Part 10: Elevating work platforms.

9.3.2 Visually inspect the scissor lift for damage and charge before taking to the work area.

9.3.3 Visually inspect the work area for hazards and obstacles that may prevent the scissor lift from safe passage. Where the scissor lift is to be used in the vicinity of obstacles or hazards at floor level, a second person on the ground is required as a spotter.

9.3.4 A scissor lift is not to be operated if the standing platform is within a vertical distance of 4.5 metres of overhead power lines, or within a horizontal distance of 2.1m of the power lines.

9.3.5 If a fault or damage occurs to the scissor lift, the vehicle is to be tagged as unsafe and reported to Site Services.

9.4 Safety Harnesses

9.4.1 Use of a Safety Harness is to be in accordance with AS 1891.1:1995 Industrial fall-arrest system and devices, Part 1: Safety belts and harnesses.

9.4.2 Before and after use, personnel must inspect the safety harness and lanyard to ensure it is in good condition and ready for service. If there is any defect or damage, the harness must be removed from service and reported to the Site Services Manager.

9.4.3 The Safety Harness must be securely fastened as vertical as possible above the work area to an anchorage point of sufficient load bearing capacity.

9.4.4 A Safety Harness is not required to be worn from a scissor lift or scaffolding unless working outside the handrails.

9.4.5 When using a Safety Harness, the operator is not to work alone.

10. Work in Plant Rooms

10.1 Unauthorised personnel must not enter plant rooms at any time. The General Manager Assets and Maintenance has authority to determine persons with authority to enter plant rooms.

10.2 Personnel and contractors should use appropriate Personal Protective Equipment (PPE) when required.

10.3 Rotating equipment must not be operated without the guards in place.

10.4 All electrical equipment must be locked out during servicing.

10.5 An RCD must be used on every electrical appliance and power tool.

10.6 All unsafe conditions must be reported to the 'Responsible Officer' as soon as is practicable.

10.7 Plant rooms must not be used as storerooms. Only small ready-use quantities of cleaning materials and lubricants should be left on site, and then only if a suitable storage cabinet is available.

10.8 Fire extinguishers should be checked to ensure they have current service stickers.

10.9 After completing the work, any spills or waste should be cleaned up. The plantroom should be left clean and clear for safe access to the equipment.

10.10 The plant room must be locked when the work is complete.

11. Spills and Spill Kits

11.1 The University has high standards of ecological responsibility. No pollutants are allowed to enter the soil, the groundwater, or the storm water system. Fuel oils, lubricating oils and engine coolants are severe pollutants and must be properly controlled.

11.2 The University aims for zero incidents of spills of fuel oils or lubricating oils on University grounds or in the drainage systems.

11.3 The four major steps in the event of a spill are:

a) Stop;

b) Contain;

c) Notify; and

d) Clean Up.

11.4 **Stop:** In the event of a spill, contractors and personnel must stop work immediately and take preventive measures if possible to ensure no more material is spilled. For example, close a valve or pick up a fallen container.

11.5 **Contain:** Contain the spillage immediately by damming with earth or sand, drip trays or spill kits, ensuring it does not reach nearby drains, watercourses and other sensitive areas. Use Spill Kits to deal with spills on land and water. They should be stored in a marked bag or wheelie bin in a well signposted location, preferably near where they are likely to be required. The spill kit should contain equipment specific to the oils and chemicals being used on the site and may include:

11.5.1 Oil-absorbent granules.

11.5.2 Absorbent mats (preferably water-repelling).

11.5.3 Floating booms.

11.5.4 Drain covers.

11.5.5 Gloves.

11.6 **Notify:** If a spillage occurs notify the Responsible Officer immediately. Subject to the extent of the spill and the hazardous content of the spill, the Responsible Officer will notify the PDCSO Maintenance Department.

11.7 **Clean Up:** Collect or excavate all contaminated spill kits, granules and contaminated ground and put into a suitable “Hazardous Waste” container. It must not be mixed with other (non hazardous) waste.

11.8 Replace the materials used from the spill kit immediately.

11.9 Spill skits must be carried in all vehicles performing refueling or replenishment of oils or coolants.

11.10 All refueling and replenishment activities must be carried out by experienced personnel.

11.11 No refueling is permitted on grassed areas, garden beds, footpaths, or on open soil anywhere on University property.

12. Use and Management of the PDCSO Workshop

12.1 Care must be taken to minimise the risk of injury to personnel who are required to work in the PDCSO workshop. Only authorized PDCSO personnel may use the workshop areas unless use by others is permitted by the General Manager Assets and Maintenance.

12.2 All personnel working in a workshop environment are responsible to follow the General Requirements of Safety in Workshops as follows:

12.2.1 Always use the appropriate personal protective equipment (PPE) and check that it is clean and in good repair before and after use.

12.2.2 Keep the work area clean and tidy at all times.

12.2.3 Report all hazards and unsafe conditions and work practices.

12.2.4 Always seek instruction before using an unfamiliar piece of equipment.

12.2.5 Use tools and machines only for their intended purpose.

12.2.6 Report all damaged equipment and do not use it until it has been repaired by a qualified person.

12.2.7 Where machine guards are provided they must be kept in place.

12.2.8 Never distract the attention of another person who is operating equipment.

12.2.9 Restrain long hair by either a tie or hat.

12.2.10 Ensure there is adequate lighting before starting work.

12.3 Before using Hand Tools

12.3.1 Ensure that you have the correct tools for the job.

12.3.2 Check that the tools are in good condition. Defective tools must not be used.

12.3.3 Keep all edged tools sharp and ground to the correct cutting angle.

12.3.4 Never carry sharp tools such as knives or chisels in the pocket. Keep them in a scabbard or carry them in a toolbox.

12.3.5 Return all hand tools to their allocated place after use.

12.4 Before using Machine Tools

12.4.1 Inspect the equipment to ensure that all guards are correctly fitted.

12.4.2 Ensure that you are thoroughly familiar with the operating and emergency stop controls.

12.4.3 Ensure that any cutting tools or bits are in good condition and are correctly fitted.

12.5 Before using Portable Power Tools

12.5.1 Inspect the equipment to ensure that it and any accessories are safe to use.

12.5.2 Check that the power cord and plug are in good condition. In the case of damage, cuts or abrasion, do not use the tool. Tag it and return it for repair.

12.5.3 Always connect electric power tools through an RCD. Test the RCD daily before using, by pressing the “Test” button.

12.5.4 If using air-powered tools, always check that the air hose and fittings are in good condition. In the case of damage, cuts or abrasion, do not use the tool. Tag it and return it for repair, or fit a new hose.

12.5.5 Make sure that power cables and air hoses are kept neat and out of the way to prevent tripping hazards. Route them overhead if possible.

12.5.6 Never disconnect the electric plug of a power tool by pulling on the wire.

12.6 Using Drilling Machines

12.6.1 Always cut the power before removing or replacing a bit, or changing speed.

12.6.2 Always close the belt guard provided immediately after changing speeds, before applying power to the machine.

12.6.3 Never leave a chuck key in the chuck unless you are actually using it.

12.6.4 Always clamp any fixture, machine vice or workpiece to the work table, or set it against stop bars.

12.6.5 Always stop the machine before attempting to remove swarf or reposition the workpiece.

12.7 Using Grinding and Polishing Machines

12.7.1 All personnel engaged in grinding or polishing operations must wear suitable PPE including eye, ear and respiratory protection where required.

12.7.2 Ensure that grinding wheels are correctly mounted using the correct bushes where appropriate, and firmly tightened.

12.7.3 Keep grinding wheels dressed and clean.

12.7.4 So far as practicable and consistent with the nature of the work, ensure that the guard encloses the grinding wheel.

12.7.5 Check the eye screen if fitted, and clean if necessary. Always look through the screen.

12.7.6 When switching on, stand out of the plane of rotation of the wheel until the machine has reached full speed.

12.7.7 Allow the machine to come up to full speed before applying the work to the wheel.

12.7.8 If you notice any vibration, immediately move your body out of the plane of rotation of the wheel and shut down the machine. If the problem cannot be fixed immediately, tag the machine out and do not use it.

12.8 Using Belt Finishing Machines

12.8.1 Check the condition of the abrasive belt before use and replace if worn.

12.8.2 Check the belt tracking by rotating the belt by hand. If necessary adjust the tracking and finally check with a trial run.

12.8.3 Where possible, use a suitable jig or fixture to hold or locate the workpiece.

12.8.4 Never hold the workpiece in a cloth or any form of pliers.

12.8.5 Do not wear gloves when using a Belt Finishing Machine.

12.9 Using Metal-Cutting Guillotines

12.9.1 Guards must not be removed. They help to prevent the operator's fingers from contacting the knife or clamp from either the front or rear of the machine.

12.9.2 Only one person is allowed to operate the machine at a time.

12.9.3 Additional support should be provided for long material that cannot be adequately supported by the work table.

12.9.4 When not in use, disable hand-operated guillotines by removing the handle or by using a locking device.

12.9.5 Ensure that the shear edges of the blades are maintained in good condition.

12.9.6 Adjust the blade clearance in accordance with the manufacturer's recommendation for the thickness of the material being cut.

12.9.7 Wear protective gloves when handling sheet metal.

12.9.8 Always put scrap in a container provided for the purpose.

12.10 Woodworking Machinery

12.10.1 All personnel using woodworking machinery must be trained and be familiar with the provisions of Section 9 of Australian Standard AS1485-1983 and Australian Standard AS1473 - Code of Practice for the Guarding and Safe Use of Woodworking Machinery.

12.11 Harmful Substances and Processes

12.11.1 Before using any substance, ensure that the Material Safety Data Sheet (MSDS) is available. Always know the safety precautions required.

12.11.2 If it is possible for harmful concentrations of fumes or gases to develop, ensure that local exhaust ventilation is operating, in addition to the general ventilation of the workshop.

12.11.3 Use the appropriate PPE to protect against chemical agencies such as harmful dusts, mists and vapours.

12.12 Solvent Degreasing

12.12.1 A legible copy of relevant Material Safety Data Sheets (MSDS) for all solvent degreasers must be kept in the location in which they are being used.

12.12.2 Solvent degreasing processes must not be carried out near open flames or electric heaters.

12.12.3 The following solvents are permitted for use in workshops:

a) 1,1,1 Trichloroethane. This should always be used in a fume cupboard and only for small scale operations.

b) Trichloroethylene and Perchloroethylene. These should only be used in specifically designed equipment and in a well ventilated area free from draught. These solvents have anaesthetic properties and are harmful when inhaled or on contact with the skin.

c) Personnel must not use caustic alkalis with Trichloroethylene or Perchloroethylene as they produce an explosive mixture.

12.12.4 The following solvents are prohibited for use in workshops:

a) Petrol

b) Kerosene

c) Alcohol

d) Ketones

e) Esters

f) Carob Tetrachloride

12.13 Spray Painting and Coatings

12.13.1 Spray painting must be done only by trained personnel, who are familiar with the provisions of Regulations 745 to 755 of the Occupational Safety and Health Regulations (1996) section 3.99 to 3.101.

12.13.2 Spray painting must be done only:

a) in a properly constructed and mechanically ventilated booth; or

b) in the open air with a 5 metre isolation radius, ensuring that there are no air conditioning intakes in the area.

12.13.3 All personnel engaged in or exposed to spray painting of lead paint, silica paint or epoxy resin must wear suitable protective clothing and head covering.

12.13.4 The following substances are prohibited for use in spray painting operations:

a) Carbon Bisulphide

b) Carbon Tetrachloride

c) Tetrachloroethane

d) Arsenic or any of its compounds

e) Any compound containing more than 1% Benzene or Methanol.

12.13.5 The following substances may be used:

a) Amyl, Methyl Amyl and N-Butyl Acetates

b) Mineral Turpentine

c) Toluene

d) Xylene

12.14 Welding and Cutting

12.14.1 Regulations 735 to 755 of the Occupational Health Safety and Welfare Regulations apply to welding and cutting processes and spray painting operations.

12.14.2 Many common materials and coatings give off toxic fumes when heated during cutting or welding. These include galvanized iron and compounds of cadmium, lead, zinc and many similar metals.

12.14.3 Avoid inhalation of fumes by:

a) using the least toxic material or process practicable;

b) ensuring that there is adequate ventilation in the form of a movable exhaust hood; and

c) using an appropriate respiratory protective device.

13. Electrical Works, Hazardous Materials and Asbestos Related Works

13.1 All works involving electricity, hazardous materials and asbestos removal (or works that have the potential to disturb asbestos) require a permit to work before the work commences. The Responsible Officer at PDCSO is responsible for issuing these permits for building related works.

13.2 The management of asbestos is governed by relevant legislation and codes of practice, and the University's Asbestos Management Policy, Asbestos Management Procedure and Asbestos Management Plan. Project Leaders and Maintenance personnel should refer to these documents and to the Asbestos Register at the FM Helpdesk on the South St campus prior to the commencement of any asbestos-related work on campus.

13.3 Electrical works also require that a permit to work is issued by the Responsible Officer at PDCSO prior to works commencing. Electrical works are governed by the University's Electrical Policy, Procedures and Guidelines. Project Leaders who are managing contractors and relevant Maintenance personnel should refer to these documents prior to the commencement of any electrical works on campus.

13.4 A permit to work is required for any works involving hazardous materials on University property. The disposal of some hazardous materials (including asbestos) is addressed in the Recycling and Waste Management Policy. Other University policies also address aspects of

handling hazardous materials appropriately on campus, including the Safety in Research and Teaching Policy.

13.5 Please note that there are new policies under development which will address the management of biological, radiological and chemical hazards on University premises. Personnel requiring advice on the management of hazardous materials on campus should refer to the Manager of Occupational Safety and Health for advice.

Governance

Approval Authority	Senior Leadership Team
Owner	Vice Chancellor
Legislation mandating compliance	
Category	Primarily a function of management
Related University Legislation and Policy Documents	Asbestos Management Policy Asbestos Management Procedure Electrical Policy Electrical Testing and Tagging Procedure Health and Safety Policy Power Tools Procedure Recycling and Waste Management Policy
Date effective	14/12/2011
Review date	14/12/2012

References

Murdoch University Asbestos Management Action Plan

Murdoch University Occupational Health and Safety

https://our.murdoch.edu.au/Occupational-Safety-and-Health/

WorkSafe Western Australia

http://www.worksafe.wa.gov.au

Safe Work Australia

http://safeworkaustralia.gov.au

Revision History

Approved/Amended	Date Approved	Resolution No. (if applicable)
Administrative amendments	08/05/2024	
Approved	14/12/2011	

Please refer to the electronic copy in the Policy and Procedure Manager to ensure you are referring to the latest version.