



**ESTATES DEPARTMENT**

**Safe Systems of Work**

**Hot Work Procedure**



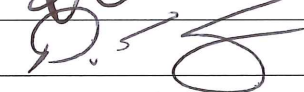
**Rev 2**

# Safe Systems of Work

## Hot Works Procedure

### Document History

Document Revision	Date	Description of amendments	Revision Author
1	06/12/2017	Procedure developed by Matt Cheney and issued as a departmental procedural document in replacement of the previously titled 'Permit to Work Procedure'.	MC
2	18/12/2018	Update to section 1.4 responsibilities. Update EMM/EPM to AP throughout document.	MC
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### SECTION 1

#### Hot Work Procedure

#### 1.1 Introduction and Scope

1.1.1 This procedure has been developed as part of a suite of Safe Systems of Work (SSoW) for the University of Kent's Estates Department. The person with overall responsibility for controlling and updating these procedures is the Assistant Director of Estates (Maintenance & Compliance) and is deemed to be the Duty Holder.

1.1.2 Compliance with this procedure is mandatory in order to establish safe working practices for the protection of persons under the management of Estates Department. Activities involve any form of hot work operations such as the use of any flame or heat source within the University of Kent Campuses. The definition of hot work is as follows;

'Hot Work' – hot work is defined as any process that can be a source of ignition when flammable material is present or can be a fire hazard regardless of the presence of flammable material in the workplace. Common hot work processes involve welding, soldering, cutting, brazing burning and the use of power-actuated tools or similar fire producing operations outside of designated hot work areas. When flammable materials are not present, industrial processes such as grinding and drilling become cold work processes

1.1.3 The procedure governs work associated with the University of Kent and applies to both employees of the University of Kent's Estates Department and those contractors and suppliers engaged by University of Kent's Estates Department, directly or via third parties, to work on its sites and premises.

1.1.4 All persons who are, or who may be, associated with the many aspects of maintenance, engineering and construction work such as; welding, burning, cutting, grinding and working with Bitumen boilers etc.; or those who undertake any other form of hot work activities, shall comply with the University of Kent's Hot Works Procedure, which observe the following statutory provisions:

- The Regulatory Reform (Fire Safety) Order 2005
- The Dangerous Substances and Explosive Atmospheres Regulations 2002
- The Health and Safety at Work Act 1974 and subordinate legislation;

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- The Management of Health and Safety at Work Regulations 1999
  - Provision and Use of Work Equipment Regulations 2002
- 1.1.5 Any work undertaken may also be governed by University of Kent's policies and safety rules other than those for safe hot works, such as those applying to general occupational health and safety matters and not least the requirement that work activities are subjected to risk assessment and method statement.
- 1.1.6 This procedure outlines the University of Kent's Safety rules and arrangements to achieve compliance of the Management of Health and Safety Regulations 1999 and to ensure employees and contractors are not exposed to unnecessary risks associated with hot works.
- 1.1.7 These arrangements will assist employees with assessing the risks associated with the various scenarios where it is difficult to eliminate hot work entirely. This procedure also outlines the duties of those persons engaging in hot works activities to enable them to work safely.
- 1.1.8 The University of Kent recognises that a number of activities fall within the definition of hot work and as staff may be required to undertake such activities as part of their duties, this procedure has been developed to:
- Ensure hot work activities are avoided wherever possible;
  - Ensure that all hazards likely to be encountered are identified.
  - Ensure that, where hot work is unavoidable, the activity is subjected to a suitable and sufficient risk assessment and that only trained competent staff operate any equipment used for hot work;
  - Set the health, safety, and principles for hot works and ensure that these are communicated to staff;
  - Establish the emergency arrangements as necessary for hot work activities.
  - Ensure that the University's Permit to Work system is followed when any hot work is undertaken;
  - Ensure that management and staff are fully aware of the duties under H&S law.
- 1.1.9 This procedure covers all contractors and staff working on behalf of the Estates Department within all University of Kent campuses who are required to carry out any hot work activities.

### 1.2 Application of the Estates Department Hot Work Procedure

- 1.2.1 All persons who have cause in the normal course of their duties to be involved with or part of this procedure, shall be provided with a copy of this procedure by the appropriate manager.
- 1.2.2 Contractors or any other persons working on University of Kent property who have cause to be involved with work outlined in 1.1.4 above, will be supplied with a copy of this procedure by the appropriate manager
- 1.2.3 All employees and persons issued with this procedure shall sign a receipt for their copy and shall keep them in good condition and have them available for reference.

### 1.3 Responsibilities and Competency

Those having specific responsibilities for Hot Work activities include the following:

Assistant Director (Maintenance & Compliance) is the Duty Holder, who is the person responsible for controlling Hot Work activities and updating and maintaining these procedures.

Estates Maintenance Manager (EMM) - A person who fulfils the requirements of a Competent Person is over 21 years of age, who is principally of an engineering discipline or who has significant experience and who has had adequate training to work without danger and accepts responsibility for the safety of others working under his direction.

Estates Project Manager (EPM) - A person who fulfils the requirements of a Competent Person is over 21 years of age, who is principally of an engineering discipline or who has significant experience and who has had adequate training to work without danger and accepts responsibility for the safety of others working under his direction.

The EEM/EPM shall ensure compliance with the requirements of the Management of Health and Safety Regulations 1999 and this safe working procedure by;

- Assessing the risks associated with the hot work activity and its potential effect on the surrounding area and processes.

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- Deciding whether the work can be carried out in accordance with a standard operating procedure or whether a permit to work is required.
- Issuing the appropriate documentation to the Competent Person, discussing the practicalities of the safety precautions and control measures required.
- To monitor that during the hot work activity, the work is carried out in line with the permit to work or standard operating procedure. Where the work extends beyond one day, to extend the permit if the conditions are still applicable.
- To ensure that on completion of the hot work the Competent Person has left the area in a safe condition and to sign off the work permit.

Both the EMM and the EPM will be considered Authorised Persons (AP) following written authority by the Duty Holder.

Apart from EMM and EPM other positions may also be classified as Authorised Persons.

Authorised persons shall hold recognised formal qualifications beyond their experience with a minimum of City & Guilds or equivalent. Where formal City & Guilds type qualifications have not been attained a recognised ONC, HNC, HND or Degree relevant to the AP activity will satisfy this requirement.

Competent Person (CP) - A person who has adequate technical knowledge and experience of hot work activities or equipment to be used to avoid risk to himself or others for whom he may be responsible.

Competent Person(s) shall comply with this procedure by;

- Ensuring receipt from the Authorised Person (EEM/EPM) of either a Safe system of Work Procedure or a Hot Work Permit, prior to starting work.
- If a permit is issued, discuss the safety precautions required with the Authorised Person (EEM/EPM). Sign for acceptance of the permit to confirm understanding of the requirements and the obligation to carry out the instructions correctly.
- Work in compliance with the job instructions and control procedures/processes imposed
- Adhere to any provision in the Safety Document (Safe System of Work or Permit to Work).
- Supervise, erect and maintain any barriers, screens or other protective measures.

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- Ensure/arrange communication and/or reporting procedures for emergency situations as appropriate.
- Observe all fire precautions.
- Comply with any monitoring required by the documentation.
- Keep the Hot Work Area clean, tidy and free from any combustible materials.
- Restrict the use and application of heat to the stated points of work.
- Leave the area in a safe condition if the hot work is suspended. The permit will need to be formally extended or a new permit issued if the hot work is to continue on a different day.
- Comply with any requirements laid down in this document, to carry out a personal inspection after a specified period following the last application of heat.
- On completion or cessation of the Hot Work, confirm that the Hot Work area is safe and free from any source of ignition or any signs of any smouldering materials, tidy up the work area, remove/replace any firefighting equipment, if a permit was issued, sign it off and return it to the permit issuer (Authorised Person).

The Authorised Persons and the mechanical trades approved technicians in the University of Kent's Estates Department are deemed to be competent persons by reason of qualifications and experience.

All contractors shall have evidence of having received appropriate training and provide a written method statement and risk assessment for review by AP and have a valid Permit-to-Work prior to undertaking any work associated with hot works. Contractors will comply with this procedure and the duties outlined under Competent Person(s) in this subsection.

### **1.4 Standard Operating Procedures**

Some activities or equipment may have standard operating procedures or similar documentation in place, developed by the Estates Department, to ensure safe working practices and methods are adopted. The introduction of standard operating procedures can play a positive role in risk reduction and may alleviate the requirement of a Hot Work Permit. Where it is identified that a Standard Operating Procedure is required it will be the responsibility of the Authorised person (AP) to ensure this is in place.

### **1.5 Dangerous Occurrences or Accidents**

All dangerous occurrences and accidents shall be immediately reported to line management, to the Health and Safety Advisor and to the AP.



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### 1.6 Operational Restrictions

Operational restrictions identified from any source are to be registered with the AP. These may include, but may not be limited to:

- Health and Safety Executive (HSE) safety alerts.
- Manufacturer's product safety alerts.
- Failures of equipment during operation.
- Third party reports or other safety alerts.

### 1.7 Objection to Instructions

If a person has an objection on safety grounds to instructions received for work on, or the operation of, hot works equipment, he/she shall make their objection known to their line manager. The manager shall consider the matter immediately, referring to the AP if the matter cannot be otherwise resolved.

### 1.8 Signs and Screens

Responsibility for placing in position or moving any signs or screens required in connection with the issuing of written work authorisation documents rests with the AP / Competent Person (CP).

### 1.9 Information, Instruction & Training

Arrangements shall be made by the University to ensure:

- That all employees concerned are adequately trained, informed and instructed as to the system, equipment and area that are affected by particular aspects of work and which legal requirements, safety procedures and related documents still apply.
- That other persons that are not employees but who may be affected by the operations or work also receive adequate information, instruction and training where appropriate.

Never perform hot work unless you have received the necessary training, have the appropriate experience and have been authorised to undertake the work.

### 1.10 Review of Estates Department Work Permit Procedure

Due to the nature of the hot work this procedure will be under constant review, updated and amended accordingly.

### SECTION 2

#### **Undertaking Hot Work safely**

##### **2.1 Safe Systems of Work**

The risk assessment will establish the nature, duration and detail of the work so that the most suitable equipment is selected for those works. The following areas should be considered both within the risk assessment and by all staff who are undertaking the work.

If the hot work involves or produces substances hazardous to health, e.g. cleaning solvents, acids, welding fumes etc. then the work must include any additional control measures as necessary under the Control of Substances Hazardous to Health Regulations.

##### **2.2 Planning**

Before any hot work is undertaken a risk assessment must be conducted to identify the hazards involved in undertaking the work to be carried out, ensuring the hierarchy of controls identified by the Management of health and Safety Regulations 1999 are adhered to, i.e.:

Alternatives to hot work (i.e. cold cutting) should be undertaken whenever reasonably practicable where there is a risk of fire or explosion. Where hot work is unavoidable, it should not be carried out unless it is authorised and properly supervised by an experienced manager or supervisor who has knowledge of the work to be carried out, the risks involved and the precautions to be taken.

Carryout a risk assessment and ensure no hot work is undertaken if it is safe to work another way. Ensure there is adequate supervision and the activities are carried out in a safe manner so as far as is reasonably practicable. Select the most suitable equipment for the task and ensure there are plans in place for emergencies where required such as safe exit routes, firefighting equipment available, etc.

##### **2.3 Risk Assessment**

As part of the general planning explained in section 2.1 above, there should already be arrangements in place to identify tasks/activities where the risk of fire may exist, and adequate procedures are in place to eliminate or reduce these risks. One aim of this process should be to identify when it may be appropriate to manage the work by means of a "Hot Work Permit".

In many cases, work undertaken by the Estates Department will be identified as routine and will be carried out in a controlled environment designed or intended for that purpose.

In these cases the risks are likely to be readily identifiable in advance by the normal risk assessment process and appropriate control measures implemented into the normal working practices. Routine work of this nature which is carried out in a suitable designated environment will not normally require management by means of a "Hot Work Permit" system.

### **2.4 Designated Hot Work Area**

For internal hot work activities undertaken by staff the Estates Department has designated the Fitters Workshop as a suitable and authorised 'Hot Work Area'. This means that a Permit to Work will not be required in this area unless identified in a risk assessment where a job may be more complex than usual or the nature of the job may carry greater risks.

This area may also be used by contractors undertaking work on behalf of the University of Kent and where prior agreement has been arranged with the EMM/EPM and activities are of low risk and adequately controlled.

### **2.5 Type and Suitability of Equipment**

When selecting equipment for hot works, it must be the most suitable for the task. Wherever possible, give collective protection measures priority over personal protection measures.

Take into account, the working conditions and risks to the safety of all those at the place where the work equipment is to be used.

### **2.6 Safe Storage of Equipment**

Equipment and supplies shall be stored in a manner that will prevent the creation of hazardous conditions. Store and use gas bottles in an upright position and only in well-ventilated places. Ensure gas bottles are stored away from heat and ignition sources and outdoors but away from building entry/exit points and drains. All equipment used in hot work activities must be securely stored and secured after use while any components of the equipment cool or others may be at risk of burns through contact with hot surfaces.

### **2.7 Hazards**

Since hot work tools are highly portable ignition sources, improperly conducted hot work is a major cause of fires and explosions.

### 2.7.1 Burns

Can be caused by the heat radiated from hot working, either by direct contact with hot surfaces or from sparks generated from cutting or grinding operations.

### 2.7.2 Eye damage

The eye can be damaged by radiation generated from welding or brazing operations.

### 2.7.3 Fire

Hot work can cause flammable vapours and combustible materials to ignite. Fumes are a natural by-product of welding, and arise from even simple welding operations. Welding work requires the use of respiratory protection and/or good ventilation, as even simple operations may create fumes such as carbon monoxide, nitrogen oxide, and ozone.

Extra precautions are required during the welding of metal coated parts with or containing zinc, cadmium, chromium, copper, fluoride, lead, manganese, or vanadium, as the resulting fumes can lead to metal-fume fever.

Hazardous fumes released during welding operations are generally derived from:


- Base material being welded or the filler material that is used;
- Coatings and paints on the metal being welded, or coatings covering the electrode;
- Shielding gases supplied from cylinders;
- Chemical reactions resulting from the action of ultraviolet light from the arc, and heat;
- Process and consumables used;
- Contaminants in the air, for example vapours from cleaners and degreasers.
- Exposure to welding smoke has serious short-term and long-term health effects often affecting the lungs, heart, kidney, and central nervous system.

### 2.7.4 Explosions

These can arise through working in explosive atmospheres or through flashback to an acetylene-welding cylinder.

# Safe Systems of Work Hot Works Procedure

## Appendix 1 Hot Works Permit

<b>Hot Work Permit</b> Safe systems of Work: Hot Works Procedure	
<b>Hot Work Permit</b>	
Date <input style="width: 100px;" type="text"/>	Time <input style="width: 100px;" type="text"/>
Permit Number <input style="width: 100px;" type="text"/>	
Description of Work	<input style="width: 100%; height: 30px;" type="text"/>
Exact Location of Proposed Work	<input style="width: 100%; height: 30px;" type="text"/>
<b>Checklist</b>	
	<b>YES    NO    N/A</b>
Is there a Risk Assessment / Method statement for this task?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Personnel are trained in the use of fire extinguishers?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
There is at least one appropriate fire extinguisher available at the location detailed on this permit	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<div style="display: flex; justify-content: space-around; font-size: small;"> <span>CO2 <input type="checkbox"/></span> <span>Foam <input type="checkbox"/></span> <span>Water <input type="checkbox"/></span> <span>Powder <input type="checkbox"/></span> </div>	
The correct RPE/PPE is available to person(s) undertaking the hot work activity?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
The location of the Hot Work activity has been cleared of any flammable materials?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Smoke / Heat / Flame detectors local to the work area have been isolated?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Area affected by Hot Works has warning signs & barriers/screens?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Are personnel medically capable (self-assessed) to perform work at height?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Have Access/Egress points been identified and any additional risk mitigated?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
A competent member of university staff has been assigned Fire Watch Duties (must remain in workplace at least 30 minutes after the hot work ends)	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Have the emergency arrangements been communicated and understood	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
I confirm that all controls as above have been agreed and I have communicated the requirements of this permit.	
UoK Permit Authority <input style="width: 150px;" type="text"/>	Contact No <input style="width: 100px;" type="text"/>
Signature <input style="width: 150px;" type="text"/>	Date <input style="width: 100px;" type="text"/>
I confirm that all controls as above are in place and I have understood the requirements of this permit.	
Competent Person <input style="width: 150px;" type="text"/>	Contact No <input style="width: 100px;" type="text"/>
Signature <input style="width: 150px;" type="text"/>	Date <input style="width: 100px;" type="text"/>
<b>Work Completion</b>	
I have inspected the worksite. I am satisfied that the work is complete, fire protection devices are reinstated and the site has been left safe with all tools and equipment removed.	
Uok Permit Authority <input style="width: 150px;" type="text"/>	
Signature <input style="width: 150px;" type="text"/>	Date <input style="width: 100px;" type="text"/>
<b>Fire Watch Completion</b>	
I confirm that I have inspected the work under the fire watch duties and all fire is extinguished	
Name <input style="width: 100px;" type="text"/>	Time <input style="width: 100px;" type="text"/>
	Date <input style="width: 100px;" type="text"/>

