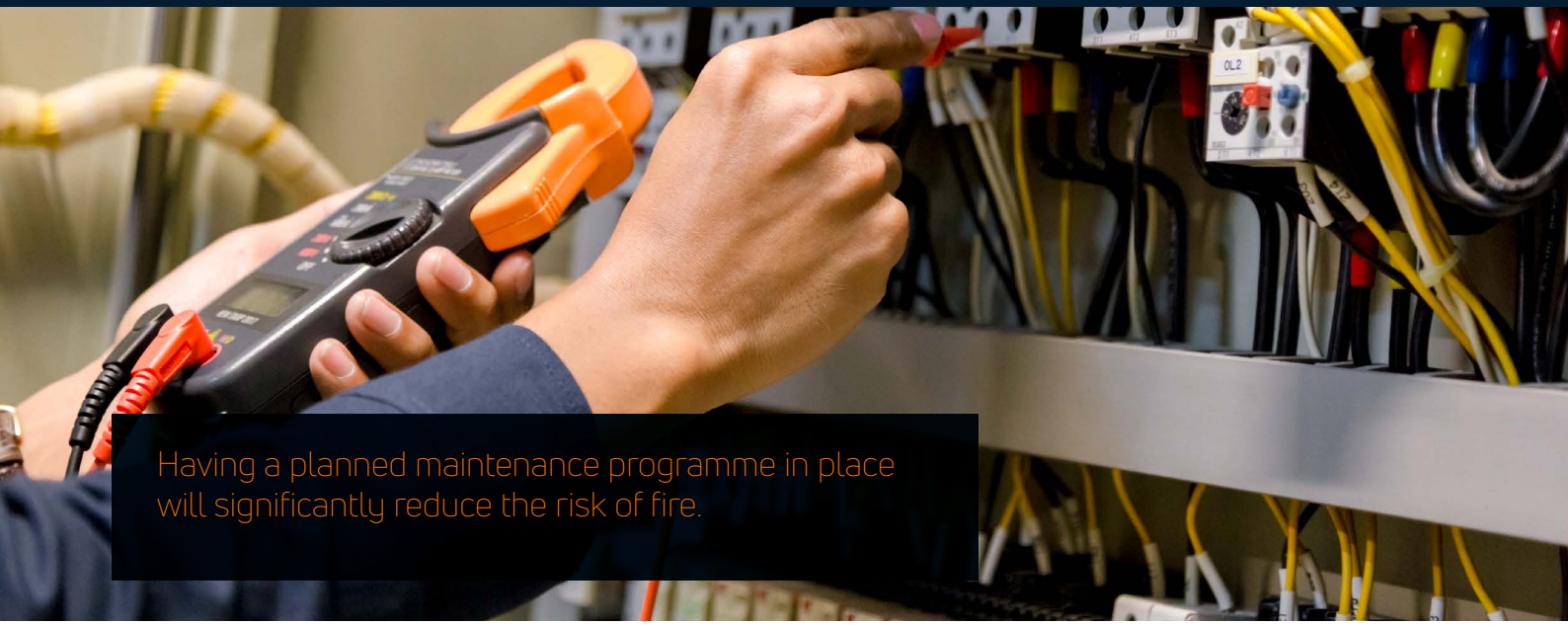
6.0 Building services

This guidance highlights the actions that can be taken to limit the possibility of fires occurring.

RISK ADVICE LINE

Having read this guidance should you have any additional questions on this topic or other risk related matters, as a valued Ecclesiastical customer you can contact us through our 'Risk Advice Line' on 0345 600 7531 (Monday to Friday 9am - 5pm, excluding bank holidays) and one of our in-house risk professionals will be able to assist. Alternatively you can email us at **risk.advice@ecclesiastical.com** and one of our experts will call you back within 24 hours.

For queries about your policy cover or claims please contact your insurance broker.



Having a planned maintenance programme in place will significantly reduce the risk of fire.

To reduce the risk of fire in heritage buildings attention must be paid to the various services that if not appropriately maintained have the potential to cause fires and result in damage buildings and their contents. In this guidance we are looking at the risks associated with electricity, lightning and heating.

Electricity

The Electricity at Work Regulations

These regulations have wide application and apply to any property where employees may be present. They require that electrical installations are safe and do not pose any danger. In order to achieve this, electrical installations must be regularly inspected by a professional electrician working to IET regulations. Under no circumstances should an untrained person attempt any electrical work.

Electrical installation

In heritage buildings electrical faults are a major cause of fires. Research from the National Database of Fires in Heritage Buildings estimated 15% of fires in heritage buildings were electrical origin. These may include:

- The electrical installation can be of considerable age with materials that are no longer used. For example cable materials such as lead or rubber.
- Over time the installation may have been extended or the wiring have been incorrectly installed.

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- Electrical circuits can become overloaded by connecting too many appliances which can lead to over heating and the installation becoming unsafe. Overheating can also damage electrical components and equipment.
- Damaged or inadequate insulation on cables or wiring.
- Combustible materials being placed close to electrical equipment which may give off heat (heat may be generated when equipment is operating normally or when equipment becomes hot due to a fault or inadequate ventilation).
- Defective portable electrical appliances.

It is important that electrical equipment is installed and maintained in a safe manner. All installations should be installed and maintained in accordance with British Standard BS 7671 'Requirements for Electrical Installations' Current Edition

Only electrical contractors with full scope registration or membership to work on commercial installations with the National Inspection Council for Electrical Installation Contracting (NICEIC), The Electrical Contractors' Association (ECA), The Electricity Contractors' Association of Scotland (SELECT) or The National Association of Professional Inspectors and Testers (NAPIT) should be employed.

Electricians or electrical contractors who are only registered to undertake work on domestic installations under Part P of the Building Regulations are not acceptable to Ecclesiastical as an Insurer.

It is generally recognised that installations in commercial premises require inspection and testing by a qualified electrical engineer at five-yearly intervals. The inspection period for some premises may be more frequent depending on their occupation. Defective wiring or equipment should be brought up to the relevant standard under the present I.E.T. Wiring Regulations (BS 7671).

After inspection and testing, if an installation is found to be in 'unsatisfactory' condition, any remedial works required to bring the system back to a 'satisfactory' condition should be completed as soon as possible. Any remedial work classified using codes C1 (Danger Present) in the 'Electrical Installation Condition Report' must be addressed without delay. Any remedial work classified as C2 (potentially dangerous) must be actioned as a matter of urgency. C3 work (improvement recommended) highlights non-compliance with current safety standards that whilst not presenting immediate or potential danger would result in significant safety improvement if remedied.

Certification confirming the outcome of the inspection and test must be obtained and retained.

Temporary wiring

Temporary or extension wiring should only be allowed in exceptional circumstances. All temporary circuits should be physically disconnected from the mains when not in use (even where the mains switches are turned off).

This wiring should always be installed in accordance with the 'Requirements for Electrical Installations' and be protected against physical damage by means of armoured cable or conduit.

Portable appliances

Portable appliance are considered to be any electrical equipment capable of being carried and, in general, connected to the mains supply by a flexible lead and a plug. Once connected they are deemed to be part of the electrical 'system'. Defects in appliances can be a cause of fires.

There are two main classifications:

Class I appliances which rely on earthing of the conductive case and one layer of insulation covering live internal parts for protection against electric shock e.g. a kettle or heater

Class II appliances which are 'double insulated' and rely on two layers of insulation between the internal parts and protection against shock e.g. multi-media projectors.

The main difference from a testing perspective is that Class I appliances require an earth continuity/bonding test which is not required in the case of Class II appliances. The requirement to inspect and test portable electrical appliances arises under a number of pieces of legislation:

- The Electricity at Work Regulations 1989 require all systems to be maintained so as to prevent danger.
- The Provision and Use of Work Equipment Regulations 1998 require work equipment (which would include portable electrical appliances) to be maintained in an efficient state, in efficient working order and in good repair.
- The Health and Safety at work Act 1974 includes general duties, including that employers provide a safe place of work, and plant and systems that are safe and without risks to health.

A competent person must carry out inspection and testing. This is someone with suitable electrical knowledge and experience, who understands the equipment to be worked on and the hazards which could arise, and can recognise if equipment presents a hazard. This does not have to be a qualified electrician. Successful completion of an appropriate course, such as a City and Guilds 2377 Portable Appliance Testing course, would demonstrate competence.

There is no statutory frequency for inspection and testing. The frequency should reflect the risk of the appliance causing damage or injury and this increases with the amount the appliance is used and the harshness of the working environment. For example a kettle in regular use and movement should be examined more frequently than a computer in permanent position. A simple visual check should be carried out by the user before each use to check for such things as damaged plugs, frayed cables and loose connections.

Further guidance is available from the **HSE – Indg236**. Maintaining portable electric equipment in low-risk environments.

Photovoltaic systems

A separate guidance note has been prepared. See **www.ecclesiastical.com/risk-management/solar-panels/**

Lightning

Whilst the provision of a lightning protection system is not a legal requirement for all buildings and structures, the requirements of the Electricity at Work Regulations 1989 apply where premises are being used as a workplace.

Under these Regulations, there is a requirement electrical installations need to be protected from the harmful effects of natural hazards, which include lightning.

Lightning strikes can cause significant damage to buildings. A strike can start a fire and cause damage to buildings and equipment through power surges e.g. electrical items, fire and intruder alarms, IT equipment and lead to the loss of data. It should be appreciated that your own building does not have to suffer a lightning strike. The actual strike can be a significant distance from your building and equipment indicated above may still be impacted.

You should arrange for your property to assessed to determine the risk of a lightning strike to your premises and computer and telecommunications systems by a specialist lightning protection contractor. We recommend you use a contractor who is a member of the Association of Technical Lightning and Access Specialists (ATLAS)[1]. If you identify that your buildings and equipment are at a significant risk from lightning or associated power surges it is strongly recommended that you consider installing a lightning protection system and surge protection devices.

Any lightning protection systems should be installed and maintained in accordance with BS EN 62305 by a specialist lightning protection contractor. Protective earthing of electrical installations needs to be undertaken in accordance with BS 7430.

When surge protection devices are fitted to the electrical system they should be independently inspected as part of the periodic fixed electrical inspection by a qualified electrician/electrical contractor on the Roll of Approved Electrical Installation Contractors issued by the National Inspection Council for Electrical Installation Contracting (NICEIC), a member of the Electrical Contractors Association (ECA), The Electricity Contractors Association of Scotland (SELECT) or a member of The National Association of Professional Inspectors and Testers (NAPIT). Registration or membership must be for the full scope to work on commercial installations.

[1] ATLAS, the Association of Technical Lightning & Access Specialists, maintain a list of competent lightning protection specialists. To find details of a contractor near you visit their website: https://www.atlas.org.uk/

Heating

Gas installations

All persons fitting piped gas must, by law, be registered with the Gas Safe Register, a register of certified installers qualified to work on gas fittings and appliances. They will ensure registered installers are competent to carry out the work they are registered for, and investigate any allegations of 'unsafe' working practices.

As the regulator with responsibility for gas safety, the HSE oversee the scheme. Apart from the obvious fire and explosion hazards, the danger of carbon monoxide poisoning from the use of faulty equipment is ever present. Regular maintenance is therefore essential.

Wherever possible, boiler rooms should be of fire-resisting construction with an external door only. If a boiler room has to be within the building then it should be constructed to a of fire resistance of 60 minutes.

The boiler room should never be used to store rubbish or other combustible material. Other items should be stored at least one metre clear of the boiler.

Oil fired heating systems

Oil fired systems should be installed in accordance with the relevant sections of both British Standard BS 799 for 'Oil Burning Equipment' and BS 54 10 'Code of Practice for Oil Firing'.

Of particular importance is the provision of an automatic fire valve in the oil supply pipe close to the point where it enters the heating chamber, or preferably in the tank chamber if that is adjacent, operated by a fusible link mounted over the oil burner and by a quick-release mechanism sited close to the heating chamber door.

Any oil-fired systems should be maintained by an OFTEC registered engineer. .Apparatus should be operated in accordance with the manufacturers' instructions which should be clearly displayed in the heating chamber or else be readily available for consultation by responsible persons. Regular expert inspection and maintenance is necessary both for safety and for efficient operation of the apparatus.

Oil storage tanks with a capacity of more than 200 litres used in England should be installed in accordance with the Control of Pollution (Oil Storage) (England) Regulations 2001 (similar regulations apply in the rest of the UK). This requires the use of a bund or catchpit, which will contain any leaking oil.

If a tank has to be sited within the heating chamber then it should be isolated from the boiler by a solid brick or concrete block wall at least 115mm thick. The tank chamber should be leak-proof and of sufficient volume to hold the contents of a full tank plus 10% to allow for expansion.

Biomass boilers

A separate guidance note has been prepared. See **www.ecclesiastical.com/risk-management/biomass/**

Electric heating systems

Generally speaking fixed electrically powered heating system are acceptable if installed in accordance with the 'Regulations for Electrical Installations' issued by the Institution of Engineering and Technology (IET), Current Edition, under British Standard BS 7671.

The systems should be fixed and have any heating elements enclosed or protected by adequate metal guards.

Portable heaters

Portable heaters should only be used when there is no alternative.

Heaters should be carefully sited well clear of combustible materials and, where possible, protected against the possibility of being knocked over or moved accidentally by the fitting of guards.

Heaters should not be left unattended for long periods or used when the building is unoccupied and should never be moved while alight.

Reserve stocks of liquid petroleum gas (LPG) bottles and cylinders for cabinet type heaters should be kept to a minimum and preferably be stored in a locked and well-ventilated outbuilding or secure compound. This form of heating should be avoided where possible and only used on a temporary basis.

Cylinders should ideally be changed in the open air. Where this is not practical the operation should take place in a well ventilated area away from any source of ignition.

Portable electric radiant heaters are dangerous in a public building and only convector or fan-assisted types fitted with a thermostatic cut-out that operates in the event of overheating should be used. They should be positioned well away from any combustible materials.

The Electricity at Work Regulations 1989 require the inspection of electrical equipment having a lead/cable and a plug and which can be easily moved from place to place. Heaters should be of the electric convector or fan assisted type with a thermostatic cut out that operates in the event of overheating and be included in the regular programme of portable appliance testing.

Protection - Frost damage

All hot water heating systems fuelled by oil or gas should be protected against freezing by the installation of one or more 'frost-stats' which are designed to operate the heating system when the external ambient temperature falls to a pre-determined level.

Wood burning stoves

Wood burning stoves require attention as follows:

- The stove should be installed in accordance with the manufacturer's instructions and properly serviced by a competent engineer, preferably a HETAS registered installer.
- The wood burning stove must to be sited on a non-combustible base e.g. stone. The stove, including the flue, should also be located away from combustible materials. The minimum distance will be specified by the stove manufacturer.
- The system needs to have appropriate ventilation.
- Wood burning stoves must be supervised whilst in use. Any lit fire must have been extinguished before the building is vacated.
- The flue (and chimney if appropriate) must be inspected and swept on a regular basis and inspected at least once every three years by a HETAS registered chimney engineer to ensure the lining and brickwork remain in good condition.
- Fuel for the stove should be stored securely. Do not stack it immediately adjacent to the stove or against the outside of the building where it could be used by an arsonist to assist in starting a fire.
- Avoid burning wet or unseasoned wood. Burning wet, newly felled or coniferous wood can create tar or creosote in the wood burner that is additional hazard.
- Only use fuel that the appliance is designed for. Do not use the stove as an incinerator for general rubbish.
- Fit carbon monoxide detectors in the vicinity of the stove, as per manufacturer's instructions.
- Review and update existing fire risk assessments for the building to reflect the introduction of the stove.
- Train people in the safe operation of the stove, including ignition and re-fuelling to reduce the risk of fire spread and injury.

Key messages

- It is important to ensure buildings services are included in your planned maintenance programme.
- Using equipment as per the manufacturer's guidelines and servicing as recommended will significantly reduce the risk.

Important Note – For any interventions to your building you will require Listed Building Consent (if a listed building). Also, you should consider any advice given by Historic England, the Amenity Societies and other conservation bodies.

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PD3778 1 07/21