

**Notes for Boards:
Infection Prevention and
Control (IPC) risks in the
design of a Critical Care
Unit (CCU), Level 2 and 3
care**

Version history

Version	Date	Summary of changes
V1.0	23 May 2024	New publication.

Approvals

Version	Date Approved	Group / Individual
V1.0		

Contents

Introduction	5
Questions and answers.....	6
Question 1: What are the optimal functional and design considerations/requirements/guidance specifications for a Critical Care Unit within the UK?	6
Question 2: What are the recommended requirements regarding provision of Clinical hand wash basins (CHWBs) and shower facilities for Level 2 or Level 3 care?.....	8
Question 3: What air change rate should be provided to a Level 2 or Level 3 care area?.....	10
Question 4: What pressure differentials should be applied to a Level 2 or Level 3 care area?	11
Question 5: What monitoring of ward ventilation pressures cascades should be used in a Level 2 or Level 3 care area?	11
Question 6: What level of ward ventilation filtration should be applied to Level 2 or Level 3 care areas?	12
Question 7: Are High Efficiency Particulate Air (HEPA) filters advocated for use in Level 2 or Level 3 care areas?.....	13
Question 8: What is the recommended water and drainage system design for a Level 2 or Level 3 care area?.....	14

Question 9: Do ventilation systems design or components exacerbate or contribute to an increased infection risk within Level 2 or Level 3 care areas?	15
Question 10: What design considerations should be taken to reduce infection risks from a ventilation system within a Level 2 or Level 3 care area?	16
Question 11: What are the recommendations for installing point of use (POU) or inline filters as a control measure within a Level 2 or Level 3 care area?	17
Question 12: Are there any recommendations regarding inclusion of renal dialysis points within a Level 2 or Level 3 care area?	18
Question 13: What maintenance considerations are essential to prevent infection risk in water and drainage systems in a Level 2 or Level 3 care area?	19
Question 14: What maintenance considerations are essential to prevent infection risk in ventilation systems in a Level 2 or Level 3 care areas?.....	20
Question 15: What are the commissioning and validation requirements for Level 2 or Level 3 care areas?	21
Question 16: Should chilled beams be used in CCU?.....	22
Appendix 1: Summary of relevant guidance	23

Introduction

There is limited technical standards and guidance currently available to aid decision making in respect of optimal design considerations when planning to undertake a new build, adapt, extend, or undertake refurbishment within a Critical Care Unit (CCU)

This document aims to support NHSScotland boards by providing them with a summarised set of questions and answers which will signpost them to any applicable technical guidance documents and summarise key considerations pertaining to:

- functionality
- layout
- support spaces
- maintenance access arrangements
- water systems (including drainage)
- ventilation systems

A list of all [available guidance used within NHSScotland for the design, construction and maintenance of healthcare settings \(inclusive of ICUs\)](#) is available. The main documents required to answer the specific design questions listed will be summarised at the end of each question and a full list provided in [Appendix 1](#).

In addition to design considerations, project teams must engage with HAI-SCRIBE and NDAP/KSAR processes. Level 2 and Level 3 critical care units are high risk areas so particular care must be taken around protecting its water and ventilation systems during construction and there needs to be a robust commissioning plan from the outset. Clear project governance structures and involvement of IPC through each stage of the project are key to ensuring a safe environment for patients is delivered.

This document refers to both Level 2 and Level 3 critical care units.

Questions and answers

Question 1: What are the optimal functional and design considerations/requirements/guidance specifications for a Critical Care Unit within the UK?

Answer:

Any new build or refurbishment project design will be influenced by the varied clinical specialities the unit is intended to serve for example:

- adult
- paediatric
- elective
- emergency
- medical
- surgical
- neurological
- cardiothoracic
- burns and/or trauma orthopaedics.

The project design team should collaborate with the multidisciplinary team to design out or fully mitigate all infection risks to enable the safe delivery of care within any healthcare-built environment. Along with the project team, the critical care clinicians and the Infection Prevention and Control Team (IPCT) should consider the bespoke nature of each Level 2 or Level 3 unit and assess how it can be built or refurbished in accordance with relevant guidance within the available allocated space, and seek to enable a thermally comfortable working environment, which offers both optimal and practical clinical provision and workflows which both minimise and manage healthcare associated infection (HAI) risks.

A functional mixture of multi-bedded bays and single rooms will be required. The number of single rooms and or isolation suites would depend on the clinical

specialties locally and regionally that the Level 2 or Level 3 unit is intending to accommodate.

The ratios of single rooms and/or isolation suites would be relative to the forecasted number of source isolation and protective isolation facilities required as determined by the clinical brief for the facility. This may require the provision of positively pressured rooms, negatively pressured rooms and/or positive pressure ventilation lobby (PPVL) rooms required for infectious diseases, immunosuppressed individuals, and/or burns patients. The HBN 04-02 states “units that routinely admit neutropenic haematology patients may require up to 50% of their beds to be provided as isolation rooms with lobbies. No unit should, however, have less than 20% of their beds as isolation rooms.”

Planning and design considerations for the adequacy of bed spacing and single/isolation room sizing/specifications and ancillary facilities are contained within a variety of Level 2 and Level 3 critical care and non-critical care specific technical guidance documents listed below.

The ventilation system and water system design and maintenance strategies for each should be approved within the boards local governance structure and be supported by the Ventilation Safety Group (VSG) and Water Safety Group (WSG). The project team should ensure that these groups are provided with technical and practical information such as business continuity or contingency arrangements for the Level 2 and Level 3-unit expansion or further compartmentation at short notice so as it can be incorporated into their decision making.

Resilience on the current provision of pre-existent services is optimistic and often largely impractical, and the project team should consider its adequacy for:

- central decontamination, laundry, and mortuary services
- domestic and maintenance provision and workflows (planned and preventative)
- safe and practical provision, removal and flow of stores, waste, and linen
- flow of staff, visitors, patients

- the unit's ability to apply the national infection prevention and control manual (NIPCM)

Relevant technical standards and guidance:

1. General design for healthcare buildings [HBN 00-01 Oct 2014](#)
2. Sanitary spaces [HBN 00-02 Mar 2017](#)
3. Critical care units [Critical care units \(HBN 04-02\)](#)
4. Adult in-patient facilities [Adult in-patient facilities \(SHPN 04-01\)](#)
5. Isolation facilities in acute settings [In-patient accommodation - supplement 1 - Isolation facilities in acute settings \(SHPN 4 sup 1\)](#)
6. Ventilation for healthcare Part A and B:
 - [Ventilation for Healthcare - Design and validation \(SHTM 03-01 Part A\)](#)
 - [Ventilation for Healthcare - Operational and verification \(SHTM 03-01 Part B\)](#)
7. Water systems Parts A-G [Water safety \(SHTM 04-01\)](#)

Question 2: What are the recommended requirements regarding provision of Clinical hand wash basins (CHWBs) and shower facilities for Level 2 or Level 3 care?

Answer:

The necessary provision of alternative methods as well as water provision via suitable outlets for hand decontamination, equipment decontamination, the provision of clinical care and assisted personal hygiene should be considered collectively by the design team.

This ratio of CHWBs required will be influenced by the bed numbers, and the variety of procedures which may be undertaken on the Level 2 or Level 3-unit. The

requirements to undertake hand hygiene in accordance with the WHO 5 moments for hand hygiene and any requirement to perform surgical hand antisepsis will influence the number, and location of accessible CHWBs, scrub troughs and hand rubs required. This should always be risk assessed locally and balanced by the project team whilst they consider a design enables the which enables the practical adoption of the NIPCM whilst preventing or mitigating for any splash or spray contamination risks which may lead directly or indirectly to water associated HAI.

Many Level 2 and Level 3 patients are unlikely to be ambulant enough to regularly use sinks, toilets, or showers therefore the ratio of outlets required should reflect the projected clinical demand.

Access to suitable showering facilities for staff should be included within accessible changing areas.

Design considerations and acceptable ergonomic arrangements for both sink and sanitary assemblies including CHWBs, and scrub troughs are contained within non-CCU specific technical guidance documents.

Relevant technical standards and guidance:

- 1.** General design for healthcare buildings [HBN 00-01 Oct 2014 \(nhs.scot\)](#)
- 2.** Sanitary spaces [HBN 00-02 Mar 2017](#)
- 3.** Critical care units [Critical care units \(HBN 04-02\)](#)
- 4.** Adult in-patient facilities [Adult in-patient facilities \(SHPN 04-01\)](#)
- 5.** Isolation facilities in acute settings [In-patient accommodation - supplement 1 - Isolation facilities in acute settings \(SHPN 4 sup 1\)](#)
- 6.** Water safety for healthcare premises Parts A-G: [Water safety \(SHTM 04-01\)](#)
- 7.** [Guidance for neonatal units \(NNUs\) \(levels 1, 2, &3\), adult and paediatric intensive care units \(ICUs\) in Scotland to minimise the risk of Pseudomonas aeruginosa infection from water. Health Protection Scotland 2018](#)
- 8.** National Infection Prevention and Control Manual. ARHAI Scotland. [National Infection Prevention and Control Manual: Home](#)

9. Scottish Healthcare Technical Memorandum 64: [Sanitary Assemblies – Building Component Series 2009](#)

Question 3: What air change rate should be provided to a Level 2 or Level 3 care area?

Answer:

All new build or refurbished Level 2 and Level 3 care areas must be designed to be provided with the air changes stipulated within the Scottish Health Technical Memoranda (SHTM), which will provide guidance and advice regarding ventilation for health care premises without unnecessary departure or derogation. Where departure or derogation is unavoidable as part of a refurbishment the project or design team are obliged to fully mitigate remaining infection risks to enable the safe delivery of care within the unit.

SHTM 03-01, interim v 2.0, 2022 stipulates this is a supply of 10 air changes per hour (Ach/hr) at 10 pascals (Pa) positive pressure within the main unit and an extract of 10 Ach/hr at -5 Pa for any isolation room/suite intended for infectious diseases.

Relevant technical standards and guidance:

1. General design for healthcare buildings [HBN 00-01 Oct 2014](#)
2. Critical care units [Critical care units \(HBN 04-02\)](#)
3. Adult in-patient facilities [Adult in-patient facilities \(SHPN 04-01\)](#)
4. Isolation facilities in acute settings [In-patient accommodation - supplement 1 - Isolation facilities in acute settings \(SHPN 4 sup 1\)](#)
5. Ventilation for healthcare Part A and B:
 - [Ventilation for Healthcare - Design and validation \(SHTM 03-01 Part A\)](#)
 - [Ventilation for Healthcare - Operational and verification \(SHTM 03-01 Part B\)](#)

Question 4: What pressure differentials should be applied to a Level 2 or Level 3 care area?

Answer:

All new build or refurbished Level 2 or Level 3 care units must be provided with the pressure differentials stipulated within the current SHTM.

SHTM 03-01 stipulates this is 10 Pa positive pressure.

Relevant technical standards and guidance:

1. Critical care units [Critical care units \(HBN 04-02\)](#)
2. Adult in-patient facilities [Adult in-patient facilities \(SHPN 04-01\)](#)
3. Isolation facilities in acute settings [In-patient accommodation - supplement 1 - Isolation facilities in acute settings \(SHPN 4 sup 1\)](#)
4. Ventilation for healthcare Part A and B:
 - [Ventilation for Healthcare - Design and validation \(SHTM 03-01 Part A\)](#)
 - [Ventilation for Healthcare - Operational and verification \(SHTM 03-01 Part B\)](#)

Question 5: What monitoring of ward ventilation pressures cascades should be used in a Level 2 or Level 3 care area?

Answer:

As this is a critical ventilation system within a critical care area, pressure cascades should be continually and robustly monitored to detect failure along with other critical system parameters via a building management system (BMS) interface with an accessible control panel out with the clinical care space which is easily accessed by the maintenance team.

For areas where isolation rooms are required the design team may consider the use of differential pressure gauges for clinical staff to monitor the ventilation within the room. If used staff must be educated as to their function and how to interpret readings as well as procedures for alarms or out of specification readings.

Relevant technical standards and guidance:

1. Isolation facilities in acute settings [In-patient accommodation - supplement 1 - Isolation facilities in acute settings \(SHPN 4 sup 1\)](#)
2. Ventilation for healthcare Part A and B:
 - [Ventilation for Healthcare - Design and validation \(SHTM 03-01 Part A\)](#)
 - [Ventilation for Healthcare - Operational and verification \(SHTM 03-01 Part B\)](#)

Question 6: What level of ward ventilation filtration should be applied to Level 2 or Level 3 care areas?

Answer:

Filtration should be determined by a local risk assessment supported by the Ventilation Safety Group. The minimum grade of supply air is stipulated within the SHTM, which provides guidance and advice regarding ventilation for healthcare premises, in accordance with BS EN 16798.

SHTM 03-01, interim v 2.0, 2022 stipulates this is SUP2 for the main Level 2 or Level 3 care area supply and category 2 isolation room/source isolation (including rooms with extract only). Protective isolation rooms E12.

Relevant technical standards and guidance:

1. Ventilation for healthcare Part A and B:
 - [Ventilation for Healthcare - Design and validation \(SHTM 03-01 Part A\)](#)
 - [Ventilation for Healthcare - Operational and verification \(SHTM 03-01 Part B\)](#)

2. Specialist Ventilation for Healthcare Society: Change in Air Filter Test and Classification standards: [SVHSoc. 02-V1.2 Filter group revisions Nov 18.pdf](#)

Question 7: Are High Efficiency Particulate Air (HEPA) filters advocated for use in Level 2 or Level 3 care areas?

Answer:

HEPA grade filtration requires additional capital expenditure and is subject to ongoing maintenance costs which exceed that of other filters. It is not currently specified as an essential requirement for the air supplied to a general Level 2 or Level 3 care area, however any neutropenic patients who may require critical care would require to be managed in a protective isolation room, provided with a HEPA filtered supply. Additionally, isolation rooms for infectious disease patients may require HEPA filtered extract.

Relevant technical standards and guidance:

1. Ventilation for healthcare Part A and B:
 - [Ventilation for Healthcare - Design and validation \(SHTM 03-01 Part A\)](#)
 - [Ventilation for Healthcare - Operational and verification \(SHTM 03-01 Part B\)](#)

Question 8: What is the recommended water and drainage system design for a Level 2 or Level 3 care area?

Answer:

Water and drainage system design should be determined by a local risk assessment supported by the Water Safety Group.

To prevent water associated HAI the design team should consider:

- hot and cold-water distribution system, and wastewater arrangements
- the suitability and selection of components (including outlets and taps), which do not promote the growth of pathogens within the water and drainage system
- the suitability of the proposed water outlet's locations within the CCU (see also [Question 2](#))
- that maintenance and repairs are possible without a requirement to disrupt clinical care were deemed practicable.
- that the number of outlets reflects only the essential clinical requirements of the CCU
- that the drainage design suitably minimises backflow from sewer and pooling and/or reflux into the outlets present within the CCU
- any necessary mitigations to manage water associated infection risks within the CCU which cannot be designed out

Relevant technical standards and guidance:

1. Sanitary spaces [HBN 00-02 Mar 2017](#)
2. Water safety (SHTM 04-01 Parts A-G)
 - [Water safety for healthcare – design, installation and testing \(SHTM 04-01 Part A\)](#)
 - [Water safety for healthcare - Operational management \(SHTM 04-01 Part B\)](#)

- [Water safety for healthcare - TVC Testing Protocol \(SHTM 04-01 Part C\)](#)
 - [Water safety for healthcare- Disinfection of domestic water systems \(SHTM 04-01 Part D\)](#) .
 - [Water safety for healthcare - Alternative materials and filtration \(SHTM 04-01 Part E\)](#)
 - [Water safety for healthcare - Chloramination of water supplies \(SHTM 04-01 Part F\)](#)
 - [Water safety for healthcare- Operational procedures and exemplar \(SHTM 04-01 Part G\)](#)
3. Scottish Healthcare Technical Memorandum 64: [Sanitary Assemblies – Building Component Series 2009](#).

Question 9: Do ventilation systems design or components exacerbate or contribute to an increased infection risk within Level 2 or Level 3 care areas?

Answer:

Yes. If the systems air handling unit or other components:

- has been poorly designed
- is not working as per intended design
- has not been fitted correctly
- is subject to contamination
- is unable to be fully maintained as per manufacturer's instructions and associated technical guidance.

The initial and ongoing oversight which can be provided by the boards Ventilation Safety Group is therefore of huge importance for this critical system and the safety of the patients within the CCU.

Building in resilience at the design phase may enable business and clinical continuity should the system fail.

Relevant technical standards and guidance:

1. Ventilation for healthcare Part A and B
 - [Ventilation for Healthcare - Design and validation \(SHTM 03-01 Part A\)](#)
 - [Ventilation for Healthcare - Operational and verification \(SHTM 03-01 Part B\)](#)

Question 10: What design considerations should be taken to reduce infection risks from a ventilation system within a Level 2 or Level 3 care area?

Answer:

There are many ventilation design considerations to reduce risk of HAI that apply for ICU areas. However, design is one component of the ventilation system to be considered in the overall ventilation strategy. The construction of commissioning of and operational maintenance of any ventilation system in accordance with the principles laid out in national guidance would reduce infection risks from any ventilation system.

All ventilation design proposals should be robustly reviewed by the project team and be presented at the board Ventilation Safety Group for approval and involved in the development of the ventilation strategy for the facility. Infection prevention and control team representatives should be involved as part of these discussions.

Relevant technical standards and guidance:

1. Critical care units [Critical care units \(HBN 04-02\)](#)
2. Isolation facilities in acute settings [In-patient accommodation - supplement 1 - Isolation facilities in acute settings \(SHPN 4 sup 1\)](#)
3. Ventilation for healthcare Part A and B:

- [Ventilation for Healthcare - Design and validation \(SHTM 03-01 Part A\)](#)
- [Ventilation for Healthcare - Operational and verification \(SHTM 03-01 Part B\)](#)

Question 11: What are the recommendations for installing point of use (POU) or inline filters as a control measure within a Level 2 or Level 3 care area?

Answer:

POU filters prevent microorganisms leaving the tap or outlet only and do not remove any microbial contamination which may be present within the water or outlet.

Unlike optimum temperature control, POU or inline filters are not considered a primary control measure for the maintenance of water supply or its quality and should not be fitted as standard.

POU filters may be used as a short term or temporary control measure within the CCU during any water associated infection incident or outbreak, to maintain the clinical functionality of the unit whilst the outlets or the hot and cold water system are being investigated.

The decision to introduce POU filters requires risk assessment as it may introduce other unintentional hazards which require to be fully considered by the IPCT and/or an IMT and/or the WSG prior to fitting and whilst they require to remain in situ.

Non-exhaustive list for risk assessment includes:

- ongoing WSG or IMT review
- outlet or POU filter compatibility
- manufacturer's instructions for installation or fitting, maintenance, lifespan and changing method and frequency

- altered ergonomics between outlet and drain and unintended consequences, for example water flow to drain being altered +/- altered splash contamination risk
- a cleaning and maintenance plan
- informing and keeping health care staff updated with the reasons for fitting a POU, any alterations to cleaning, provision of drinking water or the hand hygiene process
- informing staff what action to take if the POU becomes partially or fully dislodged from the outlet or becomes contaminated
- POU disposal in accordance with waste policy

Relevant technical standards and guidance:

1. [Prevention and management of healthcare water-associated infection incidents/outbreaks. Health Protection Scotland 2019](#)

Question 12: Are there any recommendations regarding inclusion of renal dialysis points within a Level 2 or Level 3 care area?

Answer:

Within Level 2 or Level 3 care areas outlets for haemodialysis must be connected to a new or existent reverse osmosis plant or an appropriate biocidal treatment system. This will be required to minimise impurities and maintain the water quality required to enable the safe provision of haemodialysis.

Relevant technical standards and guidance:

1. Critical care units [Critical care units \(HBN 04-02\)](#)
2. Water systems Parts A-G [Water safety \(SHTM 04-01\)](#)
3. Renal care in patients [Renal Care - Main renal unit \(HBN 07-02\)](#)

Question 13: What maintenance considerations are essential to prevent infection risk in water and drainage systems in a Level 2 or Level 3 care area?

Answer:

To prevent water associated HAI within the CCU the project team should consider the actions which will be required to assist maintenance of optimal temperature/chemical controls, and those actions which prevent the stagnation of water, to reduce the risk of microbial growth and biofilm formation.

This includes incorporation of these new or refurbished water services into the boards water safety plan and the clinical team's awareness of safe water systems including:

- appropriate and ongoing operational use of all water outlets
- enactment of scheduled flushing regimes
- enactment of temporary flushing regimes for when any outlets are identified as little used
- the enablement of regular maintenance team access for planned preventative maintenance and disinfection schedules.
- the importance of active and scheduled temperature and or chemical monitoring/water testing
- the importance of immediate action where optimal control cannot be demonstrated or is not being preserved
- the importance of taking immediate action to report slow drainage or blockages

Relevant technical standards and guidance:

1. [Guidance for neonatal units \(NNUs\) \(levels 1, 2, &3\), adult and paediatric intensive care units \(ICUs\) in Scotland to minimise the risk of Pseudomonas aeruginosa infection from water. Health Protection Scotland 2018](#)

2. [Prevention and management of healthcare water-associated infection incidents/outbreaks. Health Protection Scotland 2019](#)
3. [Pseudomonas aeruginosa routine water sampling in augmented care areas for NHSScotland. Health Protection Scotland 2018](#)
4. Scottish Healthcare Technical Memorandum 04-01: [Water safety for healthcare- Operational management \(SHTM 04-01 Part B\) 2014](#)
5. Scottish Healthcare Technical Memorandum 04-01: [Water safety for healthcare- TVC Testing Protocol \(SHTM 04-01 Part C\) 2014](#)

Question 14: What maintenance considerations are essential to prevent infection risk in ventilation systems in a Level 2 or Level 3 care areas?

Answer:

As not all Level 2 and Level 3 patients can be moved at short notice due to the clinical risks created by doing so, maintenance access and schedules should be enabled wherever practicable which cause zero to minimal clinical disruption.

As a critical ventilation system, annual inspection and verification is required for the Level 2 and Level 3 care area with oversight provided by the board VSG.

All AHU's may fail and have a manufacturer expected lifespan and for this reason isolations rooms should be served by a single AHU. Planned or predicted replacement of the AHU and an unexpected failure or loss of this critical system and the associated costs and clinical impact should feature within the units business continuity or contingency arrangements.

Relevant technical standards and guidance:

1. Ventilation for healthcare Part A and B:
 - [Ventilation for Healthcare - Design and validation \(SHTM 03-01 Part A\)](#)

- [Ventilation for Healthcare - Operational and verification \(SHTM 03-01 Part B\)](#)
2. Ventilation Crib Card [2019-08-ventilation-crib-card-v1.pdf](#)

Question 15: What are the commissioning and validation requirements for Level 2 or Level 3 care areas?

Answer:

Commissioning is an essential project step (undertaken by an appointed external independent contractor) which enables demonstrable assurances for the board and other stakeholders that the installed water and ventilation systems are installed as per design, safe to use and are fit for purpose.

Commissioning is required to take place prior to any operational use of the facility and to maximise safety in advance of or clinical occupation.

The IPCT and Estates and Facilities team (including maintenance personnel) are required to be engaged with the technical and operational elements of the commissioning and handover process.

Relevant technical standards and guidance:

1. [Scottish Capital Investment Manual: NHSScotland Commissioning Process. Scottish Government 2017.](#)
2. [Key Stage Assurance Review \(KSAR\): Notes for Board Infection Prevention and Control Teams. National Services Scotland 2023.](#)
3. Ventilation for healthcare Part A and B:
 - [Ventilation for Healthcare - Design and validation \(SHTM 03-01 Part A\)](#)
 - [Ventilation for Healthcare - Operational and verification \(SHTM 03-01 Part B\)](#)

4. Water safety for healthcare premises Parts A-G [Water safety \(SHTM 04-01\) Scotland \(nhs.scot\)](#)

Question 16: Should chilled beams be used in CCU?

Answer:

Substantial risks can be introduced to the high-risk patient groups being cared for in CCU from chilled beams water pooling which would increase the risk of introduction or ingress for waterborne bacteria and fungus to the CCU and are therefore not desirable for a CCU.

The ventilation system design should include temperature controls without a requirement for any additional equipment installation.

Relevant technical standards and guidance:

1. Ventilation for healthcare Part A and B:
 - [Ventilation for Healthcare - Design and validation \(SHTM 03-01 Part A\)](#)
 - [Ventilation for Healthcare - Operational and verification \(SHTM 03-01 Part B\)](#)
2. [Inkster T, Peters C, Soulsby H. Potential infection control risks associated with chilled beam technology: experience from a UK hospital](#)

Appendix 1: Summary of relevant guidance

Health Building Note 00-01: General design for healthcare buildings

- [HBN 00-01 Oct 2014](#)

Health Building Note 00-02: Sanitary spaces

- [HBN 00-02 Mar 2017](#)

Health Building Note 04-02: Critical care units

- [Critical care units \(HBN 04-02\)](#)

Scottish Health Planning Note 04-01: Adult in-patient facilities

- [Adult in-patient facilities \(SHPN 04-01\)](#)

Scottish Health Planning Note 4 supplement 1: Isolation facilities in acute settings

- [In-patient accommodation - supplement 1 - Isolation facilities in acute settings \(SHPN 4 sup 1\)](#)

Scottish Health Technical Memorandum 02: Medical gas pipeline systems. Parts A and B:

- [Medical Gas Pipeline Systems: Design installation validation and verification \(SHTM 02-01 Part A\)](#)
- [Medical Gas Pipeline Systems: Operational management \(SHTM 02-01 Part B\)](#)

Scottish Health Technical Memorandum 03: Ventilation for healthcare. Parts A and B:

- [Ventilation for Healthcare - Design and validation \(SHTM 03-01 Part A\)](#)
- [Ventilation for Healthcare - Operational and verification \(SHTM 03-01 Part B\)](#)

Scottish Health Technical Memorandum 04: Water safety. Parts A-G:

- [Water safety for healthcare – Design, installation and testing \(SHTM 04-01 Part A\)](#)

- [Water safety for healthcare- Operational management \(SHTM 04-01 Part B\)](#)
- [Water safety for healthcare- TVC Testing Protocol \(SHTM 04-01 Part C\)](#)
- [Water safety for healthcare- Disinfection of domestic water systems \(SHTM 04-01 Part D\)](#) .
- [Water safety for healthcare- Alternative materials and filtration \(SHTM 04-01 Part E\)](#)
- [Water safety for healthcare- Chloramination of water supplies \(SHTM 04-01 Part F\)](#)
- [Water safety for healthcare- Operational procedures and exemplar \(SHTM 04-01 Part G\)](#)

Scottish Health Technical Memorandum 06: Electrical services Parts A and B:

- [Electrical services supply and distribution: Design considerations \(SHTM 06-01 Part A\)](#)
- [Electrical services supply and distribution: Operational management \(SHTM 06-01 Part B\)](#)

Electrical safety guidance for High Voltage Systems

- [Electrical safety guidance for High Voltage systems \(SHTM 06-03\)](#)

Scottish Health Technical Memorandum 08-03: Bedhead services

- [Specialist Services - Bedhead Services \(SHTM 08-03\)](#)

Scottish Health Technical Memorandum 08-05: Building Management Systems – Parts A-D

- [Building Management Systems: Overview and Management \(SHTM 08-05 Part A\)](#)
- [Building Management Systems: Design Considerations \(SHTM 08-05 Part B\)](#)
- [Building Management Systems: Validation and Verification \(SHTM 08-05 Part C\)](#)

- [Building Management Systems: Operational Management \(SHTM 08-05 Part D\)](#)

Scottish Health Technical Memorandum 54 – 69: Building component series

- [Building component series -User manual \(SHTM 54\)](#)
- [Building component series -Windows \(SHTM 55\)](#)
- [Building component series - Partitions \(SHTM 56\)](#)
- [Building component series - Internal glazing \(SHTM 57\)](#)
- [Building component series - Internal doorsets \(SHTM 58\)](#)
- [Building component series - Ironmongery \(SHTM 59\)](#)
- [Building Component Series - Ceilings \(SHTM 60\)](#)
- [Building component series - Flooring - matrix example xls \(SHTM 61 app 1a\)](#)
- [Building component series - Demountable storage systems \(SHTM 62\)](#)
- [Building component series - Fitted storage systems \(SHTM 63\)](#)
- [Building Component Series – Sanitary assemblies \(SHTM 64\)](#)
- [Building component series - Cubicle curtain track \(SHTM 66\)](#)
- [Building component series - Laboratory storage systems \(SHTM 67\)](#)
- [Building component series - Protection \(SHTM 69\)](#)

Scottish Health Technical Memorandum 81- 87:

- [Fire safety - Precautions in new healthcare premises \(SHTM 81 part 1\)](#)
- [Fire safety - Fire engineering of healthcare premises \(SHTM 81 part 2\)](#)
- [Fire safety - Atria in healthcare premises \(SHTM 81 part 3\)](#)
- [Fire safety - alarm and detection systems \(SHTM 82\)](#)
- [Fire safety - General fire precautions in healthcare premises \(SHTM 83\)](#)
- [Fire safety - Precautions in existing healthcare premises \(SHTM 85\)](#)
- [Fire safety - Risk assessment \(SHTM 86\)](#) [Fire safety - Textiles and furniture \(SHTM 87\)](#)

NHSScotland Waste Management Guidance

- [NHSScotland Waste Management Guidance \(SHTN 03-01\)](#)