



Fire Safety: Hot Work and Historic Buildings

Introduction

Many serious fires in historic buildings have been caused by contractors using heat-producing equipment. Historic England's advice is to avoid hot work altogether unless there is absolutely no alternative.

This guidance note is intended for owners of historic buildings, conservation officers, consultants, contractors and fire protection officers. It covers 'Hot Work' and also lighting of fires in hearths for activities such as visitor interpretation of kitchens and drawing rooms in historic houses.

Hot work

Hot work includes cutting, welding, brazing, soldering, hot air, the use of blow-lamps and other equipment producing heat or naked flames, and lighting fires in hearths.

As a general rule, **no** hot work should be permitted in any roofed historic building. However, when there is absolutely no alternative, the responsible person, as defined under the Regulatory Reform (Fire Safety) Order 2005, may allow hot work to be carried out on strict adherence to the provisions of a Permit-to-Work (PTW) Hot Work. Increased costs for carrying out the work without the use of hot work should not be a deciding factor in the granting of a hot work permit.

Risk assessment

Legislation requires a fire risk assessment to be carried out by a responsible person (the employer or persons in control). All owners and operators that carry out hot work must ensure that these activities have been adequately covered by their risk assessments.

The assessment must be carried out by a 'competent person'. This person has to have sufficient technical knowledge, training and practical experience of hot work processes and associated hazards. Projects that are more complex will probably need to be assessed by a person who has had comprehensive training or experience in fire risk assessments.

Permit-to-work (PTW) systems

The PTW Hot Work must contain a risk assessment, method statement, and authority to start the works, an audit provision and a procedure for checking the area after completion of works.

The PTW should normally include:

- the location and nature of the hot work intended
- the proposed time and duration of the work
- the limits of time for which the permit is valid
- the person in direct control of the work

PTWs are formal management documents. They can only be issued by those with clearly assigned authority to do so. The requirements stated in them must be complied with before the permit is issued and the work covered by it is undertaken.

Individual PTWs should relate to clearly defined individual pieces of work. PTW documents must not be used as blanket authorisations to carry out hot work anywhere on the site at any time. They should only be issued just prior to intended hot work duty and end once the activity at that location and time has finished (see **Example 1**).

Further information

[Health and Safety Executive, *Permit-to-work systems* \(INDG98\)](#)

[Health and Safety Executive, *Dangerous Substances and Explosive Atmospheres Regulations 2002*, \(DSEAR ACOP L138\)](#)

Examples of PTW Hot Work method statements and forms such as the [Construction Industry Training Board \(CITB\) GC07 Hot-work permit](#) can be found online.

Fire safety considerations

- The aim of all duty-holders, such as designers, principal contractors and sub-contractors should be to design out any hot work in any historic building.
- Hot work should be avoided in historic buildings as far as possible, and should be done off site (such as alteration of any structural steel) or with other methods of construction (for example, push-fit services instead of soldered).
- Hot work and hot processes should be strictly controlled through permit-to-work schemes.
- Hot work must be carried out in a safe area. Combustible materials must be kept away from any hot work.

- Ignition hazards and combustibles must be separated with sufficient clear space. Fire-resistant enclosures for hot work processes should be considered.
- Contractors should be competent in the use of hot work equipment, understand and follow appropriate work practices.
- Contractors should be sufficiently informed, instructed, trained and supervised to minimise the risk of human error during operation of the permit to work system.
- Provision and maintenance of the correct equipment are key factors in preventing incidents. Detailed guidance is given in [HSE guidance note HSG139: The safe use of compressed gases in welding, flame cutting and allied processes and in the British Compressed Gases Association Code of Practice No 7](#).
- An 'Operational Checklist for those involved in Hot Work: Typical Precautions for Safe Hot Working' should be provided.
- The use of gas cylinders of any type within historic properties should be assessed unless the cylinders are in a locked cage external to the property in a safe location, and the gas supply is piped into the building by an approved system.
- Gas cylinders (if approved) should be secured in an upright position. Hose length should be kept to a minimum. This reduces the likelihood of damage and should help to ensure that the hose is not damaged by the hot work. The Hot Work Checklist should be secured to cylinder trolleys.
- Any area of hot work must be monitored for at least one hour after completion and the area should be revisited two hours later. This means that hot work cannot be carried out near the end of the day (within at least two hours of the site being vacated).
- Contractors carrying out hot work need to be competent in the use of the firefighting equipment provided and training will normally be necessary.

Hearth fires

Lit fires in kitchens and drawing rooms can add to the visitor experience in historic buildings open to the public. Although fires are not hot work in the usual sense, they are naked flames so use of hearths does require a PTW to ensure the fires are safely managed. A PTW can be set up for the whole year, providing regular inspections and checks of the hearth and flue, as part of the Method Statement (see **Example 2**).

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www.historicengland.org.uk/advice/technical-advice/emergency-and-fire/

EXAMPLE 1

Method Statement for single permit – lead roof repairs

1. The hot works will be under supervision of the responsible person or their duly authorised agent, who will ensure this method statement is followed and that the user has signed Parts III and V of the hot works permit.
2. The hot works will stop at least 2 hours before the end of the normal working day or building closing time.
3. The responsible person or their duly authorised agent must inspect at the end of each working day and at the completion of the hot works the work area, and all roof spaces/floors within 3 metres directly below and adjacent to the working area after a period of at least 2 hours to ensure all has been made safe.
4. The work area will never be left unattended during the hours of 8.00 and 16.00.
5. No hot works will be allowed to be undertaken overnight (18.00 to 8.00).
6. An appropriate fire extinguisher and a fire blanket are to be kept within the working area with the operatives undertaking the hot works suitably trained to use the fire extinguisher and fire blanket. The person responsible for monitoring the hot work will also be trained in the use of fire extinguishers and fire blankets.
7. All combustible materials should be kept at least 3 metres away from the hot works.
8. At the end of the hot work activities each day, all hot surfaces must be cool before the operatives leave the work area. Any burning embers must be thoroughly extinguished. All gas cylinders/canisters and waste materials must be removed from the work area overnight.

EXAMPLE 1

Authority to carry out hot work – Single permit

| | | |
|----------------------|---|---|
| AUTHORITY | Type of work <i>Repair of lead roof</i> | |
| | Valid for the period _____ to _____ subject to conditions of the PTW Hot Work Policy | |
| | PART I: To be prepared by the ‘Responsible Person’ in conjunction with the contractor | |
| | Why alternative methods cannot be used | |
| | <i>The hot work is required for the repair of lead roof No suitable alternative available</i> | |
| | Exact location of hot works | |
| | <i>North Wing roof</i> | |
| | Person carrying out the works | |
| | <i>Specialist lead roofing contractor trained with regards to the fire procedures only</i> | |
| | Risks associated with the work | |
| | <i>The use of naked flame Potential of hot embers Direct and indirect heat transfer to combustible materials Use of flammable liquids (gas) Access and restricted space for inspection of area during and post completion of the hot works</i> | |
| | How risks will be managed | |
| | <i>A Method Statement and Risk Assessment has been written regarding the hot works and will be reviewed at regular intervals. All roof spaces/floors within 3 metres directly below and adjacent to the working area will be cleared of all loose combustible and flammable materials. All combustible items, on ceilings and walls to be moved away clear of any metal likely to conduct heat. This may require the removal of roof insulation which will need to be reinstated once the works are complete. Where this is not possible then temporary fire-resistant materials to protect the working and adjacent areas may be required. The responsible person or the duly appointed representative will inspect the working area at regular intervals.</i> | |
| Signed _____ | | |
| Name (printed) _____ | | |
| Date _____ | | |
| ACCEPTANCE | PART II: To be completed by the ‘Responsible Person’ on site before works commence | |
| | I am satisfied that there is no practical alternative to hot working in this case and, having examined the location, permission is granted to: | |
| | Name of Staff Member | _____ |
| | Address | _____ |
| | To undertake (type of work) | <i>Lead roof repairs</i> |
| | Location | <i>North wing roof</i> |
| | Between the stated times and subject to the conditions of this Authority | Start Time: Finish Time: |
| | Signed | _____ |
| | Name (printed) | _____ |
| Date | _____ | |

EXAMPLE 1**Authority to carry out hot work – Single permit**

| | | |
|------------------------|---|--|
| AUDITING | PART III: To be completed by the contractor | |
| | I certify that the work will be carried out in accordance with the requirements of this Authority, including all precautions listed overleaf. | |
| | Signed | |
| | Name (printed) | |
| | Date | |
| | PART IV: To be completed by 'Responsible Person' on site | |
| | I have examined the work in progress and am satisfied that it is being carried out in accordance with the requirements of this Authority. | |
| | Signed | |
| | Name (printed) | |
| | Date | |
| UPON COMPLETION | PART V: To be signed by the contractor on completion | |
| | The hot work has been completed and all sources of ignition removed. The work area and all adjacent areas to which sparks and heat might have spread, were thoroughly inspected on completion of the work, and again two hours later in order to ascertain that no smouldering fires had started. | |
| | Signed | |
| | Name (printed) | |
| | Date | |
| | PART VI: To be signed by the 'Responsible Person' on completion | |
| | I have examined the area and am satisfied that there are no signs of fire. | |
| | Signed | |
| | Name (printed) | |
| | Date | |

EXAMPLE 2

Method Statement for annual permit – use of the kitchen fireplace

1. Any use of the fireplace must be under supervision of a staff member, who will ensure this method statement is followed and that the user has signed Parts III and V of the hot works permit.
2. If the fireplace is used at night, a security guard will be employed to monitor the fire and ensure that this method statement is followed.
3. The fire must never be left unattended by the persons using it and the general public will not be allowed within 1 metre of it.
4. A water fire extinguisher and a fire blanket must be kept in close proximity to the fireplace. These are concealed at events but the position known to all staff, security and re-enactors using the kitchen. The person responsible for monitoring the fire should be trained in the use of fire extinguishers.
5. The hastener and the fire basket provided must always be used, and the iron fire basket must remain in the centre of the hearth.
6. Turf and/or a fire plate must be placed under the fire basket to prevent any damage to the historic hearth.
7. All combustible materials should be kept at least 3 metres away from hearth.
8. Persons attending the fire should be appropriately dressed for the tasks. Clothing should be made of natural fibres which are typically difficult to ignite or melt, and costumes must not have any trailing material.
9. At the end of the activities, all hot or burning embers must be thoroughly extinguished, placed into the fire-proof metal box, removed from the house and safely disposed of.
10. After the removal of all embers from the house, both the chimney and fireplace must be examined by the persons using the fireplace and the staff member, to make sure that there are no sparks or smouldering particles.
11. A senior member of staff (or the Duty Manager) must inspect the fireplace, after a period of at least 2 hours following the removal of the embers, to ensure all has been made safe.

EXAMPLE 2

Authority to carry out hot work – Annual permit

| | | |
|----------------|--|---|
| AUTHORITY | Permit to use: <i>Kitchen fireplace</i> | |
| | Valid for the period _____ to _____ subject to conditions of the PTW Hot Work Policy | |
| | PART I: To be prepared by the 'Responsible Person' | |
| | Why alternative methods cannot be used | |
| | <i>Lighting the fire is part of the interpretation of the kitchen for visitors. There is no alternative to recreating the experience. The fire needs to be burning for the duration of the visitor day 10:00-17:00, therefore lit between 08:00-18:00.</i> | |
| | Exact location of hot works | |
| | <i>Old Kitchen, Country House</i> | |
| | Person carrying out the works | |
| | <i>Only staff members specifically trained with regards to the fire procedures.</i> | |
| | Risks associated with the work | |
| | <i>Chimney fire. When removing embers each day, there is the possibility embers might escape and ignite flammable materials in the room.</i> | |
| | How risks will be managed | |
| | <p><i>A Method Statement and Risk Assessment has been written regarding the fire and will be reviewed at regular intervals.</i></p> <p><i>All floors will be swept clean of all combustible materials.</i></p> <p><i>Flammable liquids have been removed to an approved location.</i></p> <p><i>All combustible items, on ceilings and walls have been moved away clear of any metal likely to conduct heat.</i></p> <p><i>A member of staff will be present at all times.</i></p> <p><i>Where possible, flammable materials will be removed on the visitor route between the entrance/exit door and the fireplace.</i></p> <p><i>The embers will be carried outside in a metal box.</i></p> <p><i>The chimney has been lined.</i></p> <p><i>The chimney is swept each year (chimney sweep must be HETAS (https://www.hetas.co.uk/) registered.</i></p> <p><i>Safety reports kept on site at the Estate Office.</i></p> | |
| Signed | | |
| Name (printed) | | |
| Date | | |
| ACCEPTANCE | PART II: To be completed by the 'Responsible Person' on site before works commence | |
| | I am satisfied that there is no practical alternative to hot working in this case and, having examined the location, permission is granted to: | |
| | Name of Staff Member | |
| | Address | |
| | Specific equipment or facility | <i>Kitchen fire, as part of interpretation demonstration for visitors</i> |
| | Location | <i>Old Kitchen, Country House</i> |
| | Between the stated times and subject to the conditions of this Authority | Start Time: Finish Time: |
| | Signed | |
| | Name (printed) | |
| Date | | |

EXAMPLE 2

Authority to carry out hot work – Annual permit

| | | |
|------------------------|---|--|
| AUDITING | PART III: To be completed by the person carrying out the work | |
| | I certify that the work will be carried out in accordance with the requirements of this Authority, including all precautions listed overleaf. | |
| | Signed | |
| | Name (printed) | |
| | Date | |
| | PART IV: To be completed by 'Responsible Person' on site | |
| | I have examined the work in progress and am satisfied that it is being carried out in accordance with the requirements of this Authority. | |
| | Signed | |
| | Name (printed) | |
| | Date | |
| UPON COMPLETION | PART V: To be signed by the person carrying out the work on completion | |
| | The hot work has been completed and all sources of ignition removed. The work area and all adjacent areas to which sparks and heat might have spread, were thoroughly inspected on completion of the work, and again two hours later in order to ascertain that no smouldering fires had started. | |
| | Signed | |
| | Name (printed) | |
| | Date | |
| | PART VI: To be signed by the 'Responsible Person' on completion | |
| | I have examined the area and am satisfied that there are no signs of fire. | |
| | Signed | |
| | Name (printed) | |
| | Date | |