

2 HEALTH & SAFETY

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2.1 General

The production of an Operating & Maintenance Manual is at source a Health and Safety requirement to ensure that users of the building can see how the systems were installed, how they work and that they have been tested and commissioned, with instruction provided so that they can be operated in a safe manner without causing harm or damage.

The equipment and materials referred to in this manual are safe and without risk to health when used and maintained in accordance with the instructions given in this manual and with the plant manufacturer's instructions.

Now here is the boring bit that no one really wants to read:

There are provisions in connection with Health, Safety and Welfare, which are legal requirements. In addition, there are many official recommendations. For full details, reference should be made to the appropriate official publications. The following paragraphs briefly refer to the more common requirements:

It is the duty of every employer to:-

- Ensure, in so far as is practical, that the health, safety and welfare at work of all his employees and all other persons who use his premises or are affected by his undertaking.
- Provide the information relevant to above.

It is the duty of every employee whilst at work to:

- Take reasonable care for the health and safety of himself and all other people who are affected by his actions or omissions.
- Co-operate with his employer or any other person in so far as it complies with the provision of the various acts.

Harmful emissions

- Anyone in control of individual or commercial premises must prevent or render inoffensive any actual or potentially harmful emissions into the atmosphere.

Access Limitations

- Access to plantrooms and electrical control equipment must be limited to authorised personnel who are members of the engineering staff.

Neat, Clean & Tidy

- All places of work must be kept as clean as possible (consistent with their use). Dirt and/or refuse must not be allowed to build up. Plantrooms MUST be kept clean and the normal practice of storing items therein must not be permitted.

Carrying out Maintenance Works

- Work must never be carried out under conditions where there is any risk of danger if it is reasonably practical to eliminate that risk.
- Safe working conditions must be provided, to give adequate protection and also safe access and egress where necessary. Proper scaffolds, guardrails, toe boards, ladders

etc., must be provided and used.

- Where appropriate to the work, protective equipment (i.e., goggles, screens, respirators, protective clothing, safety helmets, safety belts) must be provided by the employer and worn and/or used and looked after by the employee.
- No person should lift, move or carry loads that are liable to cause personal injury.
- Never work on moving parts of machinery. Exercise care if working on the stationary parts of machinery that is in operation. Before doing so, ensure that the moving parts are adequately protected by suitable guards.
- Adequate lighting whether permanent or temporary must be provided at all times and adequate ventilation must also be provided. Special precautions must be taken in atmospheres where there is steam, smoke, asbestos, or other unhealthy or dangerous contaminants, or in a confined space.
- Where maintenance work is in progress a "DANGER" notice must always be attached to any "live" apparatus, calling attention to the danger of approach. A "CAUTION" notice must always be attached to plant or its associated control equipment, warning of possible damage to equipment, which may be occasioned by interference.
- Before working on any electrical equipment, a "permit to Work" form, signed by a responsible person, must be obtained. The equipment must be disconnected from the supply by operating the switch or starter, and the isolator (if installed). As a further precaution, remove the protective devices and lock off if possible. Any work requiring technical knowledge or experience must be undertaken only by competent persons.
- Hand, or other small, power tools, should be suitable for, and operated from a 110 Volt electricity supply, using a portable transformer.

Fire Precautions

- Fire precautions must be observed. "No Smoking" notices must be displayed where necessary and must be rigidly obeyed.
- Fire fighting equipment must be provided, maintained and kept readily available at all times.
- The means of escape from the building (as specified on the certificate issued by the Fire Authority) must be maintained and kept from obstruction at all times.
- Fire alarms must be regularly tested and maintained in full functional order. Access to alarm and 'panic' buttons must be totally uninhibited.

First Aid

- First Aid boxes or cupboards of the prescribed standard and containing only First Aid requisites, must be provided in accessible positions, and kept clean and in good order. The minimum quantity of dressings etc, has been laid down according to the number of persons employed. Where this is required by the Regulations, a responsible and readily available person, trained in First Aid treatment, must be named and placed in charge of the equipment during working hours.

Hot Works

- CARE must be taken, and adequate protection provided, to prevent fire when welding or carrying out operations involving the application of heat. ARC welding demands the use of protective screens. Contact lenses must not be worn when carrying out arc welding as the 'flash' from this process may cause permanent damage to the eyes. Precautions against explosions when welding tanks or other containers which have held substances of an explosive or flammable nature must be fully observed.

2.2 Residual Site Specific Hazards

Each system making up the electrical installation in the new and refurbished areas has been tested and commissioned as being safe and therefore in our opinion there are no residual hazards during normal operation and it is noted that electrical, gas, fire and ventilation systems have been designed with safety interlocks to minimise risk of injury.

Any contractor or maintenance operative should address the following residual site hazards before carrying out works on the electrical installation:

Abbreviation	Hazard
Occupied Building	<p><u>Injury to a person caused by working in an occupied building</u> The building will be occupied by Staff and the General Public during 'core hours'. All maintenance works should be risk assessed to decide whether segregation, signage or out of hours working is required to reduce the risk firstly to occupants and secondly to maintenance operatives caused by interference by unauthorised persons.</p>
Electricity	<p><u>Serious injury or fatality caused by contact with electricity</u> The installation is safe, and tested however, maintenance of plant and equipment, and even the replacement of lamps, should be completed by a Competent Person following Safe Isolation Procedures to completely disconnect the item to be worked on from any source of electrical supply.</p>
Working at Height	<p><u>Injury caused by a fall from height of persons, materials or equipment</u> Correctly chosen access equipment will need to be used to maintain or replace luminaires and other equipment installed at height and risk assessment should consider adequate segregation or out-of-hours working to minimise the risk to both building users and maintenance staff.</p> <p>There are electrical supplies to rooftop mechanical plant. A roof working permit should be enforced to ensure adequate control measures are taken when working on the roof.</p>
Fire	<p><u>Injury or death through smoke inhalation caused by fire</u> Whilst a Fire Detection and Alarm System has been installed, it is only that; <u>a detection system</u> and not a prevention system.</p> <p>A Fire Risk Assessment should be completed by the Building's Duty Holder that will include control measures such as, for example, the prevention of using Electrical Distribution Cupboards for the storage of combustible materials and/or flammable substances and the maintenance of clear fire escape routes.</p>

2.3 Service Isolation in Emergency or for Maintenance

Electricity

- The electricity supply for each unit terminates at the panelboard located on the ground floor.
- The panelboard serves distribution boards on each floor.
- Isolation of this building can be achieved by turning off the power at the panel board.

2.4 Emergency Procedures

An Emergency Condition is defined as one that places at risk the safety of Personnel or creates a hazard to the Building or Plant. If an Emergency Condition should occur, it is most likely to be within one of the following categories:-

- Electrical fire caused by severe short circuit or insulation breakdown.
- Natural Gas or Medical Gas leak via damaged pipework
- Flooding caused by burst pipework

It is recommended that personnel operating or involved with running this building make themselves aware of the location of all mechanical and electrical shut off points, emergency "knock off" buttons and electrical mains switches, as speed of action will minimise property destruction and could save lives.

As with any emergency situation local procedures should be followed.

In the absence of local procedures the emergency should be assessed quickly and a decision made to evacuate the area or building and to call the Emergency Services. At no point should you put yourself at risk.

Fire or Explosion

Preservation of life is the most important priority so evacuate the building using the nearest emergency exit and all adjacent areas of personnel if the situation is putting persons at risk.

Leave by the nearest emergency exit and if possible operate the Fire Alarm Break Glass fitted adjacent to that exit. Call 999 and report the fire and location UNLESS local procedures dictate otherwise.

2.5 CDM Regulations 2015

The Construction (Design and Management) Regulations were revised in 2015 and YOU the Client have responsibilities to ensure ANY construction work and repairs are undertaken safely and without damaging worker's and other people's health. The HSE have produced a good guide INDG411 detailing your legal duties but to summarise, as a Client you need to do the following:

1. Appoint the right people at the right time;
2. Ensure there are arrangements in place for managing and organising the project;
3. Allow adequate time;
4. Provide information to your designer and contractor;
5. Communicate with your designer and contractor;
6. Ensure adequate welfare facilities are on site;
7. Ensure a construction phase plan is in place
8. Keep the health and safety file, update it and make it available to anyone who needs to alter or maintain the building;
9. Protect members of the public, including your employees;
10. Ensure workplaces are designed correctly.

2.6 The Electricity At Work Regulations

The owner of the site and the user of the manual, being authorised by the owner, must be fully conversant with the Statutory Regulations laid out in the Electricity at Work Regulations, 1989, which forms part of the Health and Safety at Work Act 1974.

2.7 COSHH

The Control of Substances Hazardous to Health (COSHH) Regulations 1994 place duties on employers to protect employees and other persons who may be exposed to substances hazardous to health, for example: to solids, liquids or gases that may be toxic, harmful, corrosive or irritant. Safety standards, for example, exposure limits of hazardous substances in air, are separately prescribed by the HSE.

Reference must be made to the Product or Supplier data sheets prior to handling any substances involved with operating or maintenance works. Any recommendations arising from the data sheets should be implemented and followed.

No substances considered harmful to health were used during the installation of the mechanical services although it should be noted that both the Fire Alarm Panel and Emergency Light Fittings contain emergency back-up battery packs that will eventually deteriorate and require replacement. At the time of replacement the batteries will need to be disposed of in accordance with local regulations.

2.8 Risk Assessments

Suitable site-specific risk assessments should be carried out prior to commencing any maintenance works. The assessment must take into account potential hazards to employees and members of the public arising from the works to be carried out.

Risk Assessments are usually carried out by a competent/skilled person and follows a systematic approach detailed in a Risk Assessment document. This document provides details including evaluation of the potential risks and hazards together with the measures taken to minimise or eliminate them.

2.9 Working At Height

The owner of the site and the user of the manual, being authorised by the owner, must be fully conversant with the Working at Height Regulations which require employers, the self-employed, and any person who controls the work to do all that is reasonably practicable to prevent anyone falling.

HSE guidance defines a place is "at height" if a person could be injured falling from it, even if it is at or below ground level. The Regulations require duty holders to ensure:

- all work at height is properly planned
- all work at height takes account of weather conditions that could endanger safety
- those involved in work at height are trained and competent
- the place where work at height is done is safe
- equipment for work at height is appropriately inspected
- the risks from fragile surfaces are properly controlled
- the risks from falling objects are properly controlled
- risk assessments are carried out and actions implemented
- suitable signs and barriers should be positioned to warn of overhead operations.
- edge protection erected at place of work where falls of more than 2m could occur.

2.10 Regulatory Reform (Fire Safety) Order 2005

The Regulatory Reform (Fire Safety) Order 2005 replaces the existing fire legislation such as the Fire Precautions Act 1971, the amended 1997 Fire Precautions (Workplace) Regulations, and applies to all premises except private dwellings. The local fire and rescue authority will enforce the Fire Safety Order in most premises.

Fire certificates are no longer valid and are now based on Fire Risk Assessments being carried out, precautions being implemented and regularly reviewed, particularly when alterations or changes are made, to reduce or eliminate the risk.

Fire Risk Assessment must be carried out by the responsible person(s) for the premises or area they control and must take into account ALL persons including visitors and passers-by.

2.11 Responsible Persons

The responsible person is deemed to be anyone who has control of premises or anyone who has a degree of control over certain areas, for example:

- The employer for those parts of premises staff may go to.
- The managing agent or owner for shared parts of premises or shared fire safety equipment such as fire-warning systems or sprinklers.
- The occupier, self-employed people or voluntary organisations if they have any control.
- Any other person who has some control over a part of the premises.

The responsible person is ultimately liable to ensure the Regulations are complied with, even if a third party is used to review the fire safety arrangements.

2.12 Road Transport On Site

The site should be surveyed and plans put in place to avoid danger to pedestrians, contact with building and make sure no vehicles enter or block evacuation areas.

2.13 Special Waste Regulations 1996

The Special Waste Regulations 1996 (as amended) implement the European Hazardous Waste Directive 91/689/EEC and provide guidance on the managing of special or controlled wastes as defined in Section 75 of the Environmental Protection Act 1990 (EPA90) and the Controlled Waste Regulations 1992 (CWR92). In most cases, the following items, particularly related to Building Services, will be considered to special waste

- Used oil from commercial and industrial equipment.
- Asbestos
- Refrigerants
- Waste fluorescent lamps and batteries

The Environment Agency provides A Guide to the Special Waste Regulations 1996 (as amended) version 2 November 1st 2001 that details the assessment procedure for determining special waste and disposal procedures and information on relevant legislation.

2.14 Further Legislation

- The Health and Safety at Work Act 1974
- Management of Health & Safety At Work Regulations 1992
- Management of Health and Safety at Work Regulations 1999 (Management Regulations)
- Work place (Health, Safety and Welfare) Regulations 1992
- The Provision And Use Of Work Equipment Regulations 1998
- The Manual Handling Operations Regulations 1992 (Manual Handling Regulations)
- Personal Protective Equipment Work Regulations 1992 (PPE)
- The Control of Substances Hazardous to Health (COSHH) Regulations 1999
- The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013
- The Construction (Design and Management) Regulations 2015
- Construction (Health, Safety and Welfare) Regulations 1996
- Electricity at Work Regulations 1989
- The Gas Safety Regulations 1998
- The Pressure Systems and Transportable Gas Containers Regulations 1989
- Pressure Equipment Regulations 1999
- Pressure Systems Safety Regulations 2000
- Fire Precautions (Workplace) (Amendment) Regulations 1999
- Health and Safety (First Aid) Regulations 1981
- Employers Liability (Compulsory Insurance) Regulations 1998
- Noise at Work Regulations 1989 (Noise Regulations)

Use the area below to make pertinent notes that might need to be included in a further revision of this manual.