NHS National Services Scotland

SHTM 00
Best practice guidance for healthcare engineering

Policies and principles

Health Facilities Scotland
Engineering and Environment

February 2013

Contents

Preface

About Scottish Health Technical Memoranda

Scottish Health Technical Memoranda (SHTMs) give comprehensive advice and guidance on the design, installation and operation of specialised building and engineering technology used in the delivery of healthcare.

The focus of SHTM guidance remains on healthcare-specific elements of standards, policies and up-to-date established best practice. They are applicable to new and existing sites, and are for use at various stages during the whole building life cycle.

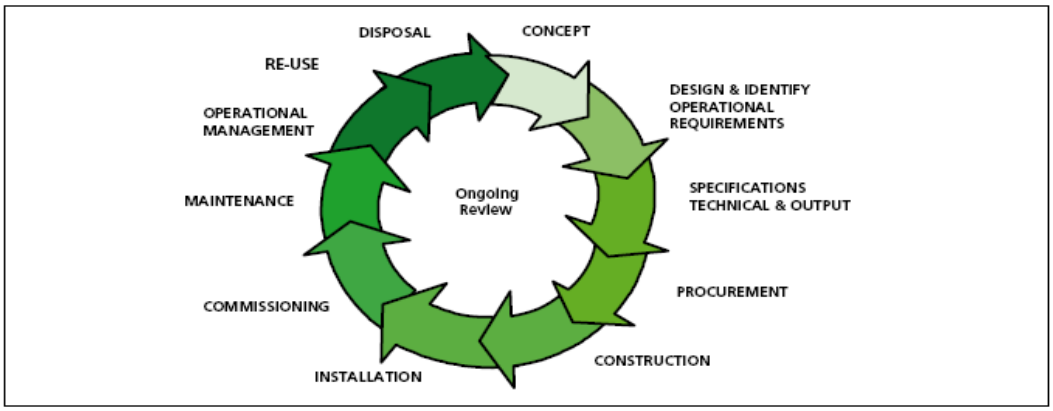

Figure 1: Healthcare building life cycle

Healthcare providers have a duty of care to ensure that appropriate engineering governance arrangements are in place and are managed effectively. The Scottish (Engineering) Health Technical Memoranda (series) provides best practice engineering standards and policy to enable management of this duty of care.

It is not the intention within this series of documents to repeat unnecessarily international or European standards, industry standards or UK Government legislation. Where appropriate, these will be referenced.

Healthcare-specific technical engineering guidance is a vital tool in the safe and efficient operation of healthcare facilities. Scottish Health Technical Memoranda guidance is the main source of specific healthcare-related guidance for estates and facilities professionals.

The core suite of nine subject areas provides access to guidance which:

- is more streamlined and accessible;
- encapsulates the latest standards and best practice in healthcare engineering;
- provides a structured reference for healthcare engineering.

Structure of the Scottish Health Technical Memoranda (Engineering) suite

The series of engineering-specific guidance will ultimately contain a suite of eight core subjects pending a re-assessment of Firecode SHTMs 81-87.

Scottish Health Technical Memorandum 00: Policies and principles (applicable to all Scottish Health Technical Memoranda in this series)

Scottish Health Technical Memorandum 01: Decontamination

Scottish Health Technical Memorandum 02: Medical gases

Scottish Health Technical Memorandum 03: Heating and ventilating systems

Scottish Health Technical Memorandum 04: Water systems

Scottish Health Technical Memorandum 05: Reserved for future use

Scottish Health Technical Memorandum 06: Electrical services

Scottish Health Technical Memorandum 07: Environment and sustainability

Scottish Health Technical Memorandum 08: Specialist services

Some subject areas may be further developed into topics shown as -01, -02 etc and further referenced into Parts A, B etc.

For example: Scottish Health Technical Memorandum 06-02 Part A will represent: Electrical Services – Electrical safety guidance for low voltage systems, Part A:

In a similar way Scottish Health Technical Memorandum 07-02 will simply represent: Environment and Sustainability - EnCO_2de.

All Scottish Health Technical Memoranda are supported by the initial document Scottish Health Technical Memorandum 00 which embraces the management and operational policies from previous documents and explores risk management issues.

Some variation in style and structure is reflected by the topic and approach of the different review working groups.

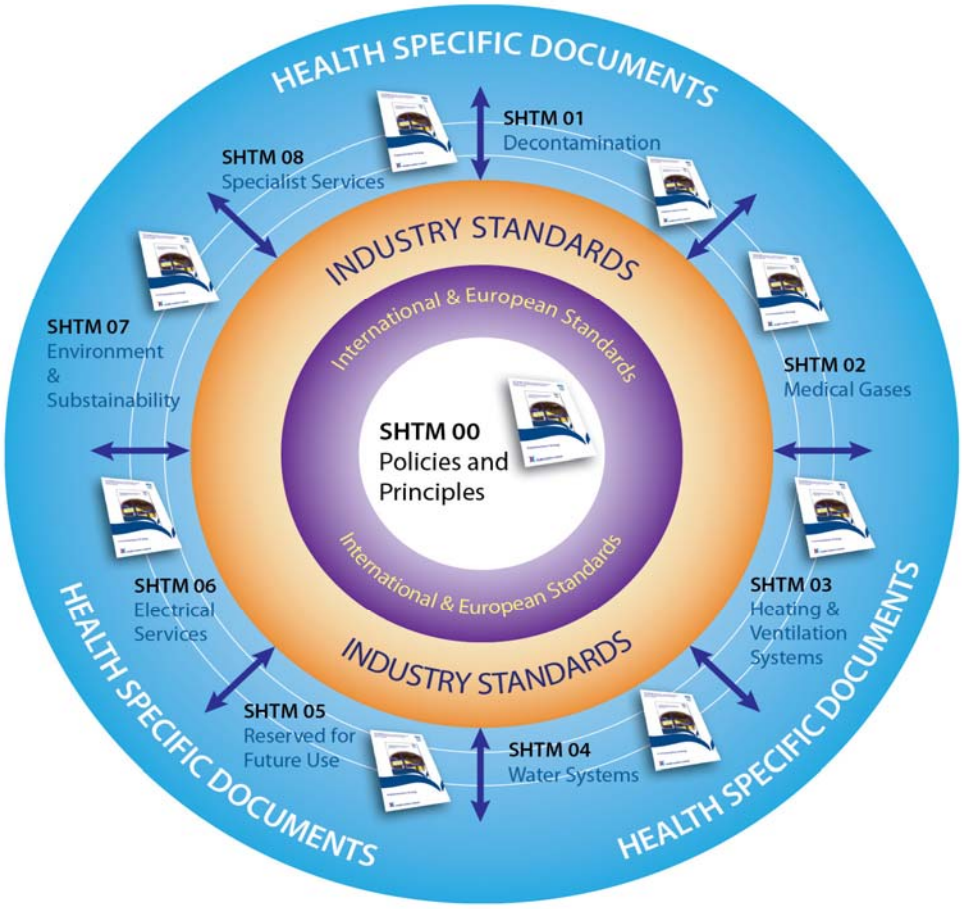

Figure 2: Engineering guidance

Executive summary

This document gives best practice advice and provides a generic overview for Health Facilities Scotland's new suite of Scottish Health Technical Memoranda .

It is provided as a comprehensive guide to all issues relating to the management of engineering and technical service provision which can be applied to NHS and other healthcare facilities: that is, wherever NHS patients are treated.

Scope

Scottish Health Technical Memorandum 00, and the series it supports, provides comprehensive specialist advice and guidance on the design, installation and effective operation of a healthcare facility from an engineering technology perspective. While it is not intended to cover every possible scenario, for example the concept of hospital at home (in a domestic dwelling), the standards and principles it advocates may be appropriate to follow in all locations where healthcare is provided.

Aim of the guidance

The aim of Scottish Health Technical Memorandum 00 is to ensure that everyone concerned with the management, design, procurement and use of the healthcare facility understands the requirements of the specialist, critical building and engineering technology involved.

Regardless of procurement route, whether by traditional means or through a Public Private Partnership (PPP), it is essential that, as part of the briefing process, those involved in the provision of the facility are advised that all relevant guidance published by Health Facilities Scotland (HFS) is available electronically for purchase from HFS. In selecting technical advisers and preferred bidders, it is strongly recommended that their healthcare experience or credentials are thoroughly verified by the NHS Board. References should be obtained and followed up.

Only by having a knowledge of these requirements can the healthcare organisation's Board and senior managers understand their duty of care to provide safe, efficient, effective and reliable systems which are critical in supporting direct patient care. When this understanding is achieved, it is expected that (in line with integrated governance proposals) appropriate governance arrangements would be put in place, supported by access to suitably qualified staff to provide this 'informed client' role, which reflect these responsibilities.

By locally interpreting and following this guidance, NHS Boards and individual senior managers should be able to demonstrate compliance with their

responsibilities and thereby support a culture of professionalism, which instils public confidence in the capability of the NHS at local level.

Users of the guidance

Those providing NHS healthcare and operating facilities will be the main users of this document. However, other stakeholders will be interested and will expect that this best practice guidance is being followed.

Healthcare commissioners should expect that the facilities to which they refer patients should provide a safe, caring environment which aids a patient's recovery and does not expose them to undue risk. Therefore the resilience of critical engineering services and business continuity, linked to policies for emergency preparedness and the ability to respond to major incidents should be high on a provider organisation's agenda.

Structure

Within this document, each Section deals with a different aspect of engineering and technical management from an overview of commonly applicable statutes and legislation through to the training and development issues to consider when providing the necessary levels of professional and technical expertise.

- Section 2 provides an overview of the context of the Scottish Health Technical Memoranda suite;
- Section 3 (while not intending to be exhaustive) deals with commonly applicable statutory and legislative requirements;
- Section 4 considers appropriate professional and technical support;
- Section 5 looks at development of operational policies and advocates service-user involvement etc;
- Section 6 considers emergency preparedness etc and the ability of the organisation to continue to provide healthcare throughout emergency situations and to recover quickly;
- Section 7 provides guidance on staff training, systems and operation and maintenance procedures;
- Section 8 considers maintaining engineering systems to provide optimum performance and maximise the potential for critical service availability;
- Section 9 looks at design and access availability with regard to engineering services.

Recommendations

Scottish Health Technical Memorandum 00 recommends that Boards and Chief Executives, as accountable officers, use the guidance and references provided:

- when planning and designing new healthcare facilities or undertaking refurbishments;
- when developing governance systems which take account of risk;
- to establish principles and procedures which:
  - recognise and address both corporate and the individuals' responsibilities;
  - recognise the link between critical engineering systems and emergency preparedness capability;
  - reflect the important role which engineering polices and principles, as implemented by suitably qualified professional and technical staff, can have in support of direct patient care.

Once NHS Boards and Chief Executives have embraced the principles set out within this document and taken the necessary actions, their duty of care responsibilities are more likely to be fulfilled, as will their ability to maintain public confidence in the NHS at local level.

1. Introduction

Scope

1.1 Healthcare premises are dependent on the safe and secure function of critical engineering services, the application of sound environmental measures, and the support of key services. There are some common principles which apply across the full range of engineering guidance and support the wider interface of all healthcare-related equipment and its environment.

1.2 The concept of providing and maintaining safe and secure critical services carries a high priority and applies across the widest range of applications. It must apply to patients, staff and the general public: that is, *all users* of the healthcare environment.

1.3 In a similar way, the duty of care in operational performance can contribute to the overall efficiency and safety of a healthcare organisation. Accessibility to suitably qualified and competent staff is a key factor when considering governance arrangements.

1.4 Evidence suggests that a comfortable healthcare environment can have a strong influence on the healing cycle. This needs to be achieved in a sensitive way, with design having regard to the function and purpose of the specific and adjoining areas.

1.5 Staff and services must be resilient to ensure continuity of business and the safety of patients and staff, and be capable of providing a suitable response to maintain a level of healthcare in all circumstances.

Engineering governance

1.6 Responsibility and, more specifically, the duty of care within a healthcare organisation are vested in the board of management and its supporting structure.

1.7 Engineering governance is concerned with how an organisation directs, manages and monitors its engineering activities to ensure compliance with statutory and legislative requirements.

1.8 Systems and processes need to be in place, and supported by adequate resources and suitably qualified and trained staff.

1.9 Healthcare organisations should ensure that sound internal controls, safe processes, working practices and risk management strategies are in place to safeguard all their stakeholders and assets to prevent and reduce harm or loss.

Reviews

1.10 Management should conduct regular reviews of the effectiveness of the healthcare organisation's engineering structure and systems. The review should cover all controls, including strategic, operational, safety and engineering risk management.

Guidance

1.11 Scottish Health Technical Memoranda guidance provides a best-practice framework which aims to raise awareness and provide the confidence for strong management.

1.12 This document addresses the general principles, key policies and factors common to all engineering services within a healthcare organisation.

1.13 Key issues include:

- general health and safety;
- professional support;
- operational and training requirements;
- emergency preparedness;
- workforce planning and capability;
- maintenance.

1.14 To determine the right level of approach, which will often require an assessment of the risk and an evaluation of the factors that remain when reasonable and practical measures have been taken to minimise the elements giving rise for concern.

2. Overview of engineering services guidance

2.1 Within the overall Scottish Health Technical Memoranda guidance structure, there are eight specialist subjects supported by this core document. The specialist subject areas are detailed below.

Note: The sequence of numbering within each subject area does not necessarily indicate the order in which the SHTM will be published. However, the overall structure/number format will be maintained as described.

Scottish Health Technical Memorandum (SHTM) 01: Decontamination (replaces SHTM 2010, 2030 and 2031)

SHTM 01 - 01: The decontamination of reusable medical devices, Part A - Management and environment

2.2 The purpose of this guidance is to provide an overview and comprehensive advice, covering the general and regulatory environment for decontamination of reusable medical devices. It considers the key environment and management issues in this area including design, and operational management considerations. It outlines the 'best practice' for the philosophy of decontamination systems for the safety of patients and staff.

SHTM 01 - 01: Decontamination of reusable medical devices, Part B - Equipment

2.3 This document sets out the necessary arrangements for procuring and managing decontamination systems across the healthcare environment. The guidance is best practice and may encompass compliance of other industry legislation and standards.

2.4 It covers the design and pre-purchase considerations, validation and verification, and operational management of test equipment, washer-disinfectors and sterilisers.

Scottish Health Technical Memorandum (SHTM) 02: Medical gases (replaces Scottish Health Technical Memorandum 2022)

SHTM 02 - 01: Medical gas pipeline systems, Part A - Design, installation, validation and verification

2.5 The purpose of this guidance is to provide comprehensive, but not all-inclusive, advice on design considerations applicable to healthcare premises. It outlines the 'best practice' philosophy for systems where patient safety and well-being are of prime importance.

2.6 Guidance in this part covers piped medical gases, medical and surgical air, and medical vacuum installations. It applies to all medical gas pipeline systems installed in healthcare premises and anaesthetic gas scavenging disposal systems. Specifically, it deals with the issues involved in the design, installation, and validation and verification (testing and commissioning) of a medical gas pipeline system.

SHTM - 02: Medical gas pipeline systems, Part B - Operational management

2.7 The safe operation of a medical gas pipeline system relies on skilled staff who understand the system and who can liaise with clinical users to ensure continuing patient safety.

2.8 This document lists key personnel involved in the operation, maintenance and use of the system. This will include nominated medical and nursing staff, risk managers/fire safety officers, pharmacy staff and the quality controller for the site, and competent personnel (who may be in-house staff or contractors). The document also includes relevant drawings and schedules of plant, terminal units, area valve service units (AVSUs), alarms etc.

Scottish Health Technical Memorandum (SHTM) 03: Heating and Ventilating systems (replaces Scottish Health Technical Memorandum 2025)

SHTM 03 - 01 Heating and ventilating systems, Part A - (replaces SHTM 2025) Ventilation, design, installation, testing and validation

2.9 This document provides best practice guidance on the design and installation of ventilation systems and the close-control (mechanical cooling or air-conditioning) of general and ‘specialised’ healthcare environments.

SHTM 03:01 Ventilating systems Part B - (replaces SHTM 2025) Operational management and verification

2.10 This document sets out the necessary arrangements for managing healthcare ventilating and mechanical cooling systems across the majority of premises.

2.11 The sophistication of ventilating and mechanical cooling systems in healthcare premises is ever-increasing. Patients, staff and visitors have a right to expect that these systems will be designed, installed, operated and maintained to standards which will enable it to fulfil its desired functions reliably and safely. To this end, current legislation requires all parties involved to be aware of their individual and collective responsibilities.

Notwithstanding the above, it needs to be remembered that the provision of cooling outwith prescribed areas must be seen as a last resort after all other options have been examined, particularly where challenging energy target figures are to be imposed.

Scottish Health Technical Memorandum (SHTM) 04-01: Water systems (replaces SHTM 2027 and 2040)

SHTM 04 - 01: The control of *Legionella*, hygiene, 'safe' hot water, cold water and drinking water systems, Part A - Design, installation and testing

2.12 Interruptions in water supply can disrupt healthcare activities. The design of systems must ensure that sufficient reserve water storage is available to minimise the consequence of disruption, while at the same time ensuring an adequate turnover of water to prevent stagnation in storage vessels and distribution systems.

To assist in assessing the implications of curtailment of water storage, a risk assessment should be carried out through liaison with the water supplier to verify robustness and condition of infrastructure from which supplies are to be derived, and records should be checked to assess frequency, duration and history of interruptions.

2.13 This document gives advice and guidance to healthcare management, design engineers, estates managers and operational managers on the legal requirements, design applications, maintenance and operation of hot and cold water supply, storage and distribution systems in all types of healthcare premises. It is equally applicable to both new and existing sites.

SHTM 04 - 01: The control of *Legionella*, hygiene, 'safe' hot water, cold water and drinking water systems, Part B - Operational management

2.14 This document sets out the necessary arrangements for managing healthcare water systems across the majority of premises. Current legislation requires all parties involved to be aware of their individual and collective responsibilities for the provision of wholesome, safe hot and cold water supplies, storage and distribution in healthcare premises.

2.15 The temperature control regime is the preferred strategy for reducing the risk from *Legionella* and other waterborne organisms in water systems. This requires monitoring on a regular basis. Recommended test frequencies are listed in the document.

2.16 For other water applications, such as hydrotherapy pools and provision to laundries etc (although briefly described in this publication); reference should be made to specific documentation.

SHTM 04 - 01: Water safety for healthcare premises, Part C – TVC testing

2.17 Although not strictly necessary, but favoured by many Heads of Estates, periodic TVC testing provides indication of trends and a change can give early warning of problems to come. This guidance sets out the procedures and protocols for testing to ensure consistency.

SHTM 04 - 01: The control of *Legionella*, hygiene, 'safe' hot water, cold water and drinking water systems, Part D – Water disinfection

2.18 Various forms of water disinfection are available. Some are only suitable for limited applications. This guidance sets out the benefits and draw-backs for those in common use.

SHTM 04 - 01: The control of *Legionella*, hygiene, 'safe' hot water, cold water and drinking water systems, Part E – Alternative materials and filtration

2.19 This guidance replaces Scottish Hospital Technical Note (SHTN) 2 which was originally published when copper tube corrosion first became manifest. It lists the various alternative materials approved for use in NHS Scotland premises and provides advise related to on-site filtration.

SHTM 04 - 01: The control of *Legionella*, hygiene, 'safe' hot water, cold water and drinking water systems, Part F – Chloraminated water supplies

2.20 The use of chloramination for water treatment is being pursued by the water authorities in place of chlorination. This has benefits for both the supplier and NHS Boards although there are implications for the likes of dialysis equipment. This guidance sets out the benefits and impacts.

SHTM 04 - 01: Water safety for healthcare premises, Part G – Written scheme exemplar

2.21 The Health & Safety Executive require the provision of Written Scheme for water services installations. This guidance sets out the procedures to be implemented and offers the framework for NHS Boards to adopt as templates for their production.

Scottish Health Technical Memorandum (SHTM) 05: Reserved for future use

2.22 Scottish Health Technical Memorandum 05 was to have been allocated to the replacement for the current series of Firecode guidance documents but the SHTM number is being held in reserve as Firecode SHTMs 81-87 have been updated and remain in use.

Scottish Health Technical Memorandum (SHTM) 06: Electrical services (replaces SHTM 2011, 2014, 2020 and 2021)

SHTM 06 - 01: Electrical services supply and distribution Part A – Design considerations (replaces SHTM 2007: Electrical Services supply and distribution, SHTM 2011: Emergency electrical services and absorbs SHTM 2014: Abatement of Electrical Interference).

2.23 The document is suitable for use with all forms of electrical maintenance work ranging from testing of plant, such as generators, to the periodic testing and inspection of the electrical network and final circuits.

2.24 Part A provides guidance for all work on the fixed wiring and integral electrical equipment used for electrical services within healthcare premises. The document should be used for all forms of electrical design work ranging from a new greenfield site to modifying an existing final sub-circuit. This document provides guidance to managers of healthcare premises on how European and British Standards relating to electrical safety such as the IEE Wiring Regulations BS 7671, the Building (Scotland) Regulations 2004 (and subsequent amendments) and the Electricity at Work Regulations 1989 can be used to fulfil their duty of care in relation to the Health and Safety at Work etc Act 1974.

SHTM 06: 01 Electrical services supply and distribution, Part B - Operational management (replaces SHTM 2007: Electrical services supply and distribution, SHTM 2011: Emergency electrical services and absorbs SHTM 2014: Abatement of electrical interference)

2.25 Part B provides guidance for all works on the fixed wiring and integral electrical equipment used for electrical services within healthcare premises. The document is suitable for use with all forms of electrical maintenance work ranging from testing of plant, such as generators, to the periodic testing and inspection of the electrical network and final circuits.

The document provides healthcare premises managers with guidance on the European and British Standards for Electrical Safety, such as the IEE Regulations BS 7671, the Building Regulations, and the Electricity at Work Regulations. Healthcare premises managers may be able to fulfil their duty of care in relation to the Health and Safety at Work etc Act by adopting the recommendations of this document. This SHTM recommends that designers and stakeholders review this part of SHTM 06-01 during the design process such that they are more aware of the maintenance activities required.

SHTM 06 - 02: Electrical safety guidance for low voltage systems

2.26 This Scottish Health Technical Memorandum gives operational guidance on electrical safety requirements for low voltage systems (up to 1 kV) in healthcare premises including management, professional and operational structure, safety procedures, testing, equipment and records.

2.27 Guidance is intended to assist in meeting the requirements of the Electricity at Work Regulations 1989, which detail the precautions to be taken against risk of death or personal injury from electricity in work activities.

SHTM 06 - 03: Electrical safety guidance for high voltage systems

2.28 This Scottish Health Technical Memorandum gives operational guidance on electrical safety requirements for high voltage systems (up to 11 kV) in

healthcare premises including management, professional and operational structure, safety procedures, testing, equipment and records.

2.29 Guidance is intended to assist in meeting the requirements of the Electricity at Work Regulations 1989, which detail the precautions to be taken against risk of death or personal injury from electricity in work activities.

Scottish Health Technical Memorandum (SHTM) 07: Environment and sustainability (replaces Health Facilities Note 21 and HTM 2065 and 2075)

(Scottish Health Technical Note (SHTN 3): NHS Scotland Waste Management Guidance)

2.30 This document consists of four parts:

- Part A: Best practice overview outlining NHS bodies' waste management responsibilities and best practice.

  A "practical" guidance document;
- Part B: Waste policy template providing example waste policy for all Health Boards to adopt and adapt as required;
- Part C: Waste management procedures template providing example waste procedures for all Health Boards to adopt and adapt as required;
- Part D: (forthcoming) comprising a compendium of regulatory requirements. and provides an overview of regulatory waste management requirements in Scotland.

  A "reference" document.

Note: This document incorporates aspects of HTM 07-01

SHTM 07 - 02: EnCO$_2$de - making energy work in healthcare (published April 2006)

2.31 This document replaces Encode guidance Parts I and II.

2.32 The purpose is to provide a primary source of guidance on managing energy use and carbon emissions in the healthcare sector. It aims to ensure that everyone involved in managing, procuring and using buildings and equipment gives due consideration to the implications of energy use and carbon emissions. It draws together best practice with the intention of putting energy at the heart of the health service.

SHTM 07 - 03: Transport management and car parking: best practice guidance for Boards

2.33 The purpose is to consider what measures NHS Boards can adopt when developing travel plans and managing transport and car parking, drawing on best practice to assist the NHS in a practical way. It aims to identify best practice in developing travel plans, give links to other assessment tools, provide a matrix from which to estimate a base level of car parking provision, point to external funding opportunities, and consider environmentally-friendly transport options.

Scottish Health Technical Memorandum (SHTM) 08: series of guidance which relates to building services systems or system components of a 'specialised' nature.

Purpose

2.34 Scottish Health Technical Memorandum 08 is the series of guidance, which relates to building services systems or system components of a 'specialised' nature.

2.35 A 'specialised' system can be either a specific stand-alone system utilised by the occupants for a specified task (for example pneumatic air tube systems or lifts), or systems interfaced or directly connected to engineering systems themselves (building & energy management control systems (BEMS).

2.36 The 'specialised' components are utilised in or in conjunction with the engineering systems to enable suitable operation (such as, sound or bed-head services).

SHTM 08 - 01: Acoustics (Replaces SHTM 2045)

2.37 This document outlines the principles and considerations associated with the control of noise generated by not only the various activities undertaken within healthcare premises but also the services which are required for these activities to be undertaken. The document is concerned with reducing both the interior noise environment affecting the exterior noise environment and vice-versa.

2.38 Noise from a certain activity within the premises should not appreciably intrude on activities taking place in adjacent areas. This may be avoided by either careful consideration of the positioning of rooms during design conception, or by provision of sufficient sound insulation.

2.39 This document provides not only the considerations for use at the design stage, but also outlines the routine maintenance of noise control hardware or acoustic treatment and the monitoring and recording of noise levels. The responsibilities of all parties involved are defined, either by brief explanation or by use of reference to specific legislation, standards and/or codes of practice.

SHTM 08 - 02: Lifts: (Replaces SHTM 2024)

2.40 This guidance sets out design and performance requirements together with safety and emergency procedures associated with traction, hydraulic and machine room-less lift installations. There is also a short section on escalators.

SHTM 08 - 03: Bedhead services: (Replaces SHTM 2015)

2.41 To be read in conjunction with SHTM 06-01 etc, this sets out design and performance requirements for bedhead services including power supplies, lighting, nurse call systems, patient monitoring, patient entertainment and medical gases pipeline systems.

SHTM 08 - 04: Pneumatic tube systems: (Replaces SHTM 2009)

2.42 This guidance sets out the design and performance parameters for pneumatic tube installations updated to reflect the latest technology and practice.

SHTM 08 - 05: Automatic controls: (Replaces SHTM 2005)

2.43 Published in four parts (A-D) this guidance sets out design and performance requirements for automatic controls installations and building management systems including innovations such as wireless technology.

SHTM 08 - 06: Pathology laboratory gas installations:

2.44 A new SHTM comprising a companion volume to SHTM 02-01 specifically concentrating on gases for laboratories.

Scottish Health Technical Memorandum (SHTM) 04-02: Water systems: Emerging technologies. Subdivided as follows:

SHTM 04-02: Part A Solar water heating

SHTM 04-02: Part B Rainwater harvesting

SHTM 04-02: Part C Grey water recovery

2.45 This guidance advises caution in the application of these technologies in the light of minimising healthcare associated infection but gives advice on practical issues.

3. Statutory and legislative requirements

Health and safety in the UK

3.1 Current health and safety philosophy was developed following the Report of the Robens Committee 1972 which resulted in the Health and Safety at Work etc Act 1974.

3.2 The standards of health and safety in the UK are delivered through a flexible enabling system introduced in 1974 by the Health and Safety at Work etc Act 1974 and are typified by the Management of Health and Safety at Work Regulations 1999.

3.3 The Health and Safety at Work etc Act 1974 leaves employers freedom to decide how to control the risks which they identify, that is, to look at what the risks are and to take sensible measures to tackle them. The Act is part of criminal law, and enforcement is by the Health and Safety Executive and Local Authority. Successful prosecution can result in fines or imprisonment.

Regulations are law, approved by Parliament. These are usually made under the Health and Safety at Work etc Act following proposals from the Health & Safety Commission. Regulations identify certain risks and set out specific actions which must be taken.

Approved Codes of Practice give advice on how to comply with the law by offering practical examples of best practice. If employers follow the advice, they will be doing enough to comply with the law.

Approved Codes of Practice have a special legal status. If employers are prosecuted for a breach of health and safety law, and it is proved that they did not follow the relevant provisions of an Approved Code of Practice, they will need to show that they have complied with the law in some other way, or a court will find them at fault.

Standards (British or European), institutional guides and industry best practice play a large part in how things should be done. They have no direct legal status (unless specified by Regulations). However, should there be an accident; the applied safety practices at the place of work would be examined against existing British or European Standards. It would be difficult to argue in favour of an organisation where safety was not to the described level.

Guidance is issued in some cases to indicate the best way to comply with Regulations, but the guidance has no legal enforcement status.

Some statutory and legislative requirements in the UK

3.4 There are numerous statutory and legal duties to which owners and occupiers of premises must adhere. These are continually changing in the light of new evidence and experience. Reference should be made to these documents at the time of application.

3.5 The following are some of the commonly cited legislation in the UK and current at the time of publication. The list is not exhaustive but is intended to demonstrate the range of issues which should be considered. All references to guidance legislation standards should be compared to those current at the time of application. Latest published guidance always takes precedence.

3.6 Only the primary Acts and main Regulations are cited here. Most of these Acts and Regulations have been subjected to amendment subsequent to the date of first becoming law. These amending Acts or Regulations are not included in this list.

- Health and Safety at Work etc Act 1974;
- Factories Act 1961 (as amended);
- The NHS and Community Care Act 1990;
- Consumer Protection Act 1987;
- Disability Discrimination Act 2005 (DDA);
- The Management of Health and Safety at Work Regulations 1999;
- Workplace (Health, Safety and Welfare) Regulations 1992;
- Provision and Use of Work Equipment Regulations 1998;
- Manual Handling Operations Regulations 1992;
- Personal Protective Equipment at Work Regulations 1992;
- Health and Safety (Display Screen Equipment) Regulations 1992;
- Confined Spaces Regulations 1997;
- The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR 95);
- The Working Time (Amendment) Regulations 2002;
- Control of Substances Hazardous to Health Regulations (COSHH) 2002;
- Health and Safety (First-Aid) Regulations 1981 and Miscellaneous Amendments 2002;
- Health and Safety (Consultation with Employees) Regulations 1996;
- Health and Safety Information for Employees Regulations 1989;
- Health and Safety (Safety Signs and Signals) Regulations 1996;
- Employers' Liability (Compulsory Insurance) Regulations 1998 and (Amendment) Regulations 2004;

- The Health and Safety (Training for Employment) Regulations 1990;
- Safety Representatives and Safety Committees Regulations 1977;
- Control of Asbestos at Work Regulations 2006.

Electrical

- Electricity Act 1989;
- Electricity Safety, Quality and Continuity Regulations 2002;
- Electricity at Work Regulations 1989;
- BS 7671:2008 (IEE Wiring Regulations, 17th Edition);
- The Electrical Equipment (Safety) Regulations 1994;
- The Plugs and Sockets etc (Safety) Regulations 1994;
- The Radio Equipment and Telecommunications Terminal Equipment Regulations 2000 and Amendment 2003;
- Electromagnetic Compatibility Regulations 2005.

Mechanical

- Supply of Machinery (Safety) Regulations 1992 and Supply of Machinery (Safety) (Amendment) Regulations 1994;
- Lifting Operations and Lifting Equipment Regulations 1998 (LOLER);
- Gas Appliances (Safety) Regulations 1995;
- Gas Safety (Installation and Use) Regulations 1998;
- The Lifts Regulations 1997;
- Noise at Work Regulations 2005;
- The Pressure Systems Safety Regulations 2000;
- The Pressure Equipment Regulations 1999 and (Amendment) Regulations 2002;
- Simple Pressure Vessels (Safety) Regulations 1991;
- The Construction (Design and Management) Regulations 2007;
- The Construction (Health, Safety and Welfare) Regulations 1996;
- The Building (Scotland) Regulations 2004.

Environment

- The Environmental Protection Act 1990;
- The Control of Pollution (Amendment) Act 1989;
- The Waste Management Licensing Regulations 1994 (as amended);
- Environmental Protection (Duty of Care) Regulations 1991;

- The Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991;
- Special Waste Amendment (Scotland) Regulations 2004;
- Pollution Prevention and Control (Scotland) Regulations 2000;
- The Special Waste Regulations 1996;
- Clean Air Act 1993;
- Environmental Protection (Prescribed Processes) Regulations 1991;
- Trade Effluent (Prescribed Processes and Substances) Regulation 1989 Amended 1990, 1992;
- Controlled Waste Regulations 1992 Amendment 1993;
- Environment Act 1995;
- Packaging (Essential Requirements) Regulations 2003;
- Control of Pollution (Oil Storage) (Scotland) Regulations 2003;
- The Landfill Tax Regulations 1996 and Landfill Tax (Qualifying Material) Order 1996;
- Chemicals (Hazard Information and Packaging for Supply) Regulations 2002;
- The Planning etc. (Scotland) Act 2006;
- The Control of Pollution Act 1974 and (Amendment) Act 1989;
- Producer Responsibility Obligations (Packaging Waste) Regulations 2007;
- Waste Electrical and Electronic Equipment Directive 2002;
- The Water Environment and Water Services (Scotland) Act 2003;
- The Water Byelaws (Scotland) 2000;
- Control of Lead at Work Regulations 2002;
- Control of Pesticides Regulations 1986;
- Noise and Statutory Nuisance Act 1993.

Radiation

- Ionising Radiations Regulations 2004 (IRR99);
- The Radioactive Substances Act 1993 (RSA93);
- Ionising Radiation (Medical Exposure) Regulations 2000;
- Radioactive Materials (Road Transport) Regulations 2002;
- Medicines (Administration of Radioactive Substances) (Amendment) Regulations 2006.

Fire

- The Fire (Scotland) Act 2005 as Amended;
- The Furniture and Furnishings (Fire) (Safety) Regulations 1988;
- Dangerous Substances and Explosive Atmosphere Regulations (DSEAR) 2002.

Food

- The Food Safety Act 1990;
- The Food Safety (General Food Hygiene) Regulations 1995;
- The Food Safety (Temperature Control) Regulations 1995.

Public Health

- Public Health (Infectious Diseases) Regulations 1988;
- Medicines Act 1961.

3.7 This list demonstrates the complex services which exist within a healthcare organisation. A further brief description of each piece of legislation is given in Appendix 1 of this document.

Risk and/or priority assessment

3.8 In carrying out design, operational and management evaluation, a consistent method of assessment should be engaged to ensure adequate information, consultation and appraisal is undertaken across the whole range of influences.

3.9 Although some elements of a particular assessment may be complex (for example whole-life costing, net present value, patient criticality, resilience etc), it is important to keep the collective assessment as simple as possible.

3.10 One method is to establish an evaluation matrix which allows information across two scales to be represented in an easily understood way which helps users come to a particular decision.

3.11 Both scales are graded from lowest to highest such that a combination of the assessments can be represented.

3.12 For example, an event analysis may appear as below: mapping the likelihood of an event happening and the severity of the effect.

3.13 In a similar way, a cost/benefit matrix may be constructed or a risk/design measure assessment made.

3.14 A more detailed example of applied risk assessment may be found in the Department of Health's (2005) 'A risk-based methodology for establishing and managing backlog'.

The Matrix shown below has been adopted for use in SCART, Statutory Compliance Audit and Risk Tool.

Likelihood / Severity	Negligible (1)	Minor (2)	Moderate (3)	Major (4)	Extreme (5)
Rare (1)	Low (1x1)	Low (1x2)	Low (1x3)	Low (1x4)	Medium (1x5)
Unlikely (2)	Low (2x1)	Low (2x2)	Medium (2x3)	Medium (2x4)	High (2x5)
Possible (3)	Low (3x1)	Medium (3x2)	Medium (3x3)	High (3x4)	High (3x5)
Likely (4)	Low (4x1)	Medium (4x2)	High (4x3)	High (4x4)	Very High (4x5)
Almost Certain (5)	Medium (5x1)	High (5x2)	High (5x3)	Very High (5x4)	Very High (5x5)

Adapted from the AS/NZ 4360 Standard Risk Matrix and NHS QIS Risk Matrix

4. Professional support

4.1 Managers of healthcare property and services need technical and professional support across a range of specialist services. This support should be embedded into the structure and responsibility framework of the organisation to ensure an adequate approach for each of the areas covered by the healthcare-specific technical engineering guidance.

4.2 Within the Scottish Health Technical Memoranda, a range of measures are discussed to meet the needs of each service. This Section considers the principles, standards and common features which will be applicable as a core approach.

Management and responsibility

4.3 Healthcare organisations have a duty of care to patients, their workforce and the general public. This is to ensure a safe and appropriate environment for healthcare. This requirement is identified in a wide range of legislation.

4.4 At the most senior level within an organisation, the appointed person should have access to a robust structure which delivers governance, assurance and compliance through a formal reporting mechanism.

Scottish Health Technical Memoranda guidance structure

4.5 Following the SHTM guidance review, seven specialist topics have been initially identified while that on Fire Safety remains to be tackled:

- decontamination;
- medical gases;
- heating and ventilation;
- water;
- electrical services;
- environment and sustainability;
- Specialist services.

4.6 Within each topic, specific duties and responsibilities are defined. See Figure 2 in the Preface for structure and relationships.

Management structure

4.7 To engage and deliver the duties required, a healthcare organisation may consider the structure shown in Figure 3. In following this structure, healthcare

organisations may consider that the necessary professional and technical resilience is available to provide a robust service.

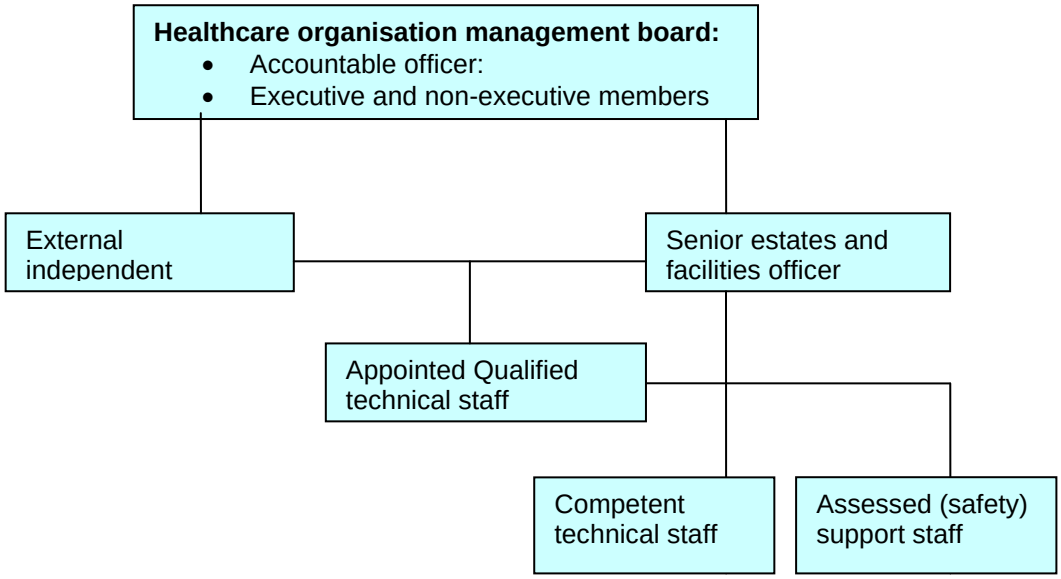

Figure 3: Management structure

Professional structure

4.8 While a Chief Executive and the NHS Board carry ultimate responsibility for a safe and secure healthcare environment, it can be assigned or delegated to other senior executives.

4.9 It may not be generally possible to maintain a senior executive with specialist knowledge for all professional services. External support may therefore be required.

4.10 An independent adviser for audit purposes, assessment and operational advice may also be required.

4.11 The structure shown in Figure 4 represents a professional approach to delivery of a specialist service.

4.12 Within a specific service, other support staff for safety, quality and process purposes may be required.

4.13 Within certain healthcare organisations, some elements of specialist services are not present (high voltage electrical, decontamination, medical gas pipelines etc). In this case, an appropriate level of external professional support should be considered.

4.14 It is possible for several organisations to share the same professional staff either individually or collectively; however, it is usual for the Authorising Engineer role to remain independent of the organisation, with particular regard to the critical audit process.

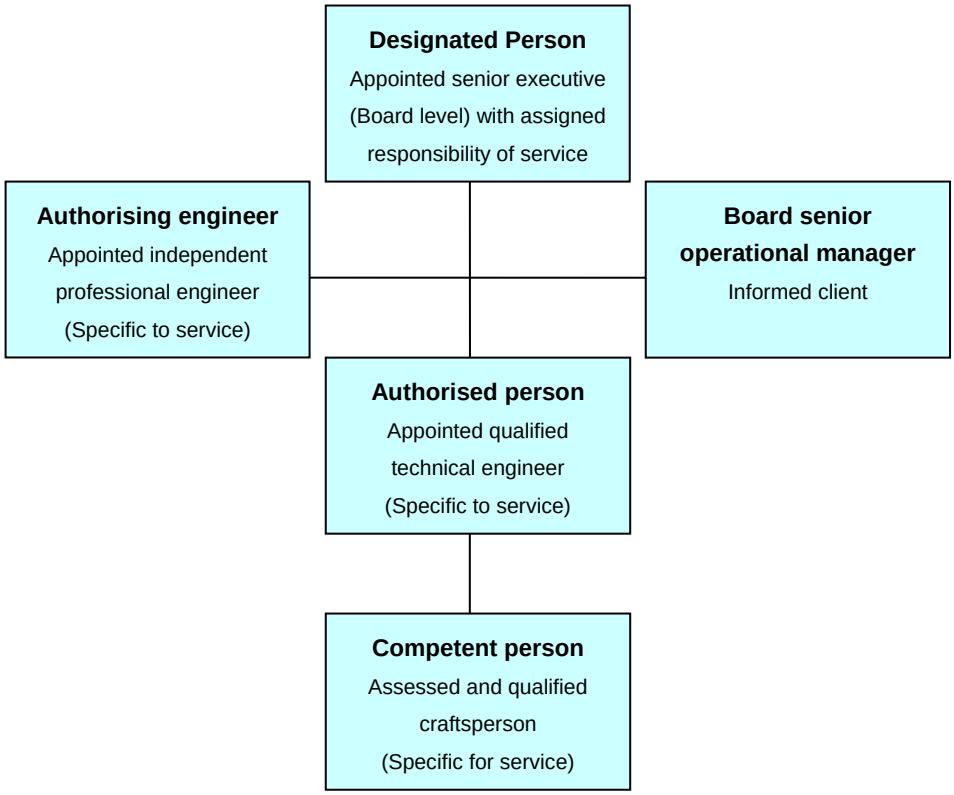

Figure 4: Professional structure

Roles and responsibilities

Designated Person (DP)

4.15 This person provides the essential senior management link between the organisation and professional support, which also provides independence of the audit-reporting process. The DP will also provide an informed position at NHS Board level.

4.16 The DP will work closely with the Senior Operational Manager to ensure that provision is made to adequately support the specialist service.

NHS Board Senior Operational Manager (SOM)

4.17 The SOM may have operational and professional responsibility for a wide range of specialist services. It is important that the SOM has access to robust, service-specific professional support, which can promote and maintain the role of the 'informed client' within the healthcare organisation. This will embrace both the maintenance and development of service-specific improvements, support the provision of the intelligent customer role and give assurance of service quality.

Authorising Engineer (AE)

4.18 The AE will act as an independent professional adviser to the healthcare organisation. The AE should be appointed by the organisation with a brief to provide services in accordance with Scottish Health Technical Memoranda guidance. This may vary in accordance with the specialist service being supported.

4.19 The AE will act as assessor and make recommendations for the appointment of Authorised Persons, monitor the performance of the service, and provide an annual audit to the DP. To carry out this role effectively, particularly with regard to audit, it is preferable that the AE remains independent of the operational structure of the NHS Board.

Authorised Person (AP)

4.20 The Authorised Person has the key operational responsibility for the specialist service. The person will be qualified and sufficiently experienced and skilled to fully operate the specialist service. He/she will be nominated by the AE and be able to demonstrate:

- his/her application through familiarization with the system and attendance at an appropriate professional course;
- a level of experience;
- evidence of knowledge and skills.

4.21 An important element of this role is the maintenance of records, quality of service and maintenance of system safety (integrity).

4.22 The AP will also be responsible for establishing and maintaining the roles and validation of Competent Persons, who may be employees of the organisation or appointed contractors.

4.23 Larger sites may need more than one AP for a particular service. Administrative duties such as record-keeping should be assigned to specific APs and recorded in the operational policies.

Competent Person (CP)

4.24 This person provides skilled installation and/or maintenance of the specialist service. The CP will be appointed, or authorised to work (if a contractor), by the AP. He/she will demonstrate a sound trade background and specific skill in the specialist service. He/she will work under the direction of the AP and in accordance with operating procedures, policies and standards of the service.

Variation by service

4.25 The particular detailed roles and responsibilities will vary between specialist services, and the guidance given in the appropriate SHTM should be followed to

ensure that the necessary safe systems of working are established and maintained.

5. Operational policy

General

5.1 The healthcare organisation's management board is responsible for setting overall operational policy, and it is the Designated Person, as the senior executive, who has responsibility for implementation.

5.2 The Scottish Health Technical Memoranda series should enable an organisation to be aware of the issues relative to a particular service and support any operational policy which has to be prepared.

5.3 It is acknowledged that some organisations have separate procedures which are referenced within the operational policy under the control of other specific departments.

5.4 Where the operation of engineering services is vital to the continued functioning of the healthcare premises, operation and maintenance may require special consideration; therefore, improving resilience within the critical engineering systems should be considered. When preparing briefing for new or refurbishment projects, consideration will require to be given to the options of having backup provision as an integral part of purchased equipment or whether designers have to make specific allowance for this.

Operational considerations

5.5 The operational policy should ensure that users are aware of the capacity of the specific system and any particular limitations.

5.6 A maintenance policy which pursues and expects the good upkeep of plant and equipment by regular inspection and maintenance is evidence of best practice.

5.7 All safety aspects of operation associated with particular plant or equipment should be clearly understood by operational staff.

5.8 Nursing, medical and other staff should be aware of the purpose of any alarm systems and of the course of action to be taken in the event of an emergency occurring.

5.9 Staff responsible for engineering plant operation should be aware of the activities necessary to ensure the continued safe operation of the system and what action to be taken in an emergency.

5.10 The Authorised Person responsible for engineering services should take a lead in explaining to users the function of the system, and organise adequate information and training about the system.

5.11 Maintenance and safety are two closely related subjects. General safety is largely dependent on good standards of maintenance being attained and staff safety disciplines being exercised.

Records/drawings

5.12 The organisation should have accurate and up-to-date records and/or drawings. These should be readily available on site, in an appropriate format, either electronically or in hard copy for use by any Authorised Person responsible for engineering services. They form part of Written Schemes as required by the Health & Safety Executive and set out in their Approved Code of Practice L8. In a PPP situation where maintenance is undertaken by consortia FM Provider, all such information should be provided for NHS Board access on a 'read-only' basis.

5.13 A unique reference number should identify the equipment. This should correspond to that shown on the records/drawings.

5.14 The records/drawings should indicate the type and make of the equipment.

5.15 Database systems could be used to link plant reference numbers to locations on drawings and detailed records of the plant and its maintenance.

5.16 A schematic diagram of the installation should also be available and displayed in each plant room or service area, scheduling key components.

5.17 When additions or alterations are to be made to existing installations, the Authorised Person responsible for engineering services should ensure that the current as-fitted information is available in an acceptable format. On completion of the work, the records/drawings should be updated and the service alterations noted and dated.

Security

5.18 All means of service isolation, regulation and control (except those in plant rooms) should be secured in such a way that they can be fixed in the 'normal' position.

5.19 In the case of those components which may have to be operated in an emergency, the fixing method should be capable of being overridden.

5.20 All plant rooms should be kept locked, suitably signed and under access control.

5.21 A procedure in the operational policy for controlling access, including in the event of an emergency, should be established.

5.22 Adequate means of engineering plant isolation and safe working areas should be provided for all operational and maintenance contingencies to allow temporary plant where required and safe working around equipment.

Monitoring of the operational policy

5.23 The Designated Person is responsible for monitoring the operational policy to ensure that it is being properly implemented. This should be carried out on a regular basis, and the procedure for such monitoring should be set out in the operational policy.

5.24 The responsibility for monitoring specific aspects may be delegated to appropriate key personnel. For example, the responsibility for monitoring the implementation of the permit-to-work procedure would normally be delegated to the Authorised Person. The details of such delegation shall be set out in the operational policy.

Contractors

5.25 All contractors should comply with the organisation's safety procedures. This should be clearly stated in the operational policy.

5.26 Work should only be carried out by suitably qualified contractors within the range of design, installation, commissioning or maintenance of services as appropriate. Evidence of current registration should be by sight of the appropriate certificate of registration.

5.27 The operational policy should set out the responsibilities for monitoring the work of contractors. The Authorised Person responsible for the specific engineering services would normally co-ordinate this. The 'call-out' procedures for a contractor, particularly in the event of a fault or an emergency, should be set out in the operational policy.

Medical equipment purchase

5.28 The Authorised Person responsible for engineering services must be consulted during initial discussions on the purchase of any significant piece of medical equipment which will be connected to the engineering services. This will be in terms of high electrical running or start-up loads, requirement for clean electrical supplies, and provision of uninterruptible power supplies (UPS), high heat gains or needs for process cooing water. This is to ensure that the systems have sufficient capacity and can continue to deliver the required service.

5.29 The policy should state the procedures to be followed and the personnel who need to be consulted before a new item of medical equipment is connected to an engineering service.

6. Emergency preparedness and contingency planning

Introduction

6.1 Under the Civil Contingencies Act 2004, certain NHS organisations (as category 1 responders) e.g. Scottish Ambulance Service, geographical NHS Boards in Scotland, Health Protection Agency (but not Health Protection Scotland) are required to assess the risk of an emergency occurring and the impact on business continuity.

6.2 The organisation should sustain plans for the purpose of minimising the impact from such emergencies, maintaining services and protecting patients and staff.

6.3 Healthcare organisations should contribute and receive information through their local strategic co-ordinating group (SCG), which exchanges views and knowledge across a wide range of services within a local community.

Note: In all aspects of emergency and operational planning, Health Boards should ensure engagement with the emergency planning officer and local security management lead.

Wider specific NHS guidance on the management of non-clinical business continuity in healthcare facilities can be found in 'The National Health Service in Scotland Manual of Guidance: responding to emergencies'.

6.4 Healthcare organisations may encounter such scenarios as:

- unplanned interruption to a utility supply (gas, water, electricity etc);
- unexpected equipment and service distribution failures (telephones, water pipework, medical gases etc);
- a civil incident (act of terrorism, civil disturbance etc);
- an environmental incident (floods, transport incident, storm damage etc).

6.5 Such failures or incidents, when they occur, can have an impact on all aspects of healthcare services, including patient care, staff comfort, and health and safety.

6.6 Failures in essential support systems may lead to patient evacuation and the temporary closure of wards, which could have a major impact on the public's confidence in a healthcare organisation.

6.7 Additionally, dependent on the scale or nature of the incident, the ability of the organisation to continue an acceptable level of healthcare services may itself be compromised.

6.8 It is the responsibility of the healthcare organisation's management to ensure that their premises comply with all legislation. (See Appendix 1 for a summary of commonly cited health and safety guidance documents.) Additionally, when considering the implications of, for example, an incident associated with terrorism, reference should also be made to 'The National Health Service in Scotland Manual of Guidance: responding to emergencies'.

6.9 Planning for such emergencies can help to reduce the impact. By developing an emergency plan, healthcare organisations should be able to restore systems to normal as quickly as possible after an emergency, using safe working methods and making the best use of available resources.

6.10 Plans need to be regularly tested and updated to meet changing circumstances.

6.11 Emergency and contingency planning cannot be carried out in isolation.

6.12 All arrangements should be agreed through consultation and dialogue.

6.13 Individual services or departments should be encouraged to accept responsibility for contingency arrangements. This is particularly important for services provided through associated contracts (via PPP partners, commercial business, service level agreements etc).

6.14 Essential-service contingency plans should not be confused with major incident plans (although the two should be consistent):

- major incident plans generally are outward looking and deal with the healthcare organisation's response to a public incident for which an immediate high level of healthcare is required;
- contingency planning is generally inward looking and deals with actions needed to maintain a healthcare facility in a safe and operational status under adverse conditions.

6.15 It is possible that some features from both plans may be needed for a complex incident, but lines of responsibility should be clearly defined and understood at all times.

Creating an emergency plan

6.16 All plans should be documented and supported by as much information as possible. This should be kept up-to-date and under constant review.

6.17 It is important to define the area to which the plan will apply. This will usually be by site rather than individual buildings to avoid repetition of procedures and to embrace the wider service issues.

6.18 From an understanding of the area and the healthcare activity that takes place, all the estates services and facilities which exist in the range of buildings on-site should be considered.

6.19 Table 1 gives a broad list of suggested topics for consideration. It is not a comprehensive list and may not be applicable to all sites, but it should act as a prompt to establish the 'services list'.

Systems	Services	External Influence
Main electricity supply	Catering – patients and staff	Mains water contamination
Standby generators	Key clinical departments (A&E, theatres, critical care etc)	Air pollution
UPS and other batteries	Estates and facilities management (including engineering, APs, CPs etc)	Flooding
Mains water	Transport	Mains sewage treatment failure
Hot water	Portering	Transport routes and infrastructure
Treated water	Administration support	Infestation
Heating and ventilation	Patient information	Civil disturbance
Steam	Cleaning	Explosion
Critical cooling	Waste disposal	Evacuation
Pneumatics	Laundry	Terrorism incidents
Building Management System	Medical supplies	Communications
Drainage	Fuel supplies	
Surface/foul/waste	Water drainage	
Fuel supplies	Security	
Gas/oil/other		
Communications		
Telephones (fixed)		
Mobile		
Paging		
Electronic		
IT and Patient information system		
Lifts		
Sterilization and decontamination		
Medical gases		
Fire alarms		

Table 1: Suggested systems and services for consideration when creating an emergency plan

System resilience, planning and design

6.20 Resilience of the various systems and services (for example water and fuel) is ideally provided at the design stage of a healthcare facility. This could include:

- priority allocation of the site by local utility suppliers which provide alternative routes, for site supply, should parts of the external infrastructure be damaged or contaminated;
- resilient internal infrastructure systems which provide flexibility in services supplies to buildings;
- provision of alternative fuel sources, with appropriate storage capacity on-site (for example, fuel oil as back-up to natural gas, for boiler plant);

- enhanced levels of on-site standby capacity for electricity supplies by the use of CHP systems, the sizing of standby generator plant, and flexible electrical distribution systems;
- appropriate monitoring and storage capacity for, for example, water supplies.

6.21 Planning and designing for resilience whenever the opportunity arises, that is, when new sites/buildings or departments are being considered and when major refurbishments are taking place, is a key responsibility of the Health Board.

6.22 This will require a clear understanding of the critical operational service requirements and the type and level of ongoing service needs in the event of an emergency/incident.

6.23 Prerequisite information should be provided at the planning and design stage to enable an appropriate level of resilience to be built in. For this purpose, close liaison should take place between the organisation's emergency planning lead and the estates and facilities professionals at the earliest possible stages.

6.24 Of particular importance in times of emergency are all forms of communication systems. Email, mobile phones, advanced telephone/telemedicine and patient data systems may all require a detailed analysis of the effect of failure or loss.

6.25 Proposed changes to any communication system should ensure that consideration is given to the requirements of emergency plans and communication-service resilience before decisions are taken.

6.26 These considerations should also include home/mobile communication systems for key staff who will be required in the event of an emergency or adverse incident.

Services and priorities

6.27 Maintaining services is an essential function of business continuity and must be a priority within a contingency plan. Alternative sources of catering, laundry, waste disposal, transport etc need to be confirmed, and all lines of communication and supply chains regularly tested.

6.28 It is also necessary to discuss and establish the priorities of clinical services within the plan. These will move from life-critical functions (operating theatres, critical care areas, neonatal intensive care units, emergency care) through diagnostic services (imaging, laboratories) and on to clinical support (blood, sterile services, pharmaceutical supplies, medical gases etc).

6.29 Prioritised but flexible, estates and facilities services which underpin clinical priorities will provide a good platform for the organisation to cope with the impact of emergencies and speed up recovery to provide normal business continuity.

External impact

6.30 External influences are perhaps the most difficult element of contingency planning due to the wide range of scenarios that could be presented. Consequently, scenario planning for every eventuality is very unlikely.

6.31 However, some of the most likely scenarios and the key issues arising should be examined, evaluated and, where possible, tested to ensure that some form of response is in place for that eventuality, for example loss of major utility, external communication links etc.

Security

6.32 Areas of clinical concern, for example radiology, pathology, may require enhanced access control, and staff and contractor screening, in accordance with the 'Security Management Framework for NHS Boards in Scotland'.

6.33 Adverse incidents may present exceptional requirements to control security, access, patient and staff safety etc. Planning should ensure that measures are available and understood which may include additional staff resources (drawn from non-critical roles) for entry/exit control, increased awareness and communications, defined management responsibility etc.

Responsibility

6.34 If the issue or incident remains predominantly an estates or facilities issue, action should be coordinated through the estates and facilities management (EFM) structure. However, if the cause and/or effect escalates into a more major event, and a major incident is declared, the lines of responsibility should revert to the major incident plan structure.

6.35 Accountability must be maintained within the healthcare organisation's structure. The Chief Executive and NHS Board members must be aware of the proposed contingency plans, although it is likely that operational managers will implement the actions.

6.36 The structure of different organisations will mean that staff with varying levels of experience and expertise could be called upon to deal with estates and facilities emergencies.

6.37 Written emergency operational procedures should therefore be easily understood by those people expected to use them. For example, if the management structure is such that emergencies associated with engineering services will always be handled by a qualified and experienced engineer, the emergency operational procedure may be highly technical.

6.38 In many cases, however, standby staff who may be the first to attend an emergency will not have the technical knowledge to make appropriate decisions. If this is the case, emergency operational procedures should be detailed and specific, and should include instruction on where and how to seek

assistance from a more experienced colleague at any stage. This instruction should normally include more than one route and more than one level of management (that is, it should have some communication resilience).

Staff functions

6.39 Whether employed directly by NHS Boards or by PPP consortia FM Providers, individuals who are responsible for different parts of the emergency process should be identified, notified and trained accordingly. Key personnel will include:

- communications manager;
- incident manager;
- resource manager;
- emergency procedure manual owner.

Communications manager

6.40 This is a vital responsibility which should be assigned to someone who has a wide range of knowledge about the site and the infrastructure. It may also be necessary to co-ordinate between departments, media, public, emergency services, and other healthcare managers and providers.

Incident manager

6.41 This will probably be the most senior Operational Manager available.

Resource manager

6.42 This role is necessary for emergency procurement, contact with external support, and maintaining a record of staff on site. It is important to ensure that staff welfare requirements are also considered and included in the plans.

Emergency procedure manual owner

6.43 For each key role identified, there should be a specific copy of the manual, and individual departments should have a copy assigned to a named individual whose role it is to maintain and review the details to ensure they remain valid.

Testing the plan

6.44 Small elements of the plan should be exercised in order to familiarise staff and to test procedures.

6.45 Larger and more wide-ranging exercises should be carefully planned to ensure that control is maintained and that reversion to status quo is easily achieved. An alternative is to carry out a ‘table-top’ exercise where a scenario approach is tested and staff are challenged to deal with the issues that arise.

6.46 These approaches should engage all staff involved in contingency and emergency planning for the healthcare organisation so that all lessons learned can be shared across all services and used to update the plans.

7. Training, information and communications

General

7.1 All personnel employed in the operation and maintenance of critical engineering services, including maintenance personnel and operators, should receive adequate, documented training. Personnel should not commence their duties until this training has been completed and detailed operating instructions have been provided.

7.2 As a minimum, training should include:

- the prime function for the operation and maintenance of the critical engineering service;
- operational policies;
- safety provisions;
- first-aid (as appropriate);
- emergency procedures;
- use of respiratory equipment (as appropriate);
- duties to be performed;
- actions in the event of a fire;
- problems and hazards that can arise from failing to follow the agreed operating, monitoring and maintenance procedures;
- the permit-to-work system and safety procedures in use (when appropriate);
- the danger of making unauthorized modifications, alterations or additions to the critical engineering service, as well as the possible legal consequences;
- the procedure to be followed if it is suspected that the system is no longer operating correctly.

Building occupiers

7.3 The engineering services and their functions and operation should be explained to the building occupiers. This will assist in understanding the safe operation and capability of the particular system when changes are being considered.

Service and maintenance staff

7.4 Training of all staff involved with the operation or maintenance of the engineering services is essential to realise the optimum use of facilities and the safety of staff, patients and the public.

The required workforce (as defined by service and operational needs)

7.5 All staff involved, irrespective of employer, need to be adequately trained and competent to undertake the work expected of them. This is especially pertinent to work on critical engineering systems and services where errors may have significant implications.

7.6 Consequently, a process needs to be developed which regularly checks that the workforce is competent and suitably trained to cover all aspects of the work required. The following issues may require consideration:

- analysis of maintenance profile (review of existing practice);
- assessment of emergency repair experience (to inform staff profile);
- planned and first-line maintenance of equipment (to determine essential skills);
- recruitment and retention experience (to understand the likely labour pool available);
- skills gap (determined by an analysis);
- potential/ideal staff profile (as if setting up a new structure);
- possible training (to meet the above if not available from in-house arrangements).

7.7 From this type of assessment, it should be possible to determine the service shortfalls relative to loss of staff for which a natural replacement is not readily available, and the skill shortages of existing staff and the skill shortage for equipment or systems installed etc.

7.8 The resulting analysis may give rise to either a training need for existing staff or a need for a staff/structure review with possible training implications. It may also identify a service, which may be more cost-effectively provided by an outsourced contract.

7.9 While it is important to address the staff profile by trade or service, it may be useful for an organisation to link the outcome with other service profiles. This may indicate some common issues, economies of scale for training needs, useful feeder groups and a better general overview of the service, which can be used to inform a priority assessment.

Improving the workforce profile

7.10 Many of the traditional training routes no longer provide the level of opportunity relevant to the healthcare sector; at the same time, skills and competences needed are becoming more and more specific to the healthcare sector.

7.11 One challenge is to encourage more young people to enter the services sector of healthcare organisations under specific programmes such as the modern

apprenticeship scheme where skills can be delivered to meet a specific need. Another is to develop a multi-skilled approach to service delivery. In each case, training and development will be an important factor in the solution.

7.12 With an understanding of the existing workforce profile, a training plan may be established to meet the short, medium and long-term requirements that are needed to satisfy the organisation's requirements.

7.13 The cost of training and the cost of apprenticeships can be difficult to secure. When presented as part of an overall assessment with, at least, a medium-term plan, it can deliver cost-efficient provision of services meeting the future need of the organisation.

7.14 Training and the quality of service are inter-linked. Taking full advantage of multi-skilling and flexible working practices will begin to deliver the cost and performance efficiencies required from the services.

Criteria for operation

7.15 Maintenance staff should be trained in all relevant maintenance procedures.

7.16 The depth of training will depend on the level of required maintenance, but it should at least draw attention to any risks and safety hazards arising due to maintenance activities.

7.17 Other personnel who monitor plant or who carry out routine plant maintenance should be trained in:

- understanding the visual displays;
- acknowledging and canceling alarms;
- taking required actions following alarm messages;
- obtaining the best use of the system.

7.18 Training (including refresher training) will need to be repeated periodically in order to cater for changes in staff or the systems.

7.19 Records of the training provided should be kept up-to-date.

7.20 On completion of training, employees should be assessed by an Authorised Person to ensure that the training programme has been understood and that they are competent to undertake the work required.

8. Maintenance

General

8.1 Healthcare organisations should make available to maintenance personnel originals of commissioning data, as-fitted drawings, manuals etc, and records of any changes implemented since commissioning.

8.2 Schedules of routine maintenance activities, suggested spares lists, and operational information should be readily available. This should be achieved by the use of computer-based systems to maintain plant databases, maintenance requirements and records.

8.3 Monitoring of data from the critical engineering services enables faults to be rectified at an early date.

8.4 The actual frequency of any particular maintenance activity and the need for planned preventive maintenance of the critical engineering services should be determined and continually assessed throughout its operation. This is to avoid unnecessary routine maintenance while ensuring the services remain safe and available.

8.5 The initial frequency of maintenance will depend on the manufacturer's recommendations and the circumstances of application.

8.6 Record sheets should be completed for all maintenance actions.

Maintenance contractors

8.7 Organisations may arrange for the appointment of a contractor to provide a maintenance service and emergency breakdown support should directly-employed staff not be suitably qualified or available.

8.8 Initial maintenance of equipment is particularly important to establish validation of warranties. Responsibility for this can be focused effectively by including the first 12 months maintenance in the supply contract. If maintenance is to be provided by the supplier/installer, it will be advantageous to detail the costs in the initial tender invitations.

8.9 The maintenance contractor may not be the equipment provider, services manufacturer or the installation contractor. Clear understanding needs to be established as to who is responsible for what, and what maintenance service will be provided.

8.10 Management should be satisfied that the contractor responsible for the regular maintenance of the engineering services employs staff who:

- understand the extent and nature of the healthcare to which the service relates;
- are competent to do the work and have had the necessary training;
- have a knowledge of the installed system;
- maintain a current awareness of the manufacturers' equipment, including computer hardware and software;
- have access to modern diagnostic equipment;
- have good technical support;
- are supported by an adequate supply of spares.

8.11 Records of service reports and attendance dates (both scheduled and achieved) should always be available.

Maintenance policy

8.12 A maintenance policy that pursues and expects the good upkeep of equipment by regular inspection and overhaul is a sign of good management. An appreciation of safety, at all times, by operational staff should be encouraged.

Tools

8.13 Special tools to carry out the necessary basic level of breakdown, maintenance or overhaul should be held in stock.

8.14 Instrumentation and tools which are classified as safety tools should always be available on site, and their position known to those who may need to use them.

Instructions

8.15 It is essential that practical training is given to all operational and maintenance staff to ensure that work routines, operational procedures, and correct application of the safety procedures and rules are implemented.

8.16 Initial and, where appropriate, ongoing training should be given by the manufacturer to all technical staff as part of the contract requirement, and should be based on the operating and maintenance manuals, which themselves should be supplied as part of the contract.

Maintenance frequency

8.17 The frequency of maintenance will be influenced by several operating factors, such as information supplied by manufacturers. This information should be used to maintain the operational integrity of an item of plant or equipment.

8.18 Planned preventive maintenance (or maintenance at fixed intervals irrespective of a service need) should be balanced against the application of breakdown maintenance. The best approach may be a mix of both, depending upon local factors and circumstances.

Maintenance planning

8.19 Irrespective of the scale of operation, maintenance programmes are essential to ensure that all the critical engineering service equipment is checked, inspected, tested, repaired or replaced at the appropriate time. This makes sound economic sense, as it enhances the operational life span of the equipment and maximises the potential for its availability for use.

8.20 To ensure that an organised maintenance programme is carried out economically, it should be supported by a reporting system of 'defect and failure'. Classifications of urgency would allow for those defects requiring extensive plant isolation and shutdown to be slotted into the overall planned maintenance programme to minimise disruption.

Original commissioning tests

8.21 It is strongly recommended that the original tests are checked and/or witnessed by suitably qualified staff on behalf of the client and signed off by both client and contractor.

8.22 These tests generate the contractually agreed records of the original commissioning procedures related to particular items of equipment or plant. They must be accurate, retained and kept in a safe place. Reference to these documents should be made from copies, as they represent the history of the equipment or plant. The originals should not be handled for reference purposes in confirming tests or in discussion, the exception being as legal documents.

Original and amended drawings

8.23 As with test records, these drawings have contractual significance, being the original as-built form.

8.24 They are legal documents showing the assembly and construction of a system, and healthcare organisations should ensure that complete and accurate drawings are handed over to them prior to acceptance of the work.

8.25 These drawings, with dated amendments made during the construction phase up to final acceptance, should not be amended. Where subsequent changes are made, these should be entered on separate amended drawings and noted to indicate the date and reference as appropriate.

Functional tests

8.26 Functional tests are a practical demonstration of the operation of an item of equipment or plant. The commissioning functional test record sheet should be

preserved for future reference. It will be the comparative reference for all future maintenance tests throughout the life of the item of equipment or plant.

8.27 The frequency of such routine tests can depend on the use of the equipment as represented by the running hours or operations. Experience may well dictate this requirement on the basis of routine and specific time-checks.

Inspections prior to re-commissioning

8.28 Before any engineering service equipment or plant is put back into service following a period of maintenance, a thorough inspection of all operational controls, protection settings, alarms and indications should be carried out. This would normally be the responsibility of the person undertaking the work, the Competent Person, or the Authorised Person.

Planned maintenance programme

General

8.29 The planned maintenance programme should be designed according to the following principles:

- where the correct functioning of important components is not necessarily verified by the periodic tests prescribed for the critical engineering service, those components should be regularly tested, and reference to testing them should be included in the schedules of maintenance tasks. This applies, for example, to door interlocks that may only be required to perform their safety function when presented with an abnormal condition;
- the maintenance programme should include, at appropriate intervals, those tasks such as lubrication and occasional dismantling of particular components (such as pumps), the need for which is indicated by normal industry best practice, manufacturer's advice and experience. Apart from those tasks, the maintenance programme should concentrate on verifying the condition of the critical engineering service and its components by means of testing and examination without dismantling. Parts that are working correctly should not be disturbed unnecessarily;
- maintenance should be carried out under a quality system such as BS EN ISO 9000. Spares fitted to critical engineering services constructed under a quality system should be sourced from the manufacturer or a similarly approved quality system.

Design of a planned maintenance programme

8.30 The planned maintenance (PM) programme supplied by the manufacturer should be used where it is available. If no manufacturer's programme can be obtained, a programme should be drawn up in consultation with the Authorised Person and the maintenance person.

8.31 Although the manufacturer may carry out certain inspection and maintenance procedures under the terms of his guarantee, these may not constitute a full PM programme. The user or their representative should therefore ensure that the complete PM programme is carried out by the maintenance person during the guarantee period.

8.32 The user or their representative should also implement any reasonable instructions given by the manufacturer during this period. Failure to carry out maintenance tasks and periodic tests could affect safety.

8.33 A set of procedures should be developed for each critical engineering service, containing full instructions for each maintenance task.

8.34 It is important that maintenance is planned so that any plant or equipment is out of service for as little time as possible.

8.35 Where practicable, maintenance should be scheduled immediately to precede any periodic tests.

Review of the planned maintenance programme

8.36 The PM programme, procedures and records should be reviewed at least once a year by the user and the maintenance person in association with the Authorised Person. To do this, it is necessary to keep systematic records of all work done, so that judgement can be made in consultation with the manufacturer on what changes, if any, to the PM programme would be best.

8.37 The review should aim to identify:

- any emerging defects;
- any changes required to the maintenance programme;
- any changes to any maintenance procedure;
- any additional training required by personnel concerned with maintenance;
- whether records have been completed satisfactorily, signed and dated.

9. Engineering services

Management of access to engineering services

9.1 Healthcare organisations have the responsibility to ensure that all service installations are specified, designed, installed, commissioned and maintained (including future upgrade) with consideration for services modifications and dismantling during the life of the building. This responsibility is not diminished in PPP projects.

9.2 To satisfy these requirements, it is recommended that organisations:

- designate a person responsible to co-ordinate or oversee all engineering services to ensure that the services do not have any adverse effects on each other, the structure and personnel safety;
- ensure that a project file is available for all new projects, alterations or extensions, regardless of the size of the project. The file should contain specifications, drawings, and maintenance information including access and safe disposal at the end of its useful life;
- ensure that adequate space is provided for installation and maintenance staff and appropriate access to services;
- adequately brief the designers on the current and future maintenance policies;
- ensure that any new work, alterations or modifications do not restrict existing access to plant and equipment.

9.3 Details of any asbestos survey must be made available to the design team and any contractors prior to carrying out any work.

9.4 The Control of Asbestos at Work Regulations 2006 includes duties to protect those who come into contact with asbestos unknowingly or accidentally. The survey report should include details of any asbestos-containing materials, their condition and location, and when they were last inspected.

9.5 A zoning policy allocating particular zones for specific services should be agreed early in the design stage. The policy should also allocate crossover zones, minimum separation distances and shielding requirements in the event of it not being possible to meet these requirements.

9.6 Before putting any engineering systems into service, the installation should be inspected, and it should be verified that access is available for commissioning, maintenance, and future upgrading.

9.7 It should also be verified that there are adequate provisions made for additional services and dismantling during the life of the system.

Development planning

9.8 It is essential to ensure that both the engineering and architectural aspects are developed in harmony from project inception. This should ensure that systems are safely integrated in terms of location, distribution and future developments, and that service resilience is planned from the start.

9.9 The architectural design must permit sufficient space for services. Provision of extra space to allow for future development is considered as best practice.

9.10 Accurate and detailed drawings are essential for providing space requirements. However, these may not be available at the early design stage. An estimate of space requirements may have to be made on preliminary drawings in order to avoid costly revisions.

Distribution requirements

9.11 An assessment of the distribution requirements should be considered, taking into account communication, area, plant and distribution. This must be related to the specific size and shape of the building etc.

9.12 Accommodation of vertical services will be decided at an early design stage. The information may be in the form of total area requirements to be divided later as design progresses.

9.13 Resilience and flexibility of services distribution should be included at an early stage.

9.14 Departments that require heavily-loaded services should be grouped together and located near to the distribution centre if possible. This avoids large runs and therefore distribution losses. Dependent on the building design, it may be advantageous for services to follow the main communication routes.

9.15 The Energy Centre is usually the first plant room whose location is determined on site. This allows the main service routes to be determined. The next step would be to determine areas required for other plant rooms including, for example, those at rooftop level.

9.16 Consideration should be given to maximising the flexibility of engineering services to allow the maximum possible changes in the use of hospital departments.

9.17 In multi-storey buildings:

- restricted flexibility is achieved when there is a small number of large vertical ducts with provision for horizontal space above ceiling level and below structural members; the number of vertical service ducts will be a function of the limitation of void spaces to accommodate horizontal distribution of ventilation ductwork and other electrical and piped services. Each vertical duct should contain service space for future additional ducting

but, in briefing this, designers should be given a suggested percentage or rationale behind this requirement.

- generally, more flexibility is achieved by a large number of smaller vertical ducts with ceiling spaces for horizontal distribution as necessary;
- the omission of space above ceilings produces the least flexible arrangement.

9.18 Convenient access should be provided to all service spaces.

9.19 In single-storey buildings:

- sufficient headroom should be allowed for installation and maintenance purposes;
- if a service trench is provided, where practicable, removable covers should be provided over the complete length of the trench.

Access

9.20 Access to services should be considered at every stage of both the architectural and engineering design process.

9.21 The frequency of access required should be the main factor considered.

Frequent access:

- immediate access is required for plant, valves, switches and other controls requiring frequent attention for safe operation and maintenance;
- if enclosed, the access should be by door or panel;
- adequate clearance should be provided for ease of working.

Intermittent access:

- items that require access at intervals (for example monthly) can be provided by means of floor traps, removable panels in walls, false ceilings and so on. It is recommended that access panels be fitted by means of retained quick-release mechanisms rather than screws and cups.

Renewal or modification of service:

- most, if not all, services may require modification or renewal during the useful life of the building. Accommodation should be planned for this to occur, taking into account weight, size and configuration of the item. During non-emergency renewals, it may be possible to remove doorframes, windows, partitions and other non-structural items. The renewal or modification of minor items does not usually create problems except where piping or cable lengths are restrictive;

- the destruction of finishes to open up a trench or vertical duct or existing access could be more economic than the provision of expensive but rarely-used permanent access. Costs versus savings must be considered with regard to the cost of inconvenience/disruption to functions incurred at the time of replacement.

Working in confined spaces

9.22 A confined-space permit-to-work system should be established, and personnel trained in the use of the system.

9.23 The system should address the following points:

- assessment of the task to be undertaken;
- identification of the potential risks/hazards;
- ventilation;
- air quality testing, prior to entry and continuously during access requirements;
- provision for special tools and lighting;
- working methods;
- implementation of the working methods;
- monitoring of compliance of the system;
- actions in case of emergency;
- communication;
- First-aid.

Appendix 1: Summary of key legislation

The following paragraphs give a wider explanation of the itemised legislation listed in paragraph 3.6. They are not a definitive summary, but are intended to explain more fully the broad content. Reference should be made to the current full documents if consideration of the legislation is thought appropriate.

Health and Safety at Work etc Act 1974

1. This is the prime piece of UK general safety legislation, and gives Government ministers the legal powers to enact Regulations.

All employers, including healthcare organisations, have a general duty under the Health and Safety at Work etc Act 1974 to ensure, so far as is reasonably practicable, the health, safety and welfare of their patients, employees and visitors and members of the public who may be affected by workplace activities.

These duties are legally enforceable, and the Health and Safety Executive has successfully prosecuted employers including health authorities and trusts for breaches of this statute. It falls upon owners and occupiers of premises to ensure that there is a management regime for the proper design, installation and maintenance of plant, equipment and systems. It is important to note that failure to have a proper system of work and adequate control measures can also constitute an offence even though an incident has not occurred.

Key requirements are:

The duties of employer to:

- issue each employee with a safety policy statement;
- provide a safe system of work;
- give adequate training and supervision;
- provide for the health, safety and welfare of all (employees, contractors and public) those affected by their business.

The duties of employees to:

- use equipment provided correctly;
- work in accordance with the organisation's policies;
- be responsible for their own acts and omissions;
- co-operate with their employer.

Factories Act 1961

2. The Factories Act 1961 and the Offices, Shops and Railway Premises (Hoists and Lifts) Regulations 1968 require that every power-driven lift should be of

good mechanical construction, sound material and adequate strength etc. The act refers to maintenance and thorough examination by an Authorised Person (Lifts) every six months, and states that a report of the result of every such examination should be prepared.

The NHS and Community Care Act 1990

3. Section 60 of the NHS and Community Care Act 1990 removed Crown immunity from the NHS and specified Health Service bodies from 1 April 1991 with only a few exemptions. This Act brings the local authority and the Health and Safety Executive into play and puts the NHS into a comparable position to any other organisation.

Consumer Protection Act 1987

4. The aim of the Consumer Protection Act 1987 is to help to safeguard the consumer from products that do not reach a reasonable level of safety. The main areas dealt with can be described as product liability and consumer safety.

The Act allows injured persons to sue producers, importers and 'own-branders' for death, personal injury or losses on private property, and the injured party must be able to show that on the balance of probabilities, the defect in the product caused the damage.

Defective products are defined as being those where the safety of the product is not such as persons generally are entitled to expect. On the other hand, a product will not be considered defective simply because it is of poor quality or because a safer version is subsequently put on the market.

Disability Discrimination Act 2005

5. The Disability Discrimination Act (DDA) was first enacted in 1995 to end the discrimination that people with disabilities face. The provisions introduced by the 2005 Act have been enforceable since December 2006. It extended the scope of part 3 of the 1995 Act to include the functions of public authorities. It created new duties for providers of premises and transport services. It protects people with disabilities in:

- employment;
- access to goods, facilities and services;
- the management, buying or renting of land or property;
- education.

Public authority functions:

Since December 2006, Part 3 of the 1995 Act has applied to the functions carried out by a public authority. The original DDA did not apply to the exercise of certain functions by public authorities (such as arrests by the police) as these do not constitute the provision of a service to the public. The provisions relating

to 'public authority functions' only apply where other parts of the 1995 Act do not already apply (section 21B (7)).

The Management of Health and Safety at Work Regulations 1999

6. Employer's duties include:

- making assessments of risk to the health and safety of their employees and acting upon risks they identify, so as to eliminate or reduce them;
- appointing competent persons to oversee workplace health and safety;
- providing employees with information and training on occupational health and safety;
- operating a written health and safety policy.

Workplace (Health, Safety and Welfare) Regulations 1992

7. The main provisions require employers to provide:

- adequate lighting, heating, ventilation and workspace, to be kept in a clean condition;
- staff facilities: toilets, washing and refreshment;
- safe passageways (for example preventing slipping and tripping hazards).

Provision and Use of Work Equipment Regulations 1998

8. The main provisions require employers to:

- ensure the safety and suitability of work equipment for the purpose for which it is provided;
- properly maintain the equipment, irrespective of its age;
- provide information, instruction and training on the use of equipment;
- protect employees from dangerous parts of machinery.

Manual Handling Operations Regulations 1992

9. The main provisions require employers to:

- so far as is reasonably practicable, avoid the need for employees to undertake any manual handling involving risk of injury;
- make assessments of manual handling risks, and try to reduce the risk of injury (the assessment should consider the task, the load, and the individual's capability);
- provide workers with information on the weight of each load.

Personal Protective Equipment at Work Regulations 1992

10. The main provisions require employers to:

- ensure that suitable personal protective equipment (PPE) is provided "*wherever there are risks to health and safety that cannot be adequately controlled in other ways".* The PPE must be 'suitable' for the risk in question, and include protective facemasks and goggles, safety helmets, gloves, air filters, ear defenders, overalls and protective footwear";
- provide information, training and instruction on the use of this equipment.

Health and Safety (Display Screen Equipment) Regulations 1992

11. The main provisions apply to display screen equipment (DSE) 'users' (defined as workers who 'habitually' use a computer as a significant part of their normal work). This includes people who are regular users of DSE equipment, or rely on it as part of their job. This covers their use DSE for an hour or more continuously, and/or you are making daily use of DSE.

Employers are required to:

- make a risk assessment of workstation use by DSE users, and reduce the risks identified;
- ensure DSE users take 'adequate breaks';
- provide regular eyesight tests;
- provide health and safety information;
- provide adjustable furniture (desk, chair etc);
- demonstrate that they have adequate procedures designed to reduce risks associated with DSE work.

Confined Spaces Regulations 1997

12. The Confined Spaces Regulations 1997 require employers firstly to avoid the need to enter a confined space. Where this is not possible, they must:

- carry out an assessment of the risks associated with entering a confined space and draw up a safe system of work;
- limit entry to the confined space to employees who are competent for confined space work and who have received suitable training;
- verify, prior to entry, that the atmosphere in the confined space is safe to breathe;
- provide any necessary ventilation;
- make sure that suitable rescue arrangements are in place before anyone goes into the confined space. These rescue arrangements should not involve risks to the safety of the people intended to carry out the rescue.

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR 95)

13. These Regulations set out the responsibilities for employers, the self-employed or those in control of work premises to report certain injuries, diseases and dangerous occurrences.

The following events must be reported by the quickest possible route (normally telephone).

If there is an accident connected with work and:

- any person is killed;
- member of the public is taken to hospital;
- a specified major injury or work-related disease (certified by a doctor) occurs to a person at work;
- any specified type of dangerous occurrence occurs, whether or not injury results.

Report the following events within ten days:

- if a person injured at work is absent from work or unable to do their normal work for more than three consecutive days (including non-work days);
- If a doctor notifies you that your employee suffers from a work-related disease.

Prosecution may follow for failing to notify the relevant authority of any of the above.

Examples of major injuries:

- fracture other than to fingers, thumbs or toes;
- amputation;
- dislocation of the shoulder, hip, knee or spine;
- loss of sight (temporary or permanent);
- loss of consciousness.

Examples of dangerous occurrences:

- failure of load-bearing parts of lifts and lifting equipment;
- explosion, collapse or bursting of any pressure vessel or associated pipework;
- electrical short-circuit or overload causing fire or explosion.

The Working Time (Amendment) Regulations 2002

14 The Regulations implement two European Union (EU) Directives on the organisation of working time and the employment of young workers (under 18 years of age). The Regulations cover the right to annual leave, to have rest breaks, and they limit the length of the working week.

Key protections include:

- a 48-hour maximum working week. Employers have a contractual obligation not to require a worker to work more than an average 48-hour week;
- four weeks paid holiday;
- minimum daily rest periods of 11 hours, unless shift-working arrangements have been made that comply with the Regulations;
- 20-minute daily rest breaks after six hours work, with young workers entitled to 45 minutes if more than 4½ hours are worked;
- a weekly rest period of 24 hours every seven days.

Control of Substances Hazardous to Health Regulations (COSHH) 2002

15. The COSHH legislation puts specific responsibilities on the employer as follows:

- they must assess the possible risks to health that may occur due to exposure to the substance before it is used;
- they must ensure prevention or practical control to exposure;
- they have a duty to ensure that the control measures are used, adequately maintained, and that they are examined and tested;
- they should monitor exposure and carry out health surveillance;
- they should ensure that their employees are informed of the hazards, instructed, and that they are given adequate training;
- the employer should review the risk assessment on a regular basis.

Too often, the first control measure that the employer adopts is the use of PPE (personal protective equipment). That is not to say that PPE cannot be used in tandem with the other control measures, should the risk assessment find it necessary. **PPE does not remove the hazard**. The hierarchal ladder of control measures as follows:

Prevent exposure by:

- eliminating the substance;
- substitution with a substance less hazardous to health.

Control exposure by:

- total enclosure of the process, therefore removing exposure;

- limiting the area of contamination;
- the use of LEV (local exhaust ventilation);
- dilution ventilation;
- reducing the period of exposure;
- providing suitable PPE.

The COSHH Regulations relate to any substance irrespective of its form including, gas, solid, dust, liquid, vapour, aerosol or micro organisms. Furthermore, substances not deemed to be detrimental to health can cause problems if not used correctly.

Health and Safety (First-Aid) Regulations 1981 and Miscellaneous Amendments 2002

16. These Regulations require an employer to provide adequate and appropriate equipment facilities and first-aid to be given to their employees if they are injured or become ill at work.

The Health and Safety Executive guidance states there is no mandatory list of items that must be included in a first-aid kit - the contents will depend on the employer's overall assessment of need.

The minimum requirements for first-aid for any workplace are:

- a suitably stocked first-aid kit/container;
- a person appointed to take charge of first-aid arrangements;
- information for all employees on first-aid arrangements.

Health and Safety (Consultation with Employees) Regulations 1996

17. Under these Regulations, all employees must now be consulted by their employers on health and safety matters. Employers can consult employees individually or through representatives elected by groups of employees in their place of work.

In general, the consultation should cover such aspects as:

- changes at work which may substantially affect the health and safety of people at work, such as changes in systems of work, procedures or equipment;
- the employer's compliance with the requirement to appoint competent persons to assist in meeting health and safety legislation;
- information resulting from risk assessments on likely risks and dangers, measures to control or eliminate such dangers, and what employees own actions should be if confronted by risk or danger;

- the consequences for health and safety standards of the introduction of new technology.

Health and Safety Information for Employees Regulations 1989

18. These Regulations require employers to provide their employees with certain basic information concerning their health, safety and welfare at work. This information is contained in both a poster and a leaflet approved by the Health and Safety Executive. Employers can comply with their duty by either displaying the poster or providing employees with a copy of the leaflet.

Some of the more recent changes to the poster are:

- removal of references to repealed duties under the Factories Act 1961 and the Offices, Shops and Railway Premises Act 1963;
- reference to the main duties under some of the more recent legislation;
- drawing attention to the duty to consult employees or their representatives on health and safety;
- The inclusion on the poster of two further information boxes which the employer is encouraged to complete as appropriate in order to personalize the information. These give details of the names and locations of employee, health and safety representatives, and the names of competent persons appointed by the employer together with their health and safety responsibilities.

Health and Safety (Safety Signs and Signals) Regulations 1996

19. These Regulations specify minimum requirements for safety signs at work. They implement a European Directive aimed at encouraging the standardisation of safety signs throughout Europe.

Safety signs are not a substitute for other methods of controlling risks, such as engineering controls and safe systems of work.

Fire safety signs are also covered in these Regulations.

Employers' Liability (Compulsory Insurance) Regulations 1998 and (Amendment) Regulations 2004

20. All employers need liability insurance unless they are exempt under the Employers Liability (Compulsory Insurance) Act. The following employers are exempt:

- most public organisations including government departments and agencies, local authorities, police authorities and nationalized industries;
- health service bodies, including NHS trusts, health authorities, primary care trusts and Scottish Health Boards;

- some other organisations which are financed through public funds, such as passenger transport executives and magistrates courts committees;
- family businesses. However, this exemption does not apply to family businesses which are incorporated as limited companies.

Further exemptions from the need to have employers' liability insurance are listed at section 3(1) (a) and section 3(1) (b) of the Employers' Liability (Compulsory Insurance) Act 1969, and Schedule 2 to the 1998 Regulations.

Employers must insure against liability for injury or disease sustained by an employee in the course of their employment. The sum to be insured is not less than £5 million. The certificate of insurance must be displayed in an appropriate location.

Health and Safety (Training for Employment) Regulations 1990

21. These Regulations extend the health and safety legislation to all those receiving 'relevant training' as defined by the Regulations. This includes government training schemes and students and pupils on work experience.

These Regulations extend 'work' in the Health and Safety at Work etc Act 1974 to include 'relevant training'. Those in training will be treated as employees of the immediate training provider.

For health and safety purposes, training for employment means that participants in many of the government's schemes will be employees, unless the training is provided by an educational establishment as defined by the Regulations.

Recent reforms in the Health Service mean that teaching institutions are now separate establishments from hospitals. However, the trainees spend much time in the associated hospital on educational visits. If these visits are purely for observation, it is unlikely they are 'relevant training' but if the trainees help with the work of the hospital, assisting doctors at clinics or in caring for patients, this might be 'relevant training', and the hospital, as the immediate provider, would have duties under section 2 of the Health and Safety at Work etc Act 1974.

Safety Representatives and Safety Committees Regulations 1977

22. If an employer recognizes a trade union and that trade union has appointed, or is about to appoint, safety representatives under the Safety Representatives and Safety Committee Regulations 1977, the employer must consult those safety representatives on matters affecting the group or groups of employees they represent. Members of these groups of employees may include people who are not members of that trade union.

Control of Asbestos at Work Regulations 2006

23. The Control of Asbestos at Work Regulations deals with the management of risk from asbestos in non-domestic buildings and requires duty holders (landlords, lessees, owners) to:

- take reasonable steps to find materials in premises likely to contain asbestos, and to check their condition;
- presume that materials contain asbestos unless there is strong evidence to suppose they do not;
- make a written record of the location and condition of asbestos and presumed asbestos-containing materials, and keep the record up-to-date;
- assess the risk of the likelihood of anyone being exposed to these materials;
- prepare a plan to manage that risk and put it into effect to ensure that:
  - any material known or presumed to contain asbestos is kept in a good state of repair;
  - any material that contains or is presumed to contain asbestos is, because of the risks associated with its location or condition, repaired or, if necessary, removed;
  - Information on the location and condition of the material is given to anyone potentially at risk.

Electrical

Electricity Act 1989

24. The primary legislation governing the electricity supply industry in Great Britain is the Electricity Act 1989 and the Utilities Act 2000. The 2000 Act established the Gas and Electricity Markets Authority – the office of which is known as Ofgem, the principal duties of which include:

- protect the interests of consumers by, wherever possible, promoting effective competition in generation, transmission, distribution or supply;
- secure reasonable demand for electricity is met;
- have regard to the interests of the disabled and sick, the elderly, those on low incomes and those in rural areas.

Electricity Safety, Quality and Continuity Regulations 2002

25. These Regulations revoke the Electricity Supply Regulations 1988 and all subsequent amendments. The requirements are separated into broad equipment categories and include:

- protection and earthing;
- substations;
- underground cables and equipment;
- overhead lines;
- generation;

- supplies to installations and other networks.

They impose requirements regarding the installation and use of electric lines and apparatus of suppliers of electricity, including provisions for connections with earth. These Regulations are administered by the Engineering Inspectorate of the Electricity Division of the Department of Energy, and may impose requirements which are in addition to those of the Electricity at Work Regulations.

Electricity at Work Regulations 1989

26. These Regulations apply to all workplaces and the electrical equipment used in them. They require precautions to be taken against the risk of death or personal injury from the use of electricity in work activities and commercial premises.

They impose duties in respect of:

- systems, electrical equipment and conductors;
- competence of persons working on or near electrical equipment.

The employers and self-employed people must make sure that everything that uses or carries electricity in the workplace is safe, that employees do not interfere with or abuse anything electrical that has been supplied for their use, or bring into the workplace anything electrical that is unsafe.

Employees must be instructed to report any damaged electrical equipment to their supervisors immediately and to not carry out any electrical work themselves, unless competent and authorised by the employer.

One of the most important elements of electrical safety is the need for routine visual inspections of electrical equipment. The visual checking of electrical leads to appliances, for example, should be made a part of every employee's work habits.

To achieve compliance with the Regulations, organisations need to make arrangements to make sure that all portable electrical appliances are safe to use. The items may already be high-risk, for example electrical drills, or the danger may be increased by using them in a high-risk environment such as wet conditions. These items particularly must be inspected by a competent person on a regular basis.

It is recommended that a record of all maintenance, including test results, is kept for each appliance.

BS 7671:2008 (IEE Wiring Regulations, 17th Edition)

27. The IEE Wiring Regulations (now called BS 7671 'Requirements for electrical installations') are an all-encompassing set of documents that give both technical and practical guidance on the installation and maintenance of electrical services.

While not being encompassed in an Act of Parliament, the Regulations do have sufficient recognition to make it unthinkable to install electrical services that do not comply with the Regulations. Their primary purpose is to ensure that all electrical installations are safe.

The Regulations are in seven parts, supported by various amendments, as follows:

- Part 1 'Scope, objects and fundamental requirements for safety';
- Part 2 'Definitions';
- Part 3 'Assessment of general characteristics';
- Part 4 'Protection for safety';
- Part 5 'Selection and erection of equipment';
- Part 6 'Special installations or locations – particular requirements';
- Part 7 'Inspection and testing'.

In addition, the 17th Edition has a number of publications called 'guides' which include much material previously to be found in appendices. These guides must be considered to form part of the Regulations.

Electrical Equipment (Safety) Regulations 1994

28. These Regulations replace the Low Voltage Electrical Equipment (Safety) Regulations 1989 and impose additional requirements on manufacturers. The rules cover electrical equipment designed or adapted for use between 50 and 1000 Volts ac or 75 and 1500 Volts dc. Electrical equipment manufacturers whose equipment falls within the scope of the Regulations must:

- CE marks the equipment, or the packaging, instruction sheet, or guarantee that accompanies the equipment. Components that are themselves 'electrical equipment' must also carry CE marking;
- issue a Declaration of Conformity that confirms in writing that the product complies with the requirements of the Regulations;
- compile technical documentation, which must be kept for ten years.

Plugs and Sockets etc (Safety) Regulations 1994

29 These Regulations require domestic plugs in the UK to be independently certificated as complying with BS 1363. Domestic socket-outlets, adaptors, fuse-links etc are required to meet the relevant British Standard. Additionally, the Regulations require most domestic electrical appliances to be pre-fitted with a compliant standard plug.

Radio Equipment and Telecommunications Terminal Equipment Regulations 2000 and Amendment 2003

30. This applies to radio equipment and telecommunications terminal equipment, ensuring that relevant products meet certain minimum essential requirements concerning health and safety, electromagnetic interference, and radio spectrum requirements.

Electromagnetic Compatibility Regulations 2005

31. These Regulations apply to almost all electrical and electronic appliances, and regulate radio interference from electrical equipment. For the purposes of being able to test whether or not equipment complies with the Regulations, tests are divided into five classes:

- radiated emissions - checks to ensure that the product does not emit unwanted radio signals;
- conducted emissions - checks to ensure the product does not send out unwanted signals along its supply connections and connections to any other apparatus;
- radiated susceptibility - checks that the product can withstand a typical level of electromagnetic pollution;
- conducted susceptibility - checks that the product can withstand a typical level of noise on the power and other connections;
- electrostatic discharge - checks that the product is immune to a reasonable amount of static electricity.

Mechanical

Supply of Machinery (Safety) Regulations 1992 and Supply of Machinery (Safety) (Amendment) Regulations 1994

32. These Regulations place duties on those who supply machinery and safety components, including manufacturers, importers and others in the supply chain. They set out the essential requirements which must be met before machinery or safety components may be supplied in the UK.

There are basically three steps to dealing with the requirements:

- the responsible person should ensure that machinery and safety components satisfy the relevant essential health and safety requirements of the Supply of Machinery (Safety) Regulations and that, where appropriate, relevant conformity assessment procedures have been carried out;
- the responsible person must issue a declaration of conformity (or a declaration of incorporation) which is issued with the finished product so that it is available to the user. This will contain various details such as the manufacturer's address, the machinery type and serial number, and the harmonized European or other standards used in design;

- when the first two steps have been satisfactorily completed, the responsible person or person supplying or assembling the final product should affix the CE marking if they are satisfied it is safe.

Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)

33. In general, these Regulations require that any lifting equipment used at work for lifting or lowering loads is:

- strong and stable enough for particular use and marked to indicate safe working loads;
- positioned and installed to minimize any risks;
- used safely: that is, the work is planned, organised and performed by competent people;
- subject to ongoing thorough examination and, where appropriate, inspection by competent people.

Gas Appliances (Safety) Regulations 1995

34. These Regulations apply to domestic and commercial gas appliances used for cooking, heating, hot water production, refrigeration, lighting or washing (with no limit on power), excluding appliances which have a normal operating temperature above 105°C. Appliances for use in industrial processes on industrial premises are specifically excluded.

Gas Safety (Installation and Use) Regulations 1998

35. These Regulations cover safe installation, maintenance and use of gas systems and appliances in domestic and commercial premises.

Lifts Regulations 1997

36. These Regulations apply to lifts permanently serving buildings and constructions, and specified safety components. All lifts and safety components placed on the market from 1 July 1999 in the UK, including imports, will have to:

- be safe (in the case of a safety component, enable the lift in which it is installed to be safe);
- meet the relevant essential health and safety requirements in their design, construction and installation;
- satisfy the appropriate conformity assessment procedure set out in the Regulations;
- carry CE marking;
- be accompanied by an EU declaration of conformity.

Additional duties include:

- liaise between installers of lifts and those responsible for work on the building or construction;
- keep lift shafts free of extraneous piping, wiring and other fittings;
- keep the supply of relevant information to those who are entitled to it.

Noise at Work Regulations 2005

37. These Regulations impose a duty on employers to reduce risk of damage to hearing of employees from exposure to noise. They require employers to assess the noise to which employees may be exposed.

Usually the important factors are:

- the noise level given in decibels (dBA);
- exposure – how long employees are exposed to the noise (not only daily but over a number of years).

If in doubt, it is important to have the noise exposure to workers assessed by a competent person, tell the workers of the findings, reduce the noise as far as reasonably practicable, and implement ear protection measures that are required. Routine monitoring of the situation should follow.

Pressure Systems Safety Regulations 2000

38. These Regulations revoke and replace the Pressure Systems and Transportable Gas Containers Regulations 1989. These Regulations apply to all plant/systems which contain a relevant fluid (steam, gas under pressure and liquids under pressure which become gases upon release to the atmosphere) at a pressure greater than 0.5 bar above atmospheric. Certain small vessels, where the combination of the internal volume and pressure of the vessel is less than 250 bar litres, are exempt from some parts of the Regulations.

The Regulations require users to:

- establish the safe operating limits of the plant;
- have a suitable written scheme drawn up or certified by a competent person for the examination at appropriate intervals of:
  - most pressure vessels,
  - all safety devices,
  - any pipework which is potentially dangerous;
- arrange to have examinations carried out by a competent person at the intervals set out in the scheme;
- provide adequate operating instructions (including emergency instructions) to any person operating it (for example operating manual supplemented by on-the-job training and supervision for new staff);
- ensure the pressure system is maintained in good repair;

- keep adequate records of the most recent examination and any manufacturer's records supplied with the new plant;
- distinguish between installed or mobile systems and whether owner or user is responsible.

The Pressure Equipment Regulations 1999 and (Amendment) Regulations 2002

39. These Regulations apply to the design and construction aspects of pressure equipment intended to contain a gas or liquid at 0.5 bar gauge or above. Assemblies of such equipment (that is, a pressure system) are also covered.

Simple Pressure Vessels (Safety) Regulations 1991

40. The legislation harmonises national laws of member states across the European Union regarding the design, manufacture and initial conformity of simple pressure vessels which are intended to contain air or nitrogen at a gauge pressure between 0.5 and 30 bar gauge.

Simple pressure vessels cannot be placed on the European market unless they meet the requirements of this legislation.

Before being placed on the market, vessels must bear the CE conformity marking.

The vessel or data plate must bear, in addition to the CE marking, at least one of the seven additional inscriptions described in the Regulations.

The Construction (Design and Management) Regulations 2007

41. These Regulations are intended to improve management of safety during construction work. They establish high standards in the management and control of construction activity from concept to commissioning, rather than imposing detailed engineering requirements. In particular, they emphasise the need to take account of health and safety aspects during initial planning to ensure that these considerations are built into the scheme.

The health and safety requirements identified at the design and planning stage must be set down in a safety plan. This must be further developed during the construction phase. When the project is complete, a safety file must be provided which contains the detailed information about the structure and equipment within it, so the end-user can manage health and safety properly during subsequent use, construction and maintenance activity.

The Regulations apply to construction work on structures, but both the definitions are extremely broad:

- **Construction**: these include alteration, installation, commissioning, assembly, conversion, repair, renovation, maintenance, demolition, exploration etc. It should be noted particularly that the term can apply to

work on mechanical, electrical and telecommunications installations fixed within or to a structure;

- **Structure**: these include any building, railway, shaft, bridge, pipe, sewer, gasholder, road, cable, pylon etc.

The Regulations apply if more than four persons will be involved in the construction work at any one time. The project requires notification to the Health and Safety Executive if it will exceed 30 days or involve more than 500 person-days of work.

One of the requirements of the legislation is a safety plan. This is a statement of the arrangements made in order to achieve satisfactory standards of health and safety during construction. It should be prepared at the pre-tender stage and be part of the documentation used in the tender process which results in the selection of the Principal Contractor. The purpose is to identify known hazards associated with the project and to invite prospective contractors to say what arrangements they will make to deal with them.

Another requirement of the legislation is to have a health and safety file. This file is a record of information for the end-user, focusing on health and safety. It should identify significant health and safety risks associated with the structure and the equipment it contains. It should contain 'as built' drawings and plans.

The legislation imposes a duty on various participants, including:

- client;
- planning supervisor;
- designer;
- principal contractor.

Several or all of these roles can be performed by the same person and can be performed in-house. The essential fact is that each of the roles must be performed by competent persons.

Construction (Health, Safety and Welfare) Regulations 1996

42. These Regulations consolidate, modernise and simplify three sets of Regulations.

Most of the duties are already found in existing Regulations, but they have been updated and adapted to take account of modern working practices. Examples of the duties covered are:

- requirements to ensure a safe place of work and safe means of access to and from a place of work;
- preventing people falling from a height;
- preventing accidental collapse of new or existing structures;
- preventing accidental collapse of the ground both in and above excavations;

- identifying and preventing risk from underground cables and other services.

Training for work which could cause injury.

The new provisions applying to construction sites are:

- providing safe traffic routes;
- preventing and controlling emergencies such as fire and explosion.

Building (Scotland) Regulations 2004 and subsequent Amendments

43. Building Regulations are legal requirements aimed at achieving adequate standards for the construction of domestic, commercial and industrial buildings. They are laid down by Parliament and are supported by separate documents containing practical and technical guidance on compliance, which are known as Approved Documents. These are produced in different parts.

Building Regulations have three purposes:

- to ensure the health and safety of people in and around buildings;
- the conservation of energy;
- Access and facilities for people with disabilities.

Environment

Environmental Protection Act 1990

44. To prevent the pollution from emissions to air, land or water from scheduled processes, the concept of integrated pollution control has been introduced. Authorisation to operate the relevant processes must be obtained from the enforcing authority which, for the more heavily polluting industries, is HM Inspectorate of Pollution. Control of pollution to air from the less heavily polluting processes is through the local authority. Regulations also place a duty of care on all those involved in the management of waste, be it collecting, disposing or treating controlled waste which is subject to licensing.

Control of Pollution (Amendment) Act 1989

45. This Act covers the registration of waste carriers and controls fly-tipping. Waste carriers are obliged to register with the Scottish Environment Protection Agency (SEPA).

Waste Management Licensing Regulations 1994 (as amended)

46. These Regulations sit under the 1990 Environmental Protection Act. They make it an offence to treat, keep or dispose of controlled waste except under and in accordance with a waste management licence. Certain activities are exempt from the requirement for licensing, but these exemptions require to be

registered with the waste regulation authority – The Scottish Environment Protection Agency (SEPA).

The Waste Management Licensing (Amendment) Regulations 1995 and the Waste Management Licensing (Amendment No 2) Regulations 1995 provide exemptions for carrying out certain activities relating to scrap metal and waste motor vehicles, and other transitional exemptions.

The Waste Management Regulations 1996 relate to transitional provisions for certificates of technical competence in the management of waste treatment plants and also add exemptions relating to the storage of certain materials.

Environmental Protection (Duty of Care) Regulations 1991

47. These Regulations impose requirements on those who import, produce, carry, keep, treat or dispose of controlled waste, or act as a broker, and as such have a duty of care under the Environmental Protection Act 1990. The Regulations require that the transferor and the transferee of the waste should complete and sign a transfer note as the waste is transferred, and make and retain copies. The transfer note must identify and describe the waste in question and state its quantity, how it is stored, the time and place of transfer, and the name and address of the transferor and the transferee. Breach of the duty of care or of these Regulations is a criminal offence.

Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991

48. These Regulations cover the registrations required for certain waste carriers, brokers and dealers by the local environmental regulator. These controls, together with the Duty of Care, are designed to prevent fly-tipping (illegal waste disposal). Organisations or individuals that want to transport, deal in and/or arrange the disposal or recovery of controlled waste, whether in liquid or solid form, are required to register with their environmental regulator. The carriage of an organisation's own wastes does not usually require registration, unless it is construction or demolition waste. Waste carriers who operate in Scotland must register with the Scottish Environment Protection Agency (SEPA).

The Special Waste Amendment (Scotland) Regulations 2004 (updated 2005) to the Special Waste Regulations 1996

49. Regulations 2, 2A and 2B of the Special Waste Amendment (Scotland) Regulations provide full definitions of 'special waste'. The Regulations define and regulate the movement of hazardous waste in Scotland from the point of production to the point of disposal or recovery. These Regulations, among other things, require the producers of hazardous waste to notify by means of consignment notes the Scottish Environment Protection Agency (SEPA) and to provide unique codes to be applies to the consignment notes that accompany the waste when transported. See SHTN 3: 'NHS Scotland Waste management guidance".

The Waste Management Licensing Amendment (Scotland) Regulations 2006

50. The List of Wastes Regulations combined with the Hazardous Waste Regulations (above), implement the requirements of the Hazardous Waste Directive and the European Waste Catalogue Codes.

The List of Wastes effects the regulation of waste and hazardous waste and in particular for the purposes of:

- the determination of whether a material or substance is a waste or a hazardous waste, as the case may be;
- the classification and coding of waste or hazardous waste. The different types of waste in the List of Wastes Regulations are fully defined by the six-digit code for the waste and the respective two-digit and four-digit chapter headings.

Pollution, Prevention and Control (Scotland) Regulations 2000

51. These Regulations apply to installations or mobile plant that complies with set criteria or limits, for the purpose of achieving a high level of protection of the environment taken as a whole by, in particular, preventing or, where that is not practicable, reducing emissions into the air, water and land. This will require that some businesses need a permit from the Scottish Environment Protection Agency (SEPA) before they can operate. Such situations in healthcare may include provision of an 'energy centre' or the operation of an on-site incinerator.

Clean Air Act 1993

52. This Act deals with the emission of smoke from agriculture, industrial burning, industrial furnaces, railway engines and ships. The best practicable means must be used to reduce emissions, and furnaces are required to be fitted with plant for arresting grit and dust. Chimney heights are also specified.

The Act is enforced by local authorities, who can prosecute organisations or their employees.

The Act also specifies maximum concentrations of lead and sulphur in motor fuel.

Environmental Protection (Prescribed Processes) Regulations 1991

53. This legislation defines the substances that must be controlled when released to a particular environmental medium.

Trade Effluent (Prescribed Processes and Substances) Regulation 1989. Amended 1990, 1992

54. These Regulations prescribe the substances and processes which are treated as 'special category effluent'. Stringent controls apply to such effluents.

Prescribed processes include those processes discharging chlorinated effluents.

Controlled Waste Regulations 1992. Amendment 1993

55. These Regulations cover the wastes which are to be treated as controlled waste under the categories of household, industrial and commercial wastes.

Most wastes from industry and commerce are controlled wastes – one notable exception being radioactive waste.

Environment Act 1995

56. The Environment Act 1995 creates a system whereby local authorities must identify, and if necessary arrange for the remediation of, contaminated sites in their areas.

Each local authority must inspect its area from time to time in order to identify contaminated land, and must keep a register of such land.

Packaging (Essential Requirements) Regulations 2003

57. These Regulations implement Directive 94/62/EC on packaging and packaging waste, which relates to the essential requirements to be satisfied by packaging. The Regulations apply to all packaging placed on the market in the UK, and are enforced by trading standards officers of local authorities.

The Regulations place a responsibility on any company that introduces packaging onto the marketplace to ensure that it is minimal, safe, and is either reusable, or recoverable, or recyclable.

Water Environment (Oil Storage) (Scotland) Regulations 2006

58. These Regulations are more stringent than the Control of Pollution (Oil Storage) (England) Regulations 2001. They require persons having custody or control of oil, or who store oil, to carry out certain works and take precautions and other steps for preventing pollution of any controlled waters. It is a criminal offence to fail to comply with these Regulations but there are exemptions including single private dwellings where less than 2500 litres is stored and buried tanks outwith buildings.

Landfill Tax Regulations 1996 and Landfill Tax (Qualifying Material) Order 1996

59. These Regulations apply to all waste going to landfill. Tax is chargeable by weight on all types of waste. Two rates are applied: inert wastes are those which do not give off methane or other gases and do not have the potential to pollute underground water.

Lists of wastes are found in Annex A of the Landfill Tax (Qualifying Material) Order 1996. Those liable for tax are the licence holders for the landfill site.

Chemicals (Hazard Information and Packaging for Supply). Regulations 2002

60. These Regulations describe the requirements for the labelling of substances to indicate risks to health, safety and the environment. Preparations classified as dangerous for the environment should be assigned the symbol N. Some substances that pose no particular human health and safety problem nevertheless require to be labelled dangerous for the environment.

The Planning etc. (Scotland) Act 2006

61. This Act requires a local authority to assess the environmental effects of certain development projects, and to consult the Scottish Environment Protection Agency before granting planning permission.

Control of Pollution Act 1974 and (Amendment) Act 1989

62. The Control of Pollution Act 1974 (CPA) gives powers to local authorities to set noise criteria within the local environment. The local authority therefore has the power to serve notices on those responsible for causing noise amounting to a nuisance.

Producer Responsibility Obligations (Packaging Waste) Regulations 2005

63. A company involved in the production and sale of packaging or packaging materials has an obligation as a producer under the Regulations where thresholds are exceeded. A producer can be a manufacturer, converter, packer/filler, seller or importer of packaging or packaging material. The obligations can be discharged individually or by joining a registered scheme.

Waste Electrical and Electronic Equipment Directive 2002

64. The Waste Electrical and Electronic Equipment (WEEE) Directive was agreed in 2003, together with the related Directive on Restrictions on the use of certain hazardous substances in electrical and electronic equipment (RoHS).

The WEEE Directive applies to a huge range of products. It aims to minimise the impact of electrical and electronic equipment on the environment during their lifetimes and when they become waste. It focuses on collecting, treating, recycling and recovering waste electrical and electronic equipment.

From July 2006, the RoHS Directive will ban the placing on the EU market of new electrical and electronic equipment containing more than agreed levels of certain prescribed substances. Manufacturers will need to make sure that their products and their components comply in order to be able to offer their products for sale.

The Water Environment and Water Services (Scotland) Act 2003

65. The Water Environment and Water Services (Scotland) Act 2003 will enable Scottish Ministers to implement the EC Water Framework Directive in Scotland.

The Bill was introduced into the Scottish Parliament on 18 June 2002 and received Royal Assent on 5 March 2003.

For the first time the Act establishes a planning system for the water environment with SEPA as the lead authority working alongside the public, private and voluntary sectors.

The Act ensures that all human activities that can have a harmful effect on the water environment can be controlled by establishing a framework for co-ordinated controls on water abstraction and impoundment engineering works near watercourses, and all forms of pollution to water.

For further information:
http://www.opsi.gov.uk/legislation/Scotland/acts2003/20030003.htm

The Scottish Water Byelaws 2004

66. The Scottish Water Byelaws 2004 were made to prevent the waste, misuse, undue consumption, contamination or erroneous measurement of drinking water. The Regulations set requirements for the design, installation and maintenance of plumbing systems and water fittings. They are enforced by Scottish Water.

Control of Lead at Work Regulations 2002

67. The primary aim of the Control of Lead at Work Regulations 1998 is to control risks to health caused by exposure to lead (in the form of lead dust or fumes or lead alloys) where that lead is liable to be inhaled, ingested or absorbed through the skin.

Control of Pesticides Regulations 1986

68. The Control of Pesticides Regulations 1986 and the Control of Pesticides (Amendment) Regulations 1997 regulate the sale of pesticides. The Regulations are supported by an approved code of practice that includes guidelines for the safe storage of pesticides and details of training and certification requirements.

The sale or supply of pesticides must be under the control of someone that holds a ‘nominated storekeeper’ certificate from the British Agrochemical Standards Inspection Scheme, which also maintains a register of suppliers.

Noise and Statutory Nuisance Act 1993

69. The Noise and Statutory Nuisance Act 1993 is not directly relevant to healthcare premises, but will be to associated activities. It covers nuisances arising from vehicle and building alarms, loudspeakers and other noise in public areas.

Radiation

Ionising Radiations Regulations 2004 (IRR99)

70 These Regulations place duties and responsibilities for radiation safety and the setting up of local rules and procedures. They identify the role of a radiation protection adviser (RPA) and a radiation protection supervisor (RPS). They classify different types of personnel and restrict the exposure through design and safe systems of work. They specify various dose limits, equipment, notification of incidents, and routine inspection and testing of equipment.

Radioactive Substances Act 1993

71. This Act consolidates earlier legislation including the Radioactive Substances Act 1960. It requires those keeping and using radioactive materials to register with the Environment Agency, and those disposing of radioactive wastes or accumulating them for subsequent disposal to be authorised.

Ionising Radiation (Medical Exposure) Regulations 2000

72. These Regulations revoke the 1988 version and are concerned with exposure of patients and research activities. They lay down basic measures for the health and protection of individuals against dangers of ionising radiation in relation to medical exposure.

The Regulations impose duties on those responsible for administering radiation to protect persons undergoing medical exposure, whether as part of their own medical diagnosis or treatment or as part of occupational health surveillance, health screening, voluntary participation in research or medico-legal procedures.

Radioactive Materials (Road Transport) Regulations 2002

73. These Regulations detail the requirements of transporting radioactive substances. The Regulations are concerned with the following:

- package design should be such that the risk of any radioactive contamination or external radiation hazard should be kept to a minimum;
- all shipments should be traceable to the sender;
- good quality assurance should produce public reassurance.

Medicines (Administration of Radioactive Substances) (Amendment) Regulations 2006

74. These Regulations relate to nuclear medicine. Certificate holders are only authorised to administer these medicines. They cover nuclear medicine scanning, nuclear medicine therapy, some pathology tests and Brach therapy.

Fire

Fire (Scotland) Act 2005 as amended

75. The Fire (Scotland) Act 2005 received Royal Assent on 1 April 2005. Parts 1, 2, 4 and 5 of the Act commenced in August 2005. Part 3 introduces a new fire safety regime for non-domestic premises and is due to come into force on 1 October 2006 and will replace the Fire Precautions Act 1971 and the Fire Precautions (Workplace) Regulations 1997, as amended. (http://www.Scotland.gov.uk/Topics/Justice/Fire/19077/FireAct)

Fire certificates will no longer be required after 1 October 2006 and the new fire safety regime will be based on the principle of risk assessment similar to the Fire Precautions (Workplace) Regulations.

Furniture and Furnishings (Fire) (Safety) Regulations 1988

76. This legislation relates to the supply of furniture and furnishings. It is intended to ensure that furniture and furnishings are fire-resistant and will not produce harmful, noxious smoke in the event of a fire.

All furniture or furnishings supplied must be marked with a label to show that they comply with the Regulations. Any furniture manufactured in the UK since March 1989 must comply. The following items are covered by the Regulations:

- furniture for private use in a dwelling, including children's furniture;
- sofas and chairs;
- beds, headboards and mattresses;
- sofa-beds and futons;
- nursery furniture;
- garden furniture which is also suitable for use inside;
- scatter cushions and seat pads;
- pillows;
- loose and stretch covers for furniture.

The following items are exempt:

- bed linen (including duvets and pillowcases);

- loose covers for mattresses;
- curtains;
- carpets.

Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002

77. These Regulations set minimum standards for the protection of workers and others from the risk of fire or explosions related to dangerous substances. Petrol and LPG are amongst those substances deemed to be dangerous.

The Regulations require that risks arising from those dangerous substances are comprehensively risk-assessed and recorded.

Food

Food Safety Act 1990

78. The Food Safety Act 1990 aims to protect consumers by preventing illness from the consumption of food and by preventing them from being misled as to the nature of the food they are purchasing. The Act has similarities to the Health and Safety at Work etc Act 1974, which deals with the concept of hazards and risk.

Food Safety (General Food Hygiene) Regulations 1995

79. These Regulations cover:

- general requirements for food businesses, for example cleanliness, structural requirements, facilities such as water supply, ventilation, drainage etc;
- further requirements such as personal hygiene and staff training;
- obligations on proprietors, that is, a risk assessment.

Food Safety (Temperature Control) Regulations 1995

80. These Regulations cover all types of food businesses, ranging from a mobile food caterer to a 500-bedroom hotel. This includes food that is sold publicly or privately, for profit or fund-raising.

There are a number of stages in the food production chain which are subject to the Regulations:

- preparation;
- handling;
- processing;

- packaging;
- manufacturing;
- storage;
- transporting;
- selling;
- distribution;
- supplying.

Public Health

Public Health (Infectious Diseases) Regulations 1988

81. The Public Health (Infectious Diseases) Regulations 1988 require that a properly appointed officer shall inform the Chief Medical Officer for Scotland, as the case may be, of any serious outbreak of any disease which to his knowledge has occurred in his/her district.

Medicines Act 1961

82. Medical gases are classified as medicinal products under the Medicines Act and are therefore subject to the same procurement and quality procedures as all other medicinal products.

Appendix 2: Exemplar procedures

Introduction

1 The following procedures have been prepared by HFS Board Estates and Facilities Management (EFM) personnel to meet the needs of their own organisations.

2 They are not intended to be appropriate or definitive for all sites, but they provide examples of the types of format which may be used, and the different levels of technical content which may be appropriate on different sites.

3 These procedures cover:

- electricity supply failure;
- water contamination;
- piped medical gas failure.

4 Further procedures will be required within a healthcare organisation and a regular review is important to ensure that directives, staff and equipment remain current.

Procedure for electricity supply failure

Operational procedure reference no: ……..

Hospital location: ……..

Healthcare description (A&E, CCU, Ward 6 etc): ……..

Key areas of equipment likely to be

Lighting, medical equipment, fixed and/or mobile computers and associated equipment, other non-medical equipment (catering, waste disposal etc), communication systems (telephones, nurse call etc), heating and ventilation.

Risk assessment

This procedure is linked to the overall hospital site procedure for failure of electricity supply and departmental risk assessment register. This document should be reviewed on a regular basis and especially if any alterations to equipment function, staff and responsibility take place.

Aims

This emergency procedure is intended to highlight the key issues that may arise at departmental level in the event of electrical power failure. It is appreciated that this may be the result of a full site power failure, but it may also be the result of a local failure for which notification will be necessary. The main aim is to provide a structured approach to the safety of patients and staff and to minimise the risk associated with an electrical failure.

Identification of failure

This may be indicated by the failure of key observable elements, for example lighting and computer displays, but may also be indicated by alarm signals from monitored supply panels on medical equipment, services and systems.

Major supply failure

In the event of an obvious full electrical failure, do not wait for the restoration of supplies by generator, but immediately take action.

Staff should safely complete or suspend any procedure being undertaken and prioritise their attention on the most critical equipment and/or patients. Local standby supplies and equipment-based systems should be checked. Where necessary, manual intervention should be started to ensure the safety of patients.

When supply is restored by generator, staff should ensure that all essential equipment is functioning correctly and, where necessary, transfer equipment or patients on to essential supplies.

On restoration of the normal supply, staff should check that all systems and equipment have reset to normal.

Continued supply failure

If full supply loss should continue for several minutes, immediately contact the hospital duty manager via the switchboard. The switchboard will also contact the duty engineer for attention.

Within the department, prioritise duties to ensure safety of patients and take preventative measures, where possible, to minimise the workload.

In the event that it is identified as a local failure, contact the duty manager to gain further staff support from other adjacent unaffected areas, or arrange to move the most critical patients to other departments.

Partial supply failure

If only part of the department's electrical system fails, it is unlikely that standby systems will restore supplies in the immediate term. First, minimise the risk to patients and identify the extent of the failure. Contact the switchboard, who will alert the duty engineer and duty manager. Continue to monitor the situation and move critical equipment and/or patients to fully supported areas where possible.

Awareness and training

Electrical supply failure is one of the most wide-ranging impacts on the normal running of a department. It is likely that staff will be engaged in the regular testing of the standby systems, but further local awareness should be engaged to ensure that all staff is aware of the departmental issues and the effects of a longer-term and full failure. Where possible, this should be carried out at the workplace, but with minimum impact on patients. Senior managers should liaise with the estates engineer to arrange simulation and practical support.

Emergency procedures should be an essential part of new staff induction to the department to ensure all local issues are fully understood.

Review procedure

From incident experience and training evaluation, this procedure and any supporting information should be reviewed and amended as necessary to ensure the document remains up-to-date and definitive for the department.

This document was first issued on: …….. (Date)

Amendments (Brief details and date) ……

……

Plan approved and accepted by: ……...

Senior manager ……

Head of department: ……

Procedure for water contamination

Operational procedure reference no: .....

Other relevant procedures: Engineering scheme to provide piped fresh water supplies

Scope

The following procedure is designed to instruct and advise on the operational requirements for dealing with contamination of the water supply. It is not considered a definitive guide as the particular circumstances of the incident will ultimately determine the course of action taken. It will attempt to highlight the responsibilities of estates staff, clinical staff and on-call administrators.

Causes

Water may become contaminated in a number of ways, including:

- contamination of the incoming water supply to the hospital site;
- contamination due to substances inadvertently or maliciously added to the water storage systems;
- contamination caused by the corrosion or decay of materials in contact with the water supply, for example rusting metal and dead animals;
- cross-contamination of water supply due to the effect of a process carried out on site by staff or contractors where the safety devices are inadequate or non-existent, for example cross-contamination due to siphon age from drains and stagnant water;
- misoperation/failure of water treatment plant;
- migration between domestic hot and cold water services.

Effects

The possible effects of contamination are varied, and will depend on the severity and degree of the contamination. However, further investigation should be carried out if:

- staff complain about the taste of the drinking water;
- the water is discoloured;
- the water has a distinctive smell (this could be the result of chemicals (for example chlorine), acid, sewage or decaying matter);
- the water appears normal but people using it have become sick.

Investigation and response

The size of the affected area must first be ascertained. This will give some indication of the extent of the problem and may help to identify the source of the contamination.

The following actions may or may not require to be taken, depending on whether part of or the whole water system has been contaminated:

- inform the senior staff of affected departments to cease using the water;
- contact the local water authority. The contamination may have originated from the main water incoming supplies; there is likely to be an obligation not to contaminate the public water network;
- take samples as necessary to determine the nature of the contamination;
- once the extent has been determined, an assessment should be undertaken as to the nature of the contamination. The use of microbiology staff is recommended;
- isolate the affected area from the main supply to prevent further contamination;
- take samples at various points within the affected area(s) for future analysis;
- contact on-call or emergency administrative staff and advise them to arrange a supply of fresh water for areas requiring it;
- dependent on the nature of contamination, the cause may be obvious or easily located. If this is not possible, carry out a systematic investigation of water supply systems;
- if the cause of the contamination is located, isolate the contamination and carry out necessary works to resolve the situation;
- inform medical staff of the nature of the contamination and await advice on the clinical effect before restoring the water supply to the area;
- thoroughly flush all pipework (run taps, flush toilets, bidets etc) until further analysis shows no trace of contamination;
- when the water quality is restored and confirmed by medical or microbiology staff, allow normal use to continue.

Further work

- study how the contamination has occurred and carry out preventative work if possible to avoid recurrence;
- review the operational procedure for the incident and modify as necessary;
- note the date and time of the incident, action taken and by whom, for future reference.

Relevant drawing nos: .....

Additional information

……

……

……

……

……

Plan approved and accepted by:

Board member: .....

Risk assessment

This document is linked to risk assessment no..... It should incorporate existing controls contained in the risk assessment and should be modified if any changes to the risk assessment are made.

Procedure for piped medical gas failure

Operational procedure reference no: .....

Hospital location: .....

Plant or system description: .....

Systems in use:

Oxygen ref ..... Nitrous oxide ref .....

Nitrous oxide/oxygen ref..... Medical air ref.....

Aims

The aim of this emergency procedure is to provide guidance and a structured approach to the management response in the case of a major failure in supply of piped medical gases, and to safeguard patients at risk from any such failure.

Identification of the source and nature of failure

This will normally be indicated by an alarm actuation at one of the following locations:

- telephone exchange;
- porter's lodge;
- boiler room;
- main corridor;
- ward 1;
- ward 2;
- ward 3.

On actuation of the alarm, the hospital switchboard must be contacted with a description of the alarm legend. The switchboard operator will immediately contact the Duty Engineer or Duty Authorised Person (responsibility allocated in the medical gas pipeline system (MGPS) operational policy) for the initial response and investigation of the fault, and will follow switchboard procedures.

The situation will be assessed by the Duty Engineer and categorised accordingly as a minor or major failure of the system.

Minor failure, not life-threatening

The Duty Engineer will contact the Authorised Person to have repairs carried out in accordance with Scottish Health Technical Memorandum 02-01, and inform the Duty Senior Manager of the cause and outcome of the situation. Permits-to-work will be issued in accordance with Scottish Health Technical Memorandum 02-01 as above.

Major failure of supply

If a major failure of supply has occurred, the following procedure is to be followed by the Duty Engineer, who will carry out the initial assessment and arrange for the following personnel to be contacted:

Authorised Person, Senior Manager, Senior Pharmacist, Senior Nurse, Senior Medical Officer/Surgeon

The situation will be re-assessed by the Senior Manager and a decision taken as to whether the major incident plan is also implemented and brought into operation, together with the procedures outlined in this document.

Damage control

The cause and result of the damage to the system should be investigated by the Duty Engineer/Authorised Person.

Drawings and schematics should be readily available.

Steps should be taken to limit the amount of disruption, and a temporary supply should be secured by either valving or capping of damaged areas to enable emergency supply banks to cope during repairs. Failing this, sufficient portable cylinders should be provided at the point of use.

Following damage limitation, valve-off the damaged section where possible and ensure back-up supply banks are functioning.

Team members' attendance should be confirmed. They should assemble at a predetermined location where control will be handed from the Duty Engineer/Duty Estates Manager to the responsible Senior Manager.

The areas of responsibility for the various team members are outlined, but this list is by no means exhaustive and should be further developed in the light of knowledge as the incident develops.

Areas of responsibility

Telephonist

- first-line communications;
- initial co-ordination of response;
- assists with all communications and logs calls and responses.

Senior Manager

- coordination of all team members;
- recovery strategy and repair coordination;
- documentation.

Senior Pharmacist

- ordering and procurement of gases;
- purity checks on reinstatement of supply.

Senior Medical Officer, Surgeon/Senior Nurse

- clinical prioritisation of supply requirements;
- liaison with doctors and nursing staff;
- movement of patients where necessary;
- advice to other team members on clinical criteria.

Duty Engineer/Authorised Person

- initial response and co-ordination;
- damage limitation and securing supply;
- diagnosis and repair of failure;
- provision of temporary supplies (pipeline);
- testing and verification on reinstatement;
- recommissioning and documentation.

Designated Manager, Hotel Services

- provision of portering staff for moving and changing cylinders;
- liaison with other team members for manpower requirements;
- organisation of patient transport where needed;
- organisation of transport for support services;
- liaison with outside agencies and press.
- communications.

Debriefing

Following return to normality, a team debriefing should be held to review the emergency procedure and update or correct any apparent weaknesses.

Review procedure

This procedure will be reviewed following any change in personnel, equipment, materials and environment or following any change. It will be reviewed at regular intervals not exceeding 12 months.

Training and information

All staff involved will receive adequate training and instruction to enable them to carry out these procedures with confidence during an emergency. This training will be recorded in the log attached, and updated on a regular basis.

Amendments.....(brief details and date)

Plan approved and accepted by:

Board member: .....

Risk assessment.....

This document is linked to risk assessment no ..... It should incorporate existing controls contained in the risk assessment and should be modified if any changes to the risk assessment are made.

Operational Checklist	Define ownership of the problem?	Will patient/public/staff safety/care be affected?	Risk of fire outbreak, or reduced fire-fighting ability?	Consider impact on electricity supply?	Consider impact on gas supply?	Consider Impact on water supply?	Consider impact on drainage?	Consider impact on other services?	Increased risk of *Legionella*?	Consider impact on site security? Impact on fire alarms?	Will medical gases be affected?	Is there an impact on clinical waste?	Agree responsibility boundaries	Clinical department procedures?	Control of Infection Team involvement?	Do public relations need to be addresses?	Consider Service Level Agreements with purchasers?	Involve commercial services?	Record Board personnel contact details?	Locate supply of specialist equipment?	Locate approved subcontractors?	Record specialist contractor contact details?	Keep records of actions taken?
Air conditioning																							
Air pollution																							
Asbestos																							
Building management system																							
Boilers																							
Clinical waste																							
Domestic hot Water																							
Drainage																							
Electricity Supply failure																							
Explosions																							
Extreme Weather																							

Operational Checklist	Define ownership of the problem?	Will patient/public/staff safety/care be affected?	Risk of fire outbreak, or reduced fire-fighting ability?	Consider impact on electricity supply?	Consider impact on gas supply?	Consider Impact on water supply?	Consider impact on drainage?	Consider impact on other services?	Increased risk of *Legionella*?	Consider impact on site security? Impact on fire alarms?	Will medical gases be affected?	Is there an impact on clinical waste?	Agree responsibility boundaries	Clinical department procedures?	Control of Infection Team involvement?	Do public relations need to be addresses?	Consider Service Level Agreements with purchasers?	Involve commercial services?	Record Board personnel contact details?	Locate supply of specialist equipment?	Locate approved subcontractors?	Record specialist contractor contact details?	Keep records of actions taken?
Fire																							
Flooding																							
Gas																							
Heating																							
Incinerators																							
Infestations																							
Kitchens																							
Laboratory failures																							
Lifts																							
Medical engineering equipment																							
Operating theatres																							
Piped medical gases																							

Operational Checklist	Define ownership of the problem?	Will patient/public/staff safety/care be affected?	Risk of fire outbreak, or reduced fire-fighting ability?	Consider impact on electricity supply?	Consider impact on gas supply?	Consider Impact on water supply?	Consider impact on drainage?	Consider impact on other services?	Increased risk of *Legionella*?	Consider impact on site security? Impact on fire alarms?	Will medical gases be affected?	Is there an impact on clinical waste?	Agree responsibility boundaries	Clinical department procedures?	Control of Infection Team involvement?	Do public relations need to be addresses?	Consider Service Level Agreements with purchasers?	Involve commercial services?	Record Board personnel contact details?	Locate supply of specialist equipment?	Locate approved subcontractors?	Record specialist contractor contact details?	Keep records of actions taken?
Paging																							
Refrigerators																							
Sewage plant																							
Sterilization																							
Telephones																							
Transport incidents																							
Water contamination																							
Water supply																							
Water Treatment																							

Sample procedure Matrix

References

Acts and Regulations

NB: Access to information related to the following Acts and Regulations can be gained via www.legislation.gov.uk.

BS 7671:2008 (IEE Wiring Regulations, 17th Edition). British Standards Institution, 2008.

Building (Scotland) Regulations 2004 and (Amendment) Regulations 2006, 2007

Chemicals (Hazard Information and Packaging for Supply) Regulations 2002. SI 2002 No 1689. TSO, 2002.

Civil Contingencies Act 2004. **SSI 2005 No 494**. TSO, 2005.

Clean Air Act 1993. TSO, 1993.

Confined Spaces Regulations 1997. SI 1997 No 1713. TSO, 1997.

Construction (Design and Management) Regulations 2007. SI 2007 No 320. TSO, 2007.

Construction (Health, Safety and Welfare) Regulations 1996. SI 1996 No 1592. TSO, 1996. .

Consumer Protection Act 1987. TSO, 1987.

Control of Asbestos Regulations 2006. SI 2006 No 2739. TSO, 2006.

Control of Lead at Work Regulations 2002. SI 2002 No 2676. TSO, 2002.

Control of Pesticides Regulations 1986. SI 1986 No 1510. TSO, 1986.

The Control of Pesticides (Amendment) Regulations 1997. SI 1997 No 188, TSO, 1997.

Water Environment (Oil Storage) (Scotland) Regulations 2006, SI 2006 No133 Stationery Office

Control of Pollution Act 1974. TSO, 1974.

Control of Pollution (Amendment) Act 1989. TSO, 1989.

Control of Substances Hazardous to Health Regulations (COSHH) 2002. SI 2002 No 2677. TSO, 2002.

Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991. SI 1991 No 1624. TSO, 1991.

Controlled Waste Regulations 1992. SI 1992 No 588. TSO, 1992. .

Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) 2002. SI 2002 No 2776. TSO, 2002.

Disability Discrimination Act 2005 (DDA). TSO, 1995.

Electrical Equipment (Safety) Regulations 1994.SI 1994 No 3260. TSO, 1994. .

Electricity Act 1989. TSO, 1989.

Electricity at Work Regulations 1989. SI 1989 No 635. TSO, 1989. .

Electricity Safety, Quality and Continuity Regulations 2002. SI 2002 No 2665. TSO, 2002.

Electromagnetic Compatibility Regulations 2005. SI 2005 No 281. TSO, 2005**.**

Employers Liability (Compulsory Insurance) Regulations 1998 and (Amendment) Regulations 2004. SI 1998 No 2573. TSO, 1998.

Environment Act 1995. TSO, 1995**.**

Environmental Protection (Duty of Care) Regulations 1991. SI 1991 No 2839. TSO, 1991**.** .

Environmental Protection (Prescribed Processes) Regulations 1991. SI 1991 No 1749. TSO, 1991**.**

Environmental Protection Act 1990. TSO, 1990**.**

Factories Act 1961 (as amended). TSO, 1961**.**

Food Safety (General Food Hygiene) Regulations 1995. SI 1995 No 1763. TSO, 1995**.**

Food Safety (Temperature Control) Regulations 1995. SI 1995 No 2200. TSO, 1995**.**

The Food Safety Act 1990 (Amendment) Regulations 2004. SI 2004 No 2990. TSO, 2004.

Furniture and Furnishings (Fire) (Safety) Regulations 1988. SI 1998 No 1324. TSO, 1988.

Gas Appliances (Safety) Regulations 1995. SI 1995 No 1629. TSO, 1995.

Gas Safety (Installation and Use) Regulations 1998. SI 1998 No 2451. TSO, 1994.

The Special Waste Amendment (Scotland) Regulations 2004, SSI 2004, No 112. TSO, 2004.

Health and Safety (Consultation with Employees) Regulations 1996. SI 1996 No 1513. TSO, 1996.

Health and Safety (Display Screen Equipment) Regulations 1992. TSO, 1992**.**

Health and Safety (First-Aid) Regulations 1981. SI 1981 No 917. TSO, 1981**.**

The Health and Safety (Miscellaneous Amendments) Regulations 2002 SI 2002 No 2174. TSO, 2002.

Health and Safety (Safety Signs and Signals) Regulations 1996. SI 1996 No 341. TSO, 1996**.**

Health and Safety (Training For Employment) Regulations 1990. SI 1990 No 1380. TSO, 1990**.**

Health and Safety at Work etc Act 1974. TSO, 1974**.**

Health and Safety Information for Employees Regulations 1989. SI 1989 No 682. TSO, 1989**.**

Highly Flammable Liquid and Liquid Petroleum Gas Regulations 1972. SI 1972 No 917. TSO, 1972**.**

Ionising Radiation (Medical Exposure) Regulations 2000. SI 2000 No 1059. TSO, 2000**.**

Ionising Radiations Regulations 1999. SI 1999 No 3232. TSO, 1999**.**

Landfill Tax Regulations 1996. SI 1996 No 1527. TSO, 1996.

Lifting Operations and Lifting Equipment Regulations 1998. SI 1998 No 2307. TSO, 1998.

Lifts Regulations 1997. SI 1997 No 831. TSO, 1997.

The Waste Management Licensing Amendment (Waste Electrical and Electronic Equipment) (Scotland) Regulations 2007, SSI 2007 No 172, TSO, 2007.

Low Voltage Electrical Equipment (Safety) Regulations. SI 1989 No 728, TSO, 1997.

Management of Health and Safety at Work Regulations 1999. SI 1999 No 3242. TSO, 1999**.**

Manual Handling Operations Regulations 1992.SI 1992 No 2793. TSO, 1992.

Medicines (Administration of Radioactive Substances) Regulations 1978. SI 1978 No 1006. TSO, 1978**.**

The **Medicines (Administration of Radioactive Substances) Amendment Regulations 2006 Statutory Instrument 2006 No. 2806.** TSO, 2006.

Health and Medicines Act 1988. TSO, 1988**.**

National Health Service and Community Care Act 1990. TSO, 1990**.**

Noise and Statutory Nuisance Act 1993. TSO, 1993**.**

The Control of Noise at Work Regulations 2005. SI 2005 No 1643. TSO, 2005**.**

Packaging (Essential Requirements) Regulations 2003. SI 2003 No 1941. TSO, 2003**.**

Personal Protective Equipment at Work Regulations 1992. SI 1992 No 2966. TSO, 1992

Plugs and Sockets etc (Safety) Regulations 1994.SI 1994 No 1768. TSO, 1994**.**

Pollution Prevention and Control (Scotland) Regulations 2000. SSI 2000 No 323. The Stationery Office

Pressure Equipment Regulations 1999. SI 1999 No 2001 and (Amendment) Regulations 2002. TSO, 1999.

Pressure Systems Safety Regulations 2000. SI 2000 No 128. TSO, 2000.

Producer Responsibility Obligations (Packaging Waste) Regulations 2005. SI 2005 No 3468. TSO, 2005**.**

Provision and Use of Work Equipment Regulations 1998. SI 1998 No 2306. TSO, 1998**.**

Public Health (Infectious Diseases) Regulations 1988. SI 1988 No 1546. TSO, 1988**.**

Radio Equipment and Telecommunications Terminal Equipment Regulations 2000 and Amendment 2003. SI 2000 No 1903. TSO, 2000**.**

Radioactive Materials (Road Transport) Regulations 2002. SI 2002 No 1093. TSO, 2002**.**

Radioactive Substances Act 1993. TSO, 1993.

Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR 95).SI 1995 No 3163. **TSO, 1995**.

(The) Regulatory Reform (Fire Safety) Order 2005. SI 2005 No 1541. TSO, 2005.

Safety Representatives and Safety Committees Regulations 1977. SI 1977 No 500. TSO, 1977.

Simple Pressure Vessels (Safety) Regulations 1991. SI 1991 No 2749. TSO, 1991**.**

Supply of Machinery (Safety) Regulations 1992.SI 1992 No 3073. TSO, 1992**.**

The Planning etc. (Scotland) Act 2006. TSO, 2006**.**

Trade Effluent (Prescribed Processes and Substances) Regulations 1989. SI 1989 No 1156. TSO, 1989**.**

Waste Management Licensing Regulations 1994.SI 1994 No 1056.

Water Environment and Water Services (Scotland) Act 2003. TSO, 1991**.**

The Water Industry (Scotland) Act 2002 (Consequential Modifications) Order 2004 SI 2004 No. 1822. TSO, 2004.

Working Time (Amendment) Regulations 2002. SI 2002 No 3128. TSO, 2002

Workplace (Health, Safety and Welfare) Regulations 1992. SI 1992 No 3004. TSO, 1992.

European legislation

Council Directive of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE) (2002/96/EC). Official Journal L 37, 13.02.2003, pp 24–38.

British Standards

BS EN ISO 9000:2005. Quality management systems. Fundamentals and vocabulary. British Standards Institution, 2005. 58

Scottish Government and NHSScotland Publications.

Security Management Framework for NHS Boards in Scotland Health Facilities Scotland

The National Health Service in Scotland Manual of Guidance: Responding to emergencies.
http://www.sehd.scot.nhs.uk/emergencyplanning/guidance.htm