Risk Solutions

High-value domestic refurbishment projects

Minimum standards for fire prevention

HSB Engineering Insurance

NOT IF, BUT HOW

Munich RE

Each year, there are many serious fires on UK construction sites and buildings undergoing refurbishment which could have been avoided via careful planning and control of work activities[1]. During domestic property refurbishments, homeowners and their contractors/site supervisors should take appropriate steps to mitigate fire hazards and risks.

Our brief guide has been designed to provide you and your contractors/site supervisors with best practice guidance for the prevention of fire on your high-value domestic refurbishment projects. Provided in a checklist format (to aid you and your contractors/site supervisors with compliance and monitoring), our guide recommends key practical arrangements, working methods and control measures to put in place in order to reduce the risk of fire.

Our recommendations are based on current applicable health and safety legislation together with construction industry best practices[2], outlining minimum industry best practice standards to reduce the risk of fire on construction sites; most notably, The Joint Code of Practice on the Protection from Fire of Construction Sites and Buildings Undergoing Renovation[3]. Compliance with industry guidelines may be a requirement of your insurance policy (please check your policy for details).

Homeowner/site supervisor/contractor site management

Poor management practices and a lack of site controls can cause many fires on construction projects. You and your contractors/site supervisors should adhere to these minimum standards for fire prevention, with adherence demonstrable through site management procedures and practices.

- Your contractor should possess adequate experience, and be able to demonstrate a proven track record, in similar-type projects. ☐
- Your contractor should appoint a site manager/supervisor to be on site 'full time' for the duration of contract works (they too should have adequate experience in similar-type projects). ☐
- Site management, operatives and subcontractors should have received health and safety training relevant to the works undertaken on site and current legislation (training should be evidenced through appropriate certification). ☐

Security against unauthorised entry and arson

Fires may be started deliberately by unauthorised intruders.

If the property is uninhabited during the refurbishment period, the building should be secured when unoccupied.

- Secure fencing/hoarding should be provided around the site perimeter or the existing structure (ideally, this should be a 2.4m high solid type, with lockable gates and kept padlocked when the site is unoccupied). ☐
- All openings in the existing structure external walls, doors, windows, basements, etc, should be secured (ideally with temporary boarding or sheeting at the end of each working day, and when the site is unoccupied). ☐
- Security site lighting (motion sensor-activated) should be installed. ☐
- A temporary intruder alarm system (internal, motion sensor-activated) should be installed and linked to a designated responder during periods when the site is unoccupied. ☐
- Where scaffolding is erected and easily accessible, a scaffold alarm should be installed and linked to a designated responder during periods when the site is unoccupied. ☐
- An automatic fire detection system should be installed and linked to a designated responder during periods when the site is unoccupied. ☐
- A 'full time' security guard should be employed on site (if requested by your insurer and as determined by risk assessment). ☐
- An adequate number of fire extinguishers/fire points should be provided and maintained within existing structures and buildings under construction (as a minimum: on each floor, close to evacuation routes and adjacent to specific fire risks). ☐

Hot work

Hot work should be avoided and alternative methods adopted wherever possible. Where there is no alternative to hot work, then where possible, the hot work should be undertaken outside of the building, in a designated area away from combustible materials.

- All hot work should be subjected to a job-specific Hot Work Permit controlled by your site manager/supervisor (completed permits should be retained on file and made available to your insurer upon request). ☐
- Before starting any hot work:
  - justification for undertaking any hot work internally within the building should be recorded on the Hot Work Permit. ☐
  - the area should be cleared of any loose combustible waste, stored combustible materials, flammable liquids, etc. ☐
  - timber flooring, exposed timber joists and other irremoveable items of combustible material should be covered or screened-off with non-combustible material (e.g. fire mats or fire blankets). ☐
  - At least two suitable/maintained fire extinguishers should be at hand during the hot work, and the person undertaking the hot work trained in their use. ☐
- The Hot Work Permit should allow for continuous monitoring of the area during hot work and for at least 60 minutes after hot work is complete, and final checking prior to leaving the site. ☐

Electricity and gas

Faulty or overloaded electrics and poor gas installations can often lead to fires.

- Existing electrical installations utilised for construction works should be checked and certified by a qualified electrical contractor to ensure the system is capable of taking the electrical loads applied during the construction period. ☐
- Where existing electrical installations have been altered or adapted for construction works, alterations/adaptions undertaken should be certified by a qualified electrical contractor. ☐
- Where temporary electrical installations have been installed for construction works, they should have been undertaken and certified by a qualified electrical contractor (temporary installations should be regularly inspected, and tested at least every three months or when they have been altered). ☐
- All electrical work, temporary and permanent supplies, should be installed to the latest electrical regulations and requirements. ☐
- Portable electrical appliances (including, kettles, heaters, computers, printers, etc) used during construction works should be tested regularly (recommend annually) and carry durable labels displaying an inspection and test date. ☐
- High use equipment (including extension cables, transformer boxes, power tools, etc) used during construction works should be tested regularly (recommend annually), inspected at least every three months and carry durable labels displaying an inspection and test date. ☐
- The charging of electrical equipment/power tool batteries within the building overnight or at weekends should be prohibited. ☐
- The use of 240v multi socket adaptors or multi socket extension leads within the building should be prohibited (240v electrical sockets should be restricted to one electrical item per socket). ☐
- Electric cabling, extension leads and tools should be protected against damage from construction site activities (damaged cables and equipment should be removed from site immediately). ☐
- Electric cables and extension leads should be unwound whilst in use (to prevent overheating). ☐
- All power supplies (with the exception of those supplying security or fire protection systems) should be isolated/turned off at the end of each working day and when the site is unoccupied. ☐
- All gas supplies should be isolated/turned off when not in use and when the site is unoccupied. ☐
- All permanent gas supplies should be installed, altered and/or adapted by a registered gas installer. ☐
- Gas cylinders should be removed from buildings when equipment is not in use, and stored in secure enclosures in the open air away from buildings or removed off site at the end of each working day. ☐

Temporary heaters, lights and cookers

Temporary heaters, lights and cookers provide further sources of heat that can initiate fires

- The use of temporary heaters should be kept to a minimum. ☐
- Heaters, where deemed necessary, should be thermostatically controlled and have an enclosed element (i.e. oil-filled radiator type or involve hot air blown/ducted from an external heat source). ☐
- Heaters should be placed at least 1.5m away from combustible materials/structures, and not placed under coat stands, hooks or drying racks to dry clothes. ☐
- Only low heat temporary lighting should be used (e.g. low voltage festoon lighting, LED lamps or sealed fluorescent light tubes), and it should be located away from combustible materials and protected against damage. ☐
- The use of quartz halogen lights should be prohibited on site. ☐
- Cooking within the existing structure should be prohibited. ☐
- Where cooking takes place away from the existing structure, microwaves should be used (which are preferable to a gas or electric cooker); and the area should be provided with a suitable, maintained fire extinguisher. ☐

Temporary accommodation

Many fires can start in temporary buildings and internal accommodation areas, where there are often heaters for drying clothes and electrical items alongside office furniture and documents.

- Temporary offices and accommodation should be separated from permanent buildings (to provide as wide a firebreak as reasonably possible). ☐
- Where the firebreak is less than 6m, temporary buildings should be fire rated to provide at least 30 minutes' fire resistance (i.e. steel shipping container type). ☐
- Establishing temporary offices and accommodation within the building should be avoided; but where deemed necessary:
  - the electrical supply should be checked and certified by a qualified electrical contractor to ensure the system is capable of taking the electrical loads applied to a construction site office. ☐
  - all portable electrical office equipment (i.e. computers, printers, heaters, etc) should be tested regularly and carry durable labels displaying an inspection and test date. ☐
  - the use of electric heaters should be avoided. Where deemed necessary, the heaters should be thermostatically controlled with an enclosed element (i.e. oil-filled radiator type). ☐
  - the use of 240v multi socket adaptors or multi socket extension leads should be prohibited (240v sockets should be restricted to one electrical item per socket). ☐
  - the charging of electrical equipment/power tool batteries overnight or at weekends should be prohibited. ☐
  - cooking should be prohibited. ☐
  - the storage of fuel-operated plant and tools should be prohibited. ☐
  - the storage of fuel and other flammable liquids should be prohibited. ☐
  - the area should be fitted with an automatic fire detection and signalling system, linked to a designated responder during periods when the site is unoccupied. ☐
  - power supplies (with the exception of those supplying the fire protection system) should be isolated/turned off at the end of each working day and when the site is unoccupied. ☐
  - an adequate number of fire extinguishers/fire points should be established and maintained within the temporary office/accommodation area. ☐

> In many cases, a few simple measures are all it would take to prevent a fire from starting and spreading[4]

Smoking

Discarded cigarette ends and matches in uncontrolled site smoking areas can be a common cause of construction fires.

- Smoking within the building should be prohibited. ☐
- A 'no smoking' policy should be established throughout other areas of the site (except for designated smoking areas). ☐
- Designated smoking areas should be situated as far from any buildings as reasonably practical, kept clear of any fuels and gas bottles, and away from combustible material storage areas. ☐
- Smoking areas should include metal ashtrays, sand buckets or metal waste bins fitted with a metal lid, and a suitable maintained fire extinguisher. ☐

Site storage of flammable liquids and gases

Flammable liquids and gases stored on site can accelerate the growth and spread of a fire.

- The storage of flammable liquids within buildings should be prohibited (only daily use supplies should be retained on site - they should be stored in a secure, suitable, fire-rated container away from buildings or removed off site at the end of each working day). ☐
- The storage of gas cylinders within the building should be prohibited (gas cylinders should be removed from the building when equipment is not in use - they should be stored in secure enclosures in the open air away from the building or removed off site at the end of each working day). ☐
- The use of acetylene should be prohibited (due to its flammable, unstable and explosive nature). ☐
- Storage areas should have adequate numbers of suitable, maintained fire extinguishers in place. ☐

Combustible waste and materials storage

Combustible waste and materials stored on site can provide ample fuel and a starting point for a fire.

- The storage of combustible materials within buildings should be avoided wherever possible. ☐
- All waste materials (including off-cuts of wood, polystyrene, packaging, cardboard, paper, etc) should be removed from buildings to external skips on a daily basis. ☐
- All external skips should be located a minimum 10m from buildings (where a 10m separation cannot be achieved, then covered skips should be provided, fitted with lockable lids and secured when site is unoccupied). ☐
- The burning of waste on site should be prohibited. ☐

Temporary covering materials

Large quantities of temporary covering materials can provide further fuel for a fire.

- Any temporary covering/protection (required to finished surfaces, fixtures or fittings) should be confirmed to be of a fire retardant nature that conforms to the requirements of LPS1207. ☐
- Any scaffold sheeting required should be confirmed to be of a fire retardant nature that conforms to LPS1215. ☐

Fuel-driven plant and tools

Both elements may provide a source of heat and fuel to start and accelerate fires.

- Any stationary plant powered by internal combustion engines (such as compressors and generators) should be positioned in the open air, outside and as far away from buildings as possible. ☐
- The storage of fuel-operated plant and tools within buildings should be prohibited. ☐
- Refuelling should be carried out in a designated area, outside and as far away from buildings and combustible materials as possible. ☐
- For areas under direct control by you, your contractor or your site supervisor, long term parking of vehicles should be prohibited within 10m of buildings (except briefly to allow loading or unloading). ☐
- An adequate number of suitable fire extinguishers/fire points should be established and maintained around the site (ideally, on or near plant items). ☐

Terms and definitions used in this guide

Hot work: cutting or welding operations that involve the use of portable gas or arc welding equipment, or involve soldering, grinding, or any other similar activities, which produces a spark, flame or heat.

Hot Work Permit: a form issued to allow hot works to proceed subject to certain conditions and control measures.

Temporary buildings: includes prefabricated cabins, site huts, cargo containers, caravans and portable buildings brought onto site for use as offices, stores, workshops or welfare facilities during the course of the works.

Temporary accommodation: a segregated part of the building undergoing refurbishment and occupied as offices, stores, workshops or welfare facilities during the course of the works.

Firebreak: an obstacle to the spread of fire, such as a strip of open space.

References and further guidance

(1) Health and Safety Executive: Construction > Process fire risk (www.hse.gov.uk/construction/safetytopics/processfire.htm)

(2) The Construction (Design and Management) Regulations 1994 (as amended 1997 & 2015) (www.hse.gov.uk/construction/cdm.htm)

(3) Fire Prevention on Construction Sites - the Joint Code of Practice on the Protection from Fire of Construction Sites and Buildings Undergoing Renovation' 9th edition October 2015 (www.thefpa.co.uk)

(4) Marsden Fire Safety: Fire safety in construction (www.marsden-fire-safety.co.uk/resources/fire-safety-construction)

(5) Regulatory Reform (Fire Safety) Order 2005

(6) Fire caused by hot works; a guide to loss prevention (www.munichre.com/HSBEIL/services/loss-control-engineering/guides-to-loss-prevention/index.html) (HSB-LCE-RGN-002)

(7) Structural Timber Association – health and safety guidance notes on fire safety and fire prevention on timber framed construction projects (www.structuraltimber.co.uk)

(8) RC48 Risk Control 'Arson Prevention – The Protection of Premises from Deliberate Fire Raising' (www.stoparsonuk.org)

(9) The exposure to crime in your area can be assessed by referring to the Police UK website (www.police.uk)

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