

# **Scottish Health Technical Memorandum 60**

SHTM Building Component Series  
**Ceilings**

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# 1. Introduction

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## Background

- 1.1 This is one of a series of Scottish Health Technical Memoranda which provides specifications and design guidance on building components for health buildings which are not adequately covered by current British Standard. The numbers and titles of the SHTMs in the series are:

A full [Reference](#) section is provided at the end of this document, including Acts, Regulations and British Standards.

- 54 User manual;
- 55 Windows;
- 56 Partitions;
- 57 Internal glazing;
- 58 Internal doorsets;
- 59 Ironmongery;
- 60 Ceilings;
- 61 Flooring;
- 62 Demountable storage system;
- 63 Fitted storage system;
- 64 Sanitary assemblies;
- 66 Cubicle curtain track;
- 67 Laboratory fitting out systems;
- 69 Protection.

## Scope and status

- 1.2 This SHTM offers guidance on the technical design and output specifications of ceilings.
- 1.3 Its content does not diminish either the manufacturer's responsibility for fitness for purpose of products or the design team's responsibility for selection and application of products to meet project requirements. Design teams are also reminded of their obligations under the Construction (Design and Management) Regulations 2007 to ensure safe construction.

## Application

- 1.4 Because of the wide-ranging considerations necessary for successful selection, specification, installation, and use of ceilings, this SHTM should be made available to project teams, design teams and those responsible for construction, commissioning and maintenance of health buildings.
- 1.5 It is mainly concerned with new building work, but much of the information it contains is equally applicable to renewal of ceilings in existing buildings.

## Relationship to other data

- 1.6 The main sources of data used in the preparation of this SHTM are listed in the References section.
- 1.7 This SHTM was prepared for publication in December 2006 and updated in 2009. After this date, readers should ensure that they use the latest or new edition of all building legislation, British Standards etc, which may post-date the publication of this document.
- 1.8 First preference should be given to products and services from sources which have been registered under current BSI Quality Assurance procedures or other certification schemes. Suppliers offering products other than to British Standards should provide evidence to show that their products are at least equal to such Standards.
- 1.9 This guidance should be used in conjunction with sections of the National Building Specification (NBS) relevant to ceilings. NBS is a library of standard specification clauses covering most kinds of building work and comprising a wide range of clauses with accompanying guidance notes. All clauses are optional, and their combination into a job specification is left to the specifier. NBS has great flexibility, and it can be adapted to suit the technical needs and preferences of different projects, organisations and specifiers. Specifications go out of date as a result of technical innovation or major review of a key BSI document. As NBS sections become affected by such major changes, they are re-issued to members of the subscription service. Users are advised to ensure that they refer to the current edition. Refer to the NBS website at <http://www.thenbs.com/>.
- 1.10 Any enquiries regarding the technical content of this SHTM should be emailed to [nss.hfsenquiries@nhs.net](mailto:nss.hfsenquiries@nhs.net)

## Terminology

1.11 The following terms are used throughout this SHTM. Others are defined in the sections in which they are used:

- **Suspended ceiling system** – a ceiling supplied and fixed complete, generally comprising a membrane and horizontal and vertical support members. These systems are usually proprietary;
- **Traditional ceiling** – a non-proprietary, jointless ceiling, normally provided by the builder, of plaster applied directly to the structural soffit or of plasterboard on wood joists.

## 2. User requirements

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### Categories of performance

- 2.1 Six performance categories have been established to relate user requirements for ceiling membranes in the various activity spaces in health buildings to the physical and performance characteristics of ceilings. These are set out in [Table 1](#) and defined in [paragraphs 2.4–2.10](#).
- 2.2 These categories provide:
- a convenient method for stating user requirements in respect of ceilings in [Appendix B](#) of this SHTM and in client briefs to design teams;
  - a simple performance designation for manufacturers to apply to ceiling systems which meet the requirements in any given category;
  - convenient references for building designers and specifiers when assessing ceiling systems and products.
- 2.3 These six categories apply equally to both suspended ceiling systems and traditional ceilings, as their physical and performance characteristics refer only to the soffit of a ceiling.

### Physical and performance characteristics

#### Physical characteristics of soffit

- 2.4 The physical characteristics of the soffit may be defined as:
- smooth – no coarser than a brush-applied matt emulsion paint on a flat plastered surface without projections, indents or holes;
  - textured – a surface other than smooth;
  - imperforate – without holes through the membrane;
  - perforated – having a pattern of pre-formed holes into or through the membrane;
  - jointless – either having no joints, or having joints which are completely sealed so that the whole of the finish is impervious and will prevent the collection of dirt and bacteria;
  - jointed – other than jointless.

## Humidity

● - indicates essential requirement ○ - indicates options

Physical and performance characteristics	Categories of performance of finishes					
	1	2	3	4	5	6
<b>Soffit:</b>						
smooth	●	●	●	○	○	○
textured				○	○	○
imperforate	●	●	●	○	●	○
perforated				○		○
jointless	●	○	○	○	○	○
jointed		○	○	○	○	○
<b>Humidity:</b>						
normal	●		●	●	●	●
high		●				
<b>Spread of flame:</b>						
Class 1	●	●	●		●	●
Class 0				●		

**Table 1: Categories of Performance**

2.5 Ceilings should be capable of withstanding either normal or high humidity:

- normal humidity – 25% to 65% relative humidity over an air temperature range of 10°C to 25°C;
- high humidity – 25% to 100% relative humidity over an air temperature range of 10°C to 30°C.

### Surface spread of flame

2.6 Section 2.5 of the Building (Scotland) Regulations 2004 and subsequent amendments set out the requirements for residential carebuildings and hospitals in respect of restricting flame spread on wall and ceiling surfaces.

- ceilings of circulation spaces and shafts are required to be Class 0;
- ceilings of all other rooms are required to be not less than Class 1.

2.7 Many membranes rated as Class 1 will also meet the requirements of Class 0. Relevant test data should be obtained from relevant manufacturers.

2.8 Class 0 is not strictly a surface performance characteristic, as its definition in the Building Regulations refers to the incombustibility of materials with requirements that:

- the material of the ceiling should be incombustible throughout; or
- the surface material (or if it is bonded to a substrate, the surface material in conjunction with the substrate) should have a surface of Class 1 (to BS 476-



7:1997) and, if tested in accordance with BS 476-6:1989, should have an index of performance 'I' not exceeding 12, and a sub-index 'i' not exceeding 6.

## Hygiene and cleaning

- 2.9 Control and Prevention of Healthcare Associated Infection (HAI) is a priority issue for NHSScotland – both in respect of the safety and well being of patients and staff and also the resources consumed by potentially unavoidable infections.

Healthcare Associated Infection (HAI) is a complex issue involving the many different elements of patient care and provision. Due to its multi-factorial nature there is a need to develop a holistic approach to combating the spread of infection within the built environment.

It is imperative that those involved in the design and planning, construction and refurbishment and on-going maintenance of the healthcare facility have a sound knowledge of prevention and control of infection in the built environment.

Scottish Health Facilities Note (SHFN) 30 and HAI-SCRIBE aim to provide information on the prevention and control of infection, and on the prevention of cross-infection and cross contamination in healthcare facilities, to those responsible for the planning, design and maintenance of such facilities.

Cleaning is an essential part of the multi-disciplinary approach in improving patient, staff and public safety. Safe clinical care is supported through ensuring high standards of hygiene and related measures to tackle HAI in the healthcare environment.

Cleaning regimes including frequency of cleaning should be addressed in line with current national guidance together with any additional Local Management requirements.

Relevant Provisions of current guidance, standards and Codes of Practice for cleaning of healthcare premises and including the latest technical requirements are embodied in the following documents:

- SHFN 30: Infection Control in the built environment: Design and Planning;
- HAI-SCRIBE (Healthcare Associated Infection System for Controlling Risk in the Built Environment);
- The NHSScotland National Cleaning Services Specification;
- NHS Quality Improvement, Scotland – Healthcare Associated Infection (HAI) Cleaning Services Standards;
- The NHSScotland Code of Practice for the Local Management of Hygiene and Healthcare Associated Infection;
- Clinical Standards Board for Scotland Healthcare Associated Infection (HAI) Infection Control Standards.

## Characteristics of membranes related to categories of performance

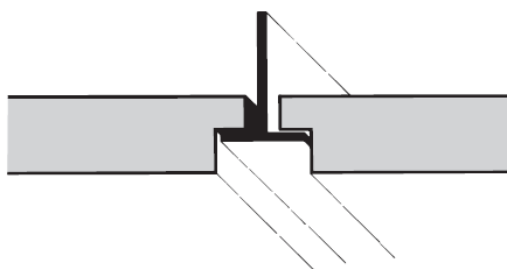
- 2.10 The relationships between membrane materials, finishes and soffit textures to categories of ceiling performance for ceilings generally acceptable in health buildings are set out in [Table 2](#).
- 2.11 [Table 2](#) may be used to make preliminary selections of membrane materials and soffit textures, but before making final selections the design team will need to examine samples to ensure that products comply with the cleaning and microbiological requirements of the various activity spaces.

## Membranes

- 2.12 Typical membranes and range of sizes are shown in [Table 3](#).

## Soffit textures and joint patterns

- 2.13 Soffit textures fall into three broad ranges as follows:
- smooth – no coarser than a brush-applied matt emulsion paint on a flat plastered surface without projections, indents or holes;
  - textured – a surface other than smooth and including such types as textured, embossed, rilled, striated, moulded or fissured;
  - perforated – having a pattern of pre-formed holes into or through the membrane, may be used in conjunction with a smooth or textured soffit.
- 2.14 Soffit textures must be compatible with the cleaning and microbiological requirements of the activity space. A smooth soffit will generally be preferred in clinical areas where category 5 ceilings are required. A 'low' textured soffit may be used provided it can be cleaned by cleaning method C.
- 2.15 For jointed ceilings, the soffit texture should be considered in relationship to the type of grid used (for example concealed, recessed or exposed) and the configuration of the joint, as illustrated below:
- 2.16 For jointed ceilings, the soffit texture should be considered in relationship to the type of grid used (for example concealed, recessed or exposed) and the configuration of the joint, as illustrated below:
- recessed grid with rebated edge tiles;

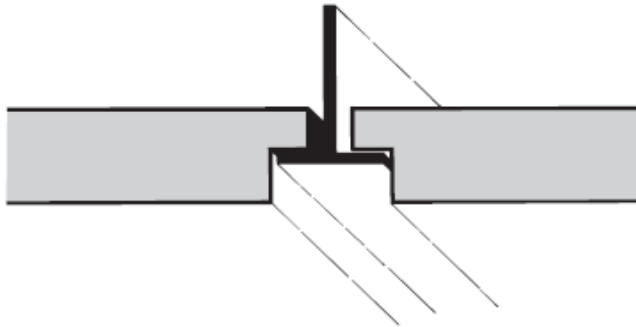


Key: § - requirement ○ - acceptable

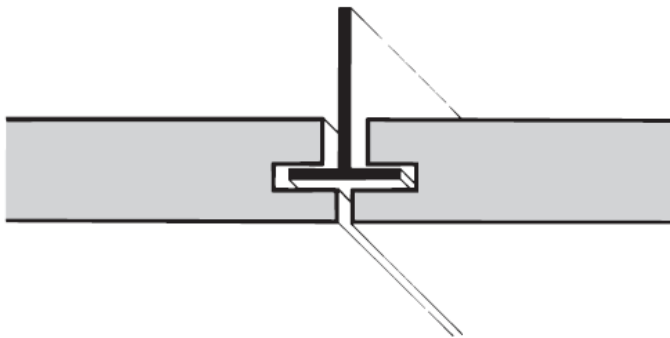
Joint pattern and suspension grid	Membrane			Category					
	Material	Finish	Soffit	1	2	3	4	5	6
Jointless membrane concealed grid	Plasterboard	Site decoration	Smooth/ imperforate after joints filled	§	○	○	○	○	○
Jointed membrane concealed grid	Reinforced plaster	Site decoration	Smooth/ imperforate			○	○	○	○
			Smooth/ perforate				○		○
	Metal	Factory finish, stove enamel etc.	Smooth/ imperforate			○	○	○	○
			Smooth/ perforate				○		○
	Calcium silicate	Site decoration or factory finish	Smooth/ imperforate		○	○	○	○	○
			Smooth/ perforate				○		○
	Mineral fibre including compressed glass fibre	Factory finish, emulsion-type paint	Textured/ imperforate or perforate				○		○
		Factory finish acrylic paint	Textured/ imperforate		○	○	○	○	○
	Perlite	Self-finish	Smooth/imperforate		○	○	○	○	○
			Textured/imperforate				○	○	○
	vermiculite	Self-finish	Textured/imperforate				○	○	○
	Wood composite	Site decoration	Textured/ imperforate or perforate				○		○
Jointed membrane exposed grid	Plasterboard	Factory finish plastic coating	Smooth/imperforate			○	○	○	○
	Calcium silicate	Site decoration or factory finish	Smooth/imperforate		○	○	○	○	○
			Smooth/ perforate				○		○
		Factory finish, spatter paint	Textured/imperforate				○	○	○
			Textured perforate				○		○
	Mineral fibre including compressed glass fibre	Factory finish, emulsion-type paint	Textured/ imperforate or perforate				○		○
Jointless traditional ceiling	Plasterboard and/or plaster	Site decoration	Textured/ imperforate or perforate				○		○
			Smooth/imperforate	§	○	○	○	○	○

Table 2: Ceiling Performance

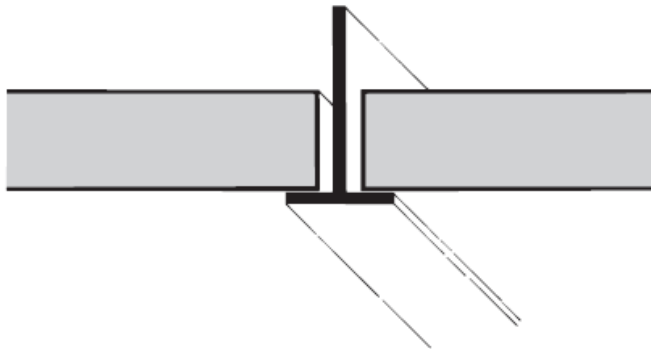
- concealed grid with bevelled edge tiles:



- concealed grid with square edged tiles with fine jointing



- exposed grid



Ceiling panel sizes and weights should be in accordance with the relevant requirements of current Health and Safety legislation in respect of manual handling in particular – both for construction stage and future maintenance activities.

<i>Material</i>	<i>Thickness (approx) mm</i>	<i>Typical unit size (mm)</i>	<i>Remarks</i>
Plasterboard	9.5	Sizes as BS 1230	Traditional ceilings with skim coat of plaster
	12.5 (one or two layers)	900 x 1800 x 2400	Face layer – taper edge boards with filled joints
Reinforced plaster	30 to 35	300 x 300 x 600 600 x 600	Overlaid with mineral wool mat and plasterboard if acoustic performance required
	10 to 25	600 x 600	
Metal	25 to 35	Widths from 100 Lengths up to 4000	Mineral wool in-fill pads or overlays
	25 to 200		Open screen
Calcium silicate	6,9 or 12	200 x 2400 x 3000 600 x 600 x 1200 1200 x 1200	Perforated tiles are overlaid with mineral wool
Mineral fibre including compressed glass fibre	12 to 40	300 x 300 x 600 x 1200 x 1800 600 x 600 x 1200 x 2400	
Perlite	20 to 25	300 x 300	
Vermiculite	10 to 25	600 x 600 x1200	
Wood composite board	25 and upwards	various sizes cut from 1220 x 3600 board	Can meet Class 0

**Table 3: Typical Ceiling Membranes**

## 3. Design and specification guidance

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### General

- 3.1 Ceilings usually consist of one of the following types:
- the soffit of the structure overhead, for example plaster on concrete;
  - fixed directly to the structure overhead, for example plasterboard on wood joists;
  - suspended from the structure overhead, for example proprietary tiles.
- 3.2 Suspended ceiling systems, which predominate throughout this SHTM, generally consist of metal vertical and horizontal members (or in special cases timber framing) supporting a membrane which will generally be formed of:
- plasterboard;
  - reinforced plaster;
  - metal;
  - calcium silicate;
  - mineral fibre;
  - perlite;
  - vermiculite;
  - wood composite board.
- 3.3 The suspension system can either be the lay-in type with an exposed grid or a concealed type where only the membrane is visible from below.
- 3.4 The type of suspension will determine whether a ceiling system can be installed in one or two stages.
- It is essential that systems which can be erected in two stages are specified in areas with mechanical services in the void. This means that the grid can be erected and stabilised before the services are completed, tested and accepted, and then followed by the installation of the membrane.
- 3.5 Vertical hangers are normally fixed to the structural soffit and support the horizontal grid. Rigid hangers should be used to resist upwards movements from wind pressure and cleaning procedures.
- 3.6 Horizontal members form a primary and a secondary grid as required, and take various forms including channels, angles and Z sections.

## Constituent parts

- 3.7 A traditional ceiling can be either:
- plaster applied direct to the structural soffit; or
  - plasterboard fixed directly or indirectly to structural members.
- 3.8 A suspended ceiling system generally comprises:
- membrane;
  - horizontal and vertical support members;
  - perimeter trim.
- 3.9 Both traditional and suspended ceilings may require:
- bulkheads at changes of ceiling soffit level;
  - reveals to rooflight openings or roof access;
  - trimmed openings with removable panels for engineering access;
  - reinforcement for ceiling-mounted equipment, for example theatre lights and pendants;
  - unistrut channels, for example for X-ray equipment.

## Constituent materials

- 3.10 Any metal structural members of the suspension system should be corrosion-resistant.
- 3.11 No installation will involve the use of materials containing asbestos.
- 3.12 No membrane will contain material which is known to give off appreciably toxic products during combustion.
- 3.13 If timber members are incorporated, consideration must be given to rot-proofing, woodworm protection and fire protection.

## Relationship to partitions and walls

- 3.14 Ceilings should be designed in relation to partitions and walls to achieve the required combined performance in respect of:
- sound insulation;
  - fire compartmentation/separation;
  - support.

- 3.15 In the case of suspended ceiling systems, the preferred relationship in health buildings is one in which the partitions or walls pass through the suspended ceiling membrane; do not require support from the ceiling system; and combine with the structural soffit above to provide fire-resisting compartmentation and sound insulation as required.
- 3.16 The alternative relationship in which partitions or walls terminate at, or just above, the soffit of a suspended ceiling is not recommended, as it demands a ceiling performance in respect of fire resistance and sound insulation which is difficult to achieve and maintain in practice in health buildings, because:
- the number of fittings required at ceiling level is incompatible with testing to BS 476 Parts 20–23, which is based on a test specimen area of ceilings without fittings;
  - the scale and frequency of access to engineering services in the ceiling void through the membrane (in respect of fire) and through insulation backing the membrane (in respect of sound) is incompatible with maintenance of these aspects of performance.

### Relationship to roofs

- 3.17 Thermal insulation may be required at ceiling level where the ceiling system is located immediately below the roof void.
- 3.18 It is not advisable to protect the roof construction by incorporating a vapour check into the suspended ceiling, since many of the engineering services pierce the ceiling membrane.

### Dimensional tolerances

- 3.19 Main runners or primary support channels should be installed so that they are level within the following permissible deviation:
- spans up to 1200mm – 1/400th of span;
  - spans up to 1800mm – 1/600th of span.
- 3.20 Rigid hangers are preferred, as wire hangers make levelling the structural grid more difficult. Wire hangers must be taut to prevent any subsequent deflection when the ceiling membrane is installed.

### Strength

- 3.21 A ceiling system should normally be able to support:
- dead loading from the normal range of surface mounted or recessed ceiling fixtures, for example small lighting fittings and lightweight services such as cables in the ceiling void;



- relevant manufacturer's advice should be sought in respect of co-ordination of ceilings and any integrated fittings or services to determine requirements for additional support for fittings or ceiling installation;
- live loading exerted as an upward and sideways thrust during normal cleaning operations.

3.22 The structural classification of a ceiling suspension system should be based on the load-carrying capacity of the main members and other indirectly hung members of the system (see [Table 4](#)).

<b>Structural grade</b>	<b>Minimum kg/lin metre</b>	<b>Maximum kg/lin metre</b>	<b>Use</b>
Grade 1 light duty	-----	15.0	Used primarily where ceiling loads of tile or lay-in panels only are proposed.
Grade 2 intermediate duty	15.0	25.0	Used primarily where ceiling loads not exceeding 25 kg/linear metre per suspension member eg for luminaires and air diffusers, are proposed.
Grade 3 heavy duty	25.0	-----	Used primarily where ceiling loads exceeding 25kg/linear metre per suspension member eg for luminaires, air diffusers, cubicle curtain tracks etc, are proposed.

**Table 4 - Load-carrying capacities of structural members**

The load-carrying capacity should be the uniformly distributed load in kilograms per linear metre that a simply supported continuous member section having a span length of 1200mm is capable of supporting without the mid-span deflection exceeding 3mm (that is, 1/400th of the 1200mm span length) when tested in accordance with the method described in Appendix B of the Suspended Ceilings Association's Guide No 2.

3.23 The loads imposed by fittings described in Grades 2 and 3 may be directly supported from the structure above, enabling a lighter-grade ceiling to be used.

## Fire resistance of suspended ceiling systems

3.24 As stated in [paragraphs 3.15–3.17](#), it is strongly recommended that demountable suspended ceiling systems should not be required to provide or contribute to the fire resistance of structures, because health building requirements for fittings mounted at ceiling level and access to engineering services through the membrane are incompatible with the achievement and maintenance in practice of fire-resisting performance. However, they should be capable of maintaining stability for 30 minutes when subjected to tests in accordance with BS 476 Parts 20–23 from below to assist escape from the room.

- 3.25 In situations where it is required to subdivide the ceiling zone at points other than compartment walls and subcompartment walls to prevent the horizontal passage of smoke and flame, the membranes of ceiling systems should be firestopped to the underside of fire stop/cavity barriers extended from the ceiling membrane to the structure above (for surface spread of flame, see [paragraphs 2.6–2.8](#)).

## Sound absorption

- 3.26 The design team will need to know the actual sound absorption performance of the ceiling systems under consideration to control the acoustic performance of any given activity space, particularly rooms where above-average levels are generated, for example dining rooms.
- 3.27 Detailed information should be obtained from ceiling manufacturers. The average sound absorption coefficient of the four middle frequencies is called the noise reduction coefficient (NRC). A product that has an NRC of not less than 0.50 is recognised as possessing significant sound absorption properties. For further information see Suspended Ceilings Association Guide No 3, 'Recommendations for the selection of suspended ceiling materials'.
- 3.28 The sound absorption qualities of some membranes are given below as general guidance:
- plasterboard and reinforced plaster – the sound absorption of these materials is not significant, but reinforced plaster tiles, if perforated and with mineral wool overlays, have an NRC of 0.75;
  - metal – smooth metal tiles do not absorb sound, but for perforated tiles with mineral wool inlays the NRC is in the range of 0.70 to 0.95 depending on the size and pattern of perforations;
  - calcium silicate – the smooth material has no significant sound absorption qualities, but the perforated tiles overlaid with a mineral wool blanket have an NRC of 0.70;
  - mineral fibre – the sound absorption qualities of this material are generally good, with an NRC of 0.70 within a range of 0.56 to 0.85 depending upon surface texture and depth of indentation;
  - perlite – has an NRC of 0.50 whether plain or textured.

**Note** – Sound insulation: In the preferred relationship to partitions and walls described in [paragraphs 3.15–3.17](#), suspended ceilings are not required to contribute to the sound insulation between spaces as this will be provided by the walls and partitions extending up into the ceiling void.

## Wind loading

- 3.29 The problem of designing against the internal air pressure differences induced by the wind forces acting around the building is complex, but cannot be ignored. For this reason, wind loading information is usually given in manufacturers' product literature.
- 3.30 The most likely manifestation of failure is when ceiling tiles are lifted or blown up into the ceiling void. Very lightweight tiles are particularly prone to this hazard.
- 3.31 Other likely problems with tile lift are:
- the increased risk of cross-infection;
  - the minimum live loading performance standard for cleaning may not be achieved;
  - disconcerting to occupants;
  - the unsightliness of disturbed tiles;
  - air pressure differentials due to mechanical ventilation.
- 3.32 Ceilings with exposed lay-in grid suspension systems should have every tile clipped to the suspension grid to withstand upward pressure. Unfortunately, spring clips are often lost or badly fitted on subsequent removal for maintenance purposes, and this eventuality should be given consideration when selecting membrane materials. Maintenance access should be carefully considered to minimise the potential of removing areas of ceiling tiles on a regular basis.

## Access to engineering services

- 3.33 Adequate access to engineering services can only be achieved by careful coordination of architectural and engineering design. The location of access points must be agreed at design stage, and usually falls into four types:
- trimmed openings with access panels;
  - air-tight proprietary inspection panels;
  - a jointed membrane which can be wholly removed for access;
  - at pre-determined points in a jointed membrane, tiles can be removed for access.
- 3.34 The critical aspects of design coordination are minimised where a jointed membrane can be wholly removed for access.
- 3.35 A label or coloured disc should identify tiles which are regularly used for access to services. The access points should be designed to allow panels and tiles to be removed without damage or disfiguration.

3.36 Access through category 1 ceilings should always be avoided wherever possible. For jointless membranes in general, access can usually be provided in four ways:

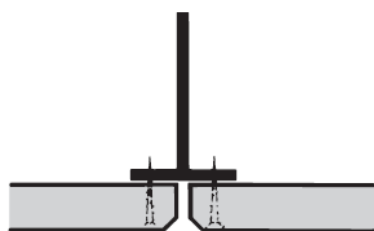
- trimmed openings with access panels;
- air-tight proprietary inspection panels;
- entry from an adjoining activity space;
- external entry from roof level, above the jointless membrane.

**Note** – High risk patient areas:

- suspended ceilings installed in any unsupervised areas (for example bathrooms, toilets) used by patients considered to be at high risk of suicide should be identified, and a risk assessment carried out involving all appropriate staff. The assessment should identify any other potential risks, including light fittings. These should be addressed according to individual circumstances;
- where necessary, means of access to suspended ceilings should be removed from unsupervised areas (for example, chairs removed from showers and bathrooms etc);
- where new patient units or the refurbishment of existing units are being planned, consideration should be given to the most appropriate type of ceiling for 'high risk' patient areas;
- it is important to provide all mental illness patients with a safe environment.
- to this end:
  - (i) risks to the safety of patients considered to be at high risk of suicide should be removed where reasonably practicable;
  - (ii) implement appropriate operational measures to minimise the risk to 'high risk' patients.

<b>Membrane material</b>	<b>Suspension grid</b>	<b>Typical method of fixing membrane to grid</b>
Plasterboard or wood composite board	Concealed system	Boards are screwed up to grid members, as <a href="#">Figure 1</a> .
	Exposed system	Boards are laid on flanges of grid members and held in position with spring dips, as <a href="#">Figure 2</a> for plasterboard and <a href="#">Figure 6</a> for wood composite.
Reinforced plaster perlite vermiculite	Concealed system	Tiles are rebated on one edge and kerfed and out back on opposite edge to slide onto the T section grid members and to interlock with the adjoining tiles, as <a href="#">Figure 3</a> . Moulded, perforated tiles can also be screwed to grid member, as <a href="#">Figure 1</a> .
Metal	Concealed system with spring T suspension	Tiles are pushed up into spring T runners which form part of the secondary grid, as <a href="#">Figure 4</a> .
Calcium silicate	Concealed system	Boards are screwed up to grid members, as <a href="#">Figure 1</a> .
	Exposed system	Boards are laid on flanges of grid members and held in position with spring dips, as <a href="#">Figure 2</a> .
Mineral fibre including compressed glass fibre	Concealed system	Tiles have kerfed and cut back edges to slide onto the T section grid members, as <a href="#">Figure 5</a> .
	Exposed system	Tiles are laid on flanges of grid members and held in position with spring dips, as <a href="#">Figure 2</a> .
		As above but with tiles with rebated edges, as <a href="#">Figure 6</a> .

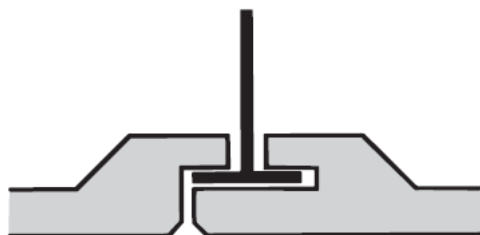
**Table 5 Relationship of membrane to metal suspension system**



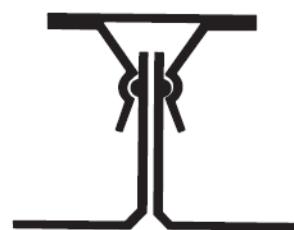
**Figure 1: Screw Fixed**



**Figure 2: Exposed Grid**



**Figure 3: Concealed Grid**



**Figure 4: Metal Spring Cup**

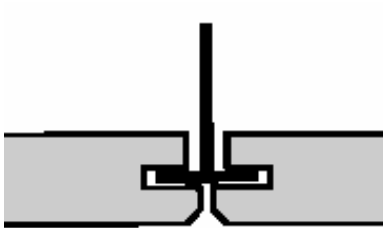


Figure 5: Concealed

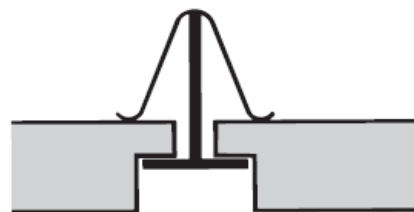


Figure 6: Exposed Rebated

## Sustainability

- 3.37 The Green Guide to Specification' (Anderson et al, 2002) is a useful guide for specifiers seeking to minimise the environmental impact of building materials.

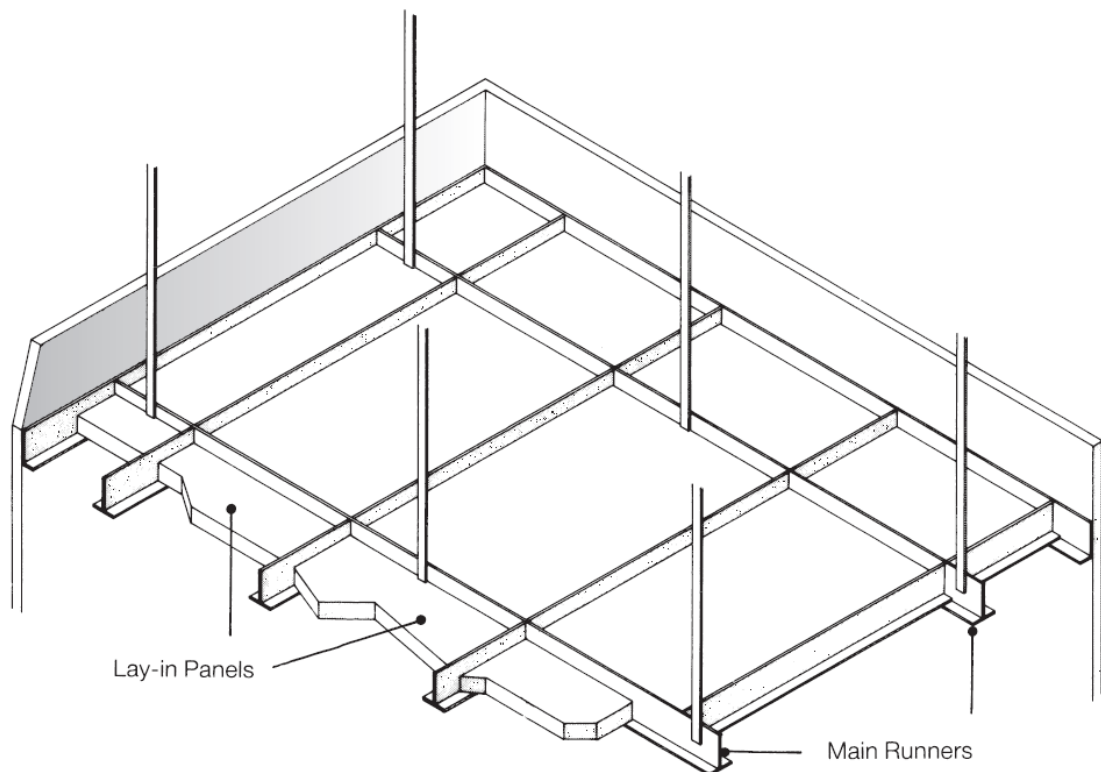
## Hanger spacing

- 3.38 Optimum hanger spacings and the extent to which they can be varied, for example to accommodate engineering services, differ between proprietary systems and whether the suspension system is:
- directly hung – in which the main structural grid network is directly suspended from the building structure overhead;
  - indirectly hung – in which the main structural grid network is supported by primary support sections which are suspended from the building structure overhead.
- 3.39 Main runners, and thereby the hangers of suspended ceiling systems with exposed grids, are controlled in one direction by their ceiling tile or panel size. Location of the hangers in the other direction can usually be varied along the length of the main runners to take account of the service distribution requirements in the void (see [Figure 7](#)).
- 3.40 Suspended ceilings with concealed grids normally have the indirectly hung suspension system which allows the hanger spacing to be varied in either direction up to a maximum of 1800 mm depending on which product is selected (see [Figure 8](#)).
- 3.41 Mortices, screwed sockets and other means of fixing hangers should be provided for in the structural design.

## Junction details

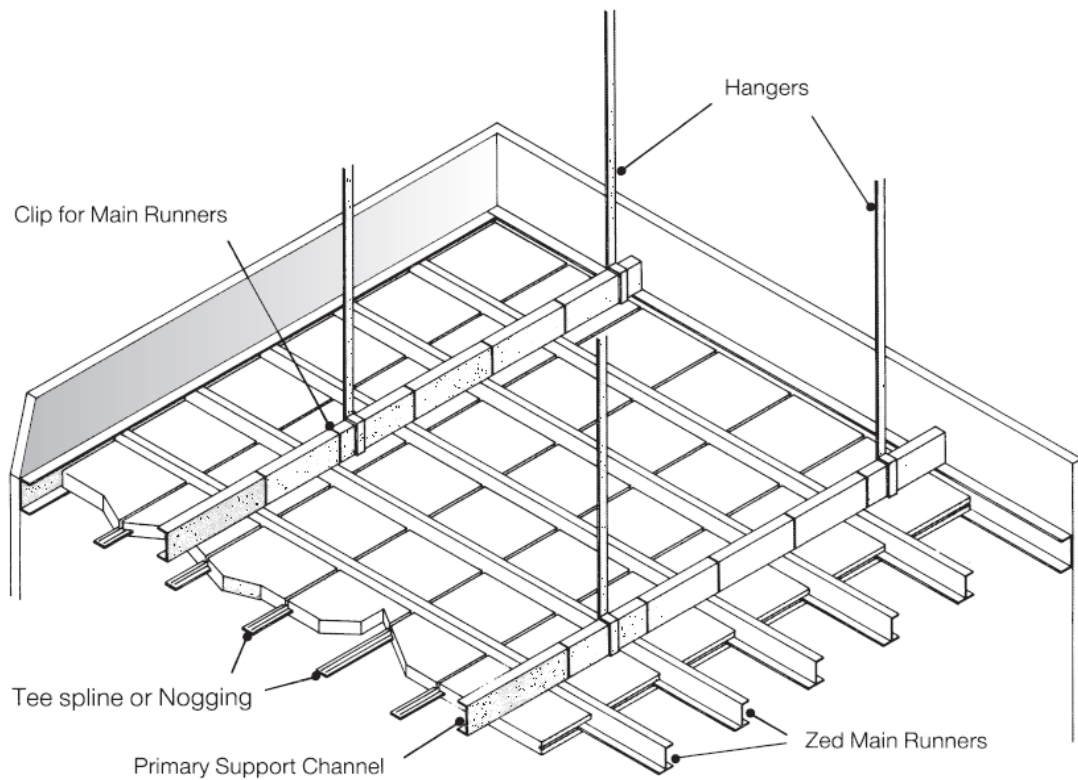
3.42 Consideration should be given to the detailing of the following junctions:

- perimeter junction at internal wall or internal lining to external wall, for example a shadow line trim (see [Figure 9](#));
- junction of membrane with dissimilar adjacent soffit;
- fire stopping – cavity barriers;
- localised perimeter junction around column or duct;
- perimeter of opening in ceiling membrane to receive infill component (for example, light fitting, ventilator grille or roof light) by others;
- ceiling change of level junction.

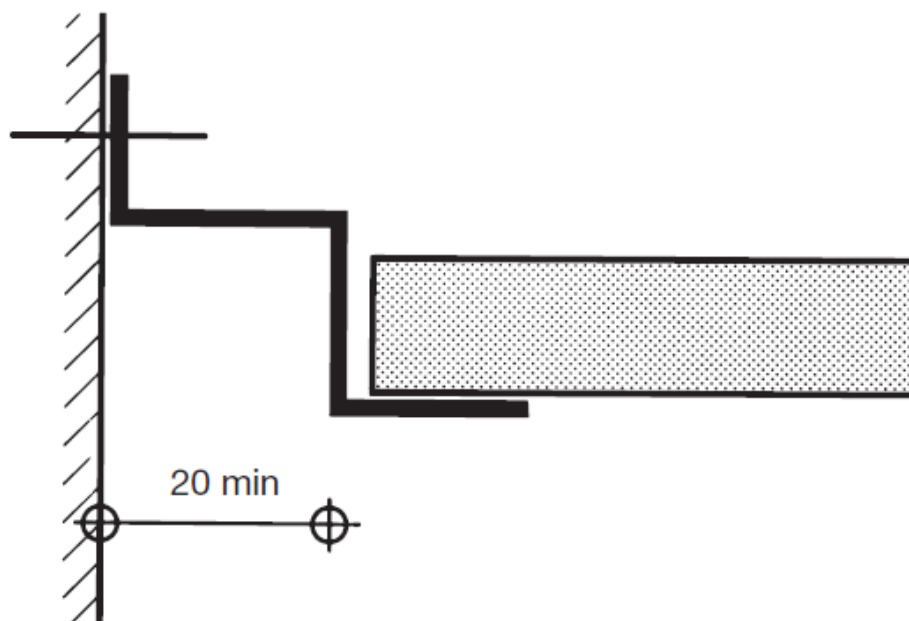


**Figure 7: Directly hung suspension system – exposed grid**





**Figure 8: Indirectly hung suspension system – concealed grid**



**Figure 9: Ceiling bulkhead junction.**



## Surface finishes

- 3.43 Many ceiling membranes, exposed grids and perimeter trims are supplied with a factory-applied finish of:
- emulsion paint;
  - stove enamel;
  - a plastic coating.
- 3.44 The quality of the finishes varies widely, and the specifier should be satisfied that the finish offered meets the performance requirements (see [paragraphs 2.4–2.10](#)).
- 3.45 Where site-applied finishes are necessary, the manufacturer's recommendations should be obtained regarding suitable primers and finishing paints, and the recommendations in BS 6150: 'Code of practice for painting of buildings' followed.
- 3.46 Site-applied finishes should meet the surface spread of flame requirements as described in [paragraphs 2.6–2.8](#).
- 3.47 Category 2 ceilings (high humidity, see [paragraph 2.5](#)) need particularly careful consideration of finishes – not only with regard to the membrane but also to ensure that all metal components are suitably protected.
- 3.48 The following site-applied finishes for category 1 and 2 ceilings are recommended:
- epoxy coating;
  - oil paint (gloss, semi-gloss or eggshell);
  - vinyl gloss paint;
  - polyurethane coating;
  - spray elastomeric vinyl compound;
  - spray paint (multi-colour) gloss;
  - fabric-backed vinyl covering.
- 3.49 For further information on the above finishes see SHTM 56: 'Partitions'.

## Maintenance manual

- 3.50 The form and type, material, finish, accessories and accessibility of ceiling systems should be considered in respect of the maintenance, cleaning, repair and replacement of the whole or part of the system.

- 3.51 An operation and maintenance manual is required to be compiled and this should be handed to the maintenance staff immediately following the practical completion of the contract.
- 3.52 The manual will require to include the following:
- identification of manufacturer or proprietary system;
  - membrane material, thickness and finish;
  - method of membrane removal;
  - details of access panels;
  - strength classification, for example light duty (see [paragraphs 3.22–3.24](#));
  - performance category (see [paragraphs 2.1–2.3](#));
  - surface spread of flame (see [paragraphs 2.4–2.10](#));
  - clear instructions on cleaning and maintenance.

## Appendices

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### Appendix A: Selection Checklist

### Appendix B – Schedule of activity space requirements

## Appendix A: Selection checklist

---

This schedule should be read in conjunction with the requirements of relevant SHPN and associated HBN guidance. Should any discrepancies be identified, then please refer to the contact for this document for further guidance if required.

1. Select a category (see [paragraphs 2.1–2.3](#) and [Appendix B](#))
  - soffit – (a) smooth or textured; (b) imperforate or perforated; (c) jointless or jointed (see [paragraph 2.4](#));
  - humidity – normal or high (see [paragraph 2.5](#));
  - spread of flame – (a) Class 1 or (b) Class 0 (see [paragraphs 2.6–2.8](#));
  - cleaning type (see [paragraphs 2.9–2.10](#)).
2. Determine joint pattern and suspension grid or traditional ceiling (see [paragraphs 2.10–2.11](#));
3. Determine membrane material and soffit texture (see [paragraph 2.12 - 2.16](#));
4. Ensure system selected complies with paragraphs (see [paragraphs 3.10–3.13](#));
5. Determine relationship to partitions and walls (see [paragraphs 3.14–3.16](#));
6. Consider thermal insulation and vapour check in relation to roofs (see [paragraphs 3.17–3.18](#));
7. Determine structural grade of ceiling system (see [paragraphs 3.21–3.23](#));
8. Establish fire resistance of proprietary suspended system (see [paragraphs 3.24–3.25](#));
9. Determine fire stopping and cavity barriers (see [paragraphs 3.24–3.25](#));
10. Determine acoustic requirements (see [paragraphs 3.26–3.28](#));
11. Ensure adequate wind loading of system selected (see [paragraphs 3.29–3.32](#));
12. Determine type(s) of engineering access (see [paragraphs 3.33–3.36](#));
13. Check against sustainability criteria (see [paragraph 3.37](#));

14. Determine hanger spacing, whether direct or indirectly hung, and fixings (see [paragraphs 3.38–3.41](#));
15. Ensure adequate junction details available in system selected (see [paragraph 3.42](#));
16. If site-decorated membrane, determine type of paint treatment (see [paragraphs 3.43–3.49](#));
17. Make provision for fixings relating to the structure;
18. Consider integration with engineering fittings;
19. Consider treatment of any timber in the ceiling void;
20. Assess range of ceilings and consider rationalisation.

## Appendix B – Schedule of activity space requirements

### Key to schedule

\* Indicates circulation spaces and ceilings to these spaces must have Class 0 surface spread of flame to comply with section 2.5 of Building (Scotland) Regulations. They include hospital streets, corridors and staircases and areas opening off them, for example waiting areas, trolley bays, staff bases etc, all of which can be used as escape routes. Where options are shown for circulation spaces these ceilings will have to be upgraded to Class 0 surface spread of flame – see [paragraphs 2.6–2.8](#).

In the categories columns:

Key: • indicates essential requirement o indicates an option

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Accident &amp; Emergency</b>						
*Circulation Space	o	o	o	•	o	o
Cleaners' Room	o	o	o		•	
Cleansing Room, Shower	o	•				
Clean Utility	o	o	o		•	
Consulting	o	o	o	o	o	•
Dirty Utility	o	o	o		•	
Disposal	o	o	o		•	
Drugs and Alcohol Recovery	o	o	•		o	
Interview Room	o	o	o	o	o	•
Major Treatment	•					
Office	o	o	o	o	o	•
Reception, Records	o	o	o	o	o	•
Resuscitation	o	•		o		
*Staff Base	o	o	o	•	o	o
Store	o	o	o	o	o	•
Treatment	o	o	•		o	
WC	o	o	o		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Administration</b>						
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Committee Room	0	0	0	0	0	•
Common Room	0	0	0	0	0	•
Interview Room	0	0	0	0	0	•
Library	0	0	0	0	0	•
Office	0	0	0	0	0	•
Reception	0	0	0	0	0	•
Store	0	0	0	0	0	•
WC	0	0	0	0	0	•
<b>Adult acute – Day care and treatment</b>						
Bathroom	0	•				
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Clean Utility	0	0	0		•	
Consulting, Examination	0	0	0		•	
Doctors' Office	0	0	0	0	0	•
Dirty Utility	0	0	0		•	
Disposal	0	0	0		•	
Major Treatment	0	0	•		0	
Multi-bed Room	0	0	0		•	
Office	0	0	0	0	0	•
*Patient Changing Cubicle	0	0	0	•	0	0
Patient Waiting	0	0	0	•	0	0
Shower	0	•				
Single-bed Room	0	0	0		•	
Sitting/Recovery	0	0	0		•	
*Staff Base	0	0	0	•	0	0
Staff Changing	0	0	0	0	0	•
Store	0	0	0	0	0	•
Treatment	0	0	•		0	
WC	0	0	0		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Adult acute – nursing section</b>						
Bathroom	0	•				
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Clean Room	0	0	0		•	
Cloakroom	0	0	0	0	0	•
Day Room	0	0	0		•	
Dining Room	0	0	0		•	
Dirty Utility	0	0	0		•	
Disposal	0	0	0		•	
*Flower Bay	0	0	0	•	0	0
Linen Store	0	0	0		•	
Multi-bed Room	0	0	0		•	
Office	0	0	0	0	0	•
Pantry	0	0	•		0	
Relatives' Room	0	0	0	0	0	•
Seminar	0	0	0	0	0	•
Shower	0	•				
Single-bed Room	0	0	0		•	
*Staff Base	0	0	0	•	0	0
Store	0	0	0	0	0	•
Switchroom	0	0	0	0	0	•
Treatment Room	0	0	•		0	
WC	0	0	0		•	
*Wheelchair Park	0	0	0	•	0	0



Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Ambulance station</b>						
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Control Room	0	0	0	0	0	•
Drying Room	0	•				
Kitchen	0	•				
Mess Room	0	0	0		•	
Office	0	0	0	0	0	•
Shower	0	•				
Sluice Room	0	•				
Staff Changing	0	0	0	0	0	•
Store	0	0	0	0	0	•
WC	0	0	0		•	
<b>Boiler house</b>						
*Circulation Space	0	0	0	•	0	0
Staff Accommodation	0	0	0	0	0	•
Staff WC and Washroom	0	0	0		•	
Switchroom	0	0	0	0	0	•
<b>Children – Day-patient accommodation</b>						
*Circulation Space	0	0	0	•	0	0
Clean Utility	0	0	0		•	
Dirty Utility, Disposal	0	0	0		•	
Multi-bed Room	0	0	0		•	
Pantry	0	0	•		0	
Single-bed Room	0	0	0		•	
Treatment, Examination	0	0	0	•	0	0
Waiting, Play	0	0	0		•	
WC	0	0	0		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Children – In-patient accommodation</b>						
Bathroom	0	•				
*Circulation Space	0	0	0	•	0	0
Clean Utility	0	0	0		•	
Dirty Utility	0	0	0		•	
Flower Bay	0	0	0	•	0	0
Linen Store	0	0	0		•	
Multi-bed Room	0	0	0		•	
Office	0	0	0	0	0	•
Pantry	0	0	•		0	
Play, Dining, Education	0	0	0		•	
Shower	0	•				
Single-bed Room	0	0	0		•	
*Staff Base	0	0	0	•	0	0
Store	0	0	0	0	0	•
WC	0	0	0		•	
<b>Children – Shared accommodation</b>						
Admission, Examination	0	0	0		•	
Adolescents' Day Room	0	0	0		•	
Baby Feed Store	0	0	0	0	0	•
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Disposal	0	0	0		•	
Education Space	0	0	0	0	0	•
*Equipment Bay	0	0	0	•	0	0
Office Interview	0	0	0	0	0	•
Parents' Bedroom	0	0	0		•	
Parents' Sitting Room	0	0	0	0	0	•
Seminar	0	0	0	0	0	•
Shower	0	•				
Staff Changing	0	0	0	0	0	•
Staff Locker Room	0	0	0	0	0	•
Switchroom	0	0	0	0	0	•
Teachers' Base	0	0	0	0	0	•
Treatment	0	0	•		0	
WC	0	0	0		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Dental</b>						
*Circulation Space	o	o	o	•	o	o
Laboratory and Darkroom	o	o	o		•	
Office	o	o	o	o	o	•
Recovery Room	o	o	•		o	
Store	o	o	o	o	o	•
Surgery	o	o	o		•	
Switchroom	o	o	o	o	o	•
Waiting Area	o	o	o	•	o	o
WC	o	o	o		•	
<b>Dining room</b>						
*Circulation Space	o	o	o	•	o	o
Cleaners' Room	o	o	o		•	
Cloakroom	o	o	o	o	o	•
Coffee Room	o	o	o	o	o	•
Dining Room	o	o	o	o	o	•
Office	o	o	o	o	o	•
Sandwich Room	o	o	o	o	o	•
Servery	o	•				
Staff Changing	o	o	o	o	o	•
Store	o	o	o	o	o	•
WC	o	o	o		•	
<b>Educational accommodation</b>						
Audio-visual	o	o	o	o	o	•
Classroom	o	o	o	o	o	•
Common Room	o	o	o	o	o	•
Demonstration	o	o	o	o	o	•
Dining	o	o	o	o	o	•
Entrance, Reception and Waiting Area	o	o	o	•	o	o
Lecture, Seminar, Discussion	o	o	o	o	o	•
Library	o	o	o	o	o	•
Office	o	o	o	o	o	•
Servery	o	•				
Staff Room	o	o	o	o	o	•
Store	o	o	o	o	o	•
WC	o	o	o		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Fracture clinic</b>						
Appliance Fitting Room	0	0	0		•	
Clean Supplies and Preparation	0	0	0		•	
Cleaners' Room	0	0	0		•	
Consulting, Examination Room	0	0	0		•	
*Circulation Space	0	0	0	•	0	0
Dirty Utility	0	0	0		•	
Disposal Holding	0	0	0		•	
Plaster Room	0	0	•		0	
*Reception, Sub-Waiting Area	0	0	0	•	0	0
*Wheelchair Park	0	0	0	•	0	0
Store	0	0	0	0	0	•
WC	0	0	0		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Geriatric care – Day hospital</b>						
Bathroom	0	•				
Bedroom	0	0	0	0	0	•
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Clean Utility	0	0	0		•	
*Clothes Hanging, Waiting and Wheelchair Park	0	0	0	•	0	0
Consulting and Examination Room	0	0	0		•	
Dining	0	0	0	0	0	•
Dirty Utility	0	0	0		•	
Disposal	0	0	0		•	
General Sitting Space	0	0	0	0	0	•
Interview Room	0	0	0	0	0	•
Kitchen	0	0	•		0	
Occupational Therapy	0	0	0	0	0	•
Office	0	0	0	0	0	•
Pantry	0	0	•		0	
Physiotherapy	0	0	0	0	0	•
Quiet Room	0	0	0	0	0	•
Shower	0	•				
Staff Seminar Room	0	0	0	0	0	•
Speech Therapy	0	0	0	0	0	•
Staff Cloakroom	0	0	0	0	0	•
Store	0	0	0	0	0	•
Switchroom	0	0	0	0	0	•
Treatment Room	0	0	•		0	
Utility and Laundry	0	•				
WC	0	0	0		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Geriatric care – Nursing section</b>						
Bathroom	0	•				
Bathroom, Treatment	0	•				
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Clean Utility	0	0	0		•	
Cloakroom	0	0	0	0	0	•
Day Room	0	0	0		•	
Dining Room	0	0	0		•	
Dirty Utility	0	0	0		•	
Disposal	0	0	0		•	
*Flower Bay	0	0	0	•	0	0
Linen Store	0	0	0		•	
Multi-bed Room	0	0	0		•	
Occupational Therapy	0	0	0	0	0	•
Office	0	0	0	0	0	•
Pantry	0	0	•		0	
Physiotherapy	0	0	0	0	•	0
Relatives' Room	0	0	0	0	0	•
Seminar	0	0	0	0	0	•
Shower	0	•				
Single-bed Room	0	0	0		•	
*Staff Base	0	0	0	•	0	0
Store	0	0	0	0	0	•
Switchroom	0	0	0	0	0	•
*Waiting Area	0	0	0	•	0	0
WC	0	0	0		•	
*Wheelchair Park	0	0	0	•	0	0

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Health Centre</b>						
Child Assessment	0	0	0	0	0	•
Chiropody	0	0	0	0	0	•
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Consulting, Examination Room	0	0	0		•	
Consulting Room – Audiology	0	0	0		•	
Dental Surgery	0	0	0		•	
Dispensary	0	0	•		0	
Disposal	0	0	0		•	
Health Education	0	0	0	0	0	•
Interview Room	0	0	0	0	0	•
Kitchen/Tea room	0	0	•		0	
Laboratory and Darkroom	0	0	0		•	
Nurses' Service Room	0	0	0	0	0	•
Office	0	0	0	0	0	•
Pharmacy	0	0	•		0	
Physiotherapy	0	0	0	0	•	0
Physiotherapy (Utility Area)	0	0	0	0	•	0
Playroom	0	0	0	0	0	•
*Pram Shelter (inside)	0	0	0	•	0	0
Recovery Room, Seminar, Library	0	0	0	0	0	•
Speech Therapy	0	0	0	0	0	•
Staff Common Room	0	0	0	0	0	•
Store	0	0	0	0	0	•
Switchroom	0	0	0	0	0	•
Treatment	0	0	•		0	
WC	0	0	0		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Intensive therapy unit</b>						
*Circulation Space	o	o	o	•	o	o
Cleaners' Room	o	o	o		•	
Clean Utility	o	o	o		•	
Dirty Utility	o	o	o		•	
Disposal	o	o	o		•	
Laboratory	o	o	o		•	
Multi-bed Room	o	o	o		•	
Office	o	o	o	o	o	•
Pantry	o	o	•		o	
Relatives' Room, Doctors' Room, Overnight	o	o	o	o	o	•
Single-bed Room	o	o	o		•	
*Staff Base	o	o	o	•	o	o
Staff Changing	o	o	o	o	o	•
Staff Rest Room	o	o	o	o	o	•
Store	o	o	o	o	o	•
Switchroom	o	o	o	o	o	•
WC	o	o	o		•	



Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Kitchen</b>						
Bulk Provisions Store	0	0	0		•	
Central Beverage Preparation Space	0	•				
Central Cooking	0	•				
Central Tray Preparation Space	0	•				
Central Tray Service Space	0	•				
Central Wash-up	0	•				
Cleaners' Room	0	0	0		•	
Cooling Room or Larder	0	0	•		0	
Day-to-day Store	0	0	•		0	
Diet Preparation	0	0	•		0	
Disposables Store	0	0	0		•	
Equipment Store	0	0	0	0	0	•
Fish Storage	Special					
General Preparation	0	0	•		0	
Kitchen Cold Room	Special					
Kitchen Deep Freeze	Special					
Meat Cold Store	Special					
Office	0	0	0	0	0	•
Pan Wash	0	•				
Pastry and Sweets Preparation	0	0	•		0	
Raw Meat and Fish Preparation	0	0	•		0	
Sandwich Preparation	0	0	•		0	
Staff Changing	0	0	0	0	0	•
Staff Rest Room	0	0	0	0	0	•
Trolley Parking Space	0	0	•		0	
Trolley Wash	0	•				
Vegetables, Salad and Fruit Preparation	0	0	•		0	
Vegetable Store	0	0	•		0	
Washing-up Materials Store	0	0	0	0	0	•
WC/Washroom	0	0	0		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Laundry</b>						
Assembling, Packing and Despatch	0	0	0		•	
Barrier Room	0	•				
Colandering	0	•				
Calorifier	0	•				
Central Disinfection Area	0	•				
Classification	0	0	0	0	0	•
Cleaners' Room	0	0	0		•	
Drying	0	•				
Machine Cloth Store	0	0	0	0	0	•
Mess Room	0	0	0	0	0	•
Office	0	0	0	0	0	•
Pressing	0	•				
Reception	0	0	0	0	0	•
Rest Room	0	0	0	0	0	•
Solution Preparation, Storage Area	0	0	•		0	
Store	0	0	0	0	0	•
Switchroom	0	0	0	0	0	•
Washing	0	•				
Washing Materials Store	0	0	0	0	0	•
WC	0	0	0		•	
<b>Maternity – Administration</b>						
*Circulation Space	0	0	0	•	0	0
Classroom	0	0	0	0	0	•
Disposal	0	0	0		•	
Office	0	0	0	0	0	•
Staff Cloaks	0	0	0	0	0	•
Store	0	0	0	0	0	•
WC	0	0	0		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Maternity – Central delivery suite</b>						
Abnormal Delivery Room	•					
Admission Suite	0	0	•		0	
Bathroom	0	•				
Changing Room	0	0	•		0	
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Clean Utility	0	0	0		•	
Day Room	0	0	0		•	
Delivery Room	•					
Dirty Utility	0	0	0		•	
Disposal	0	0	0		•	
Equipment Store	0	0	0	0	0	•
Linen Room	0	0	0		•	
Office	0	0	0	0	0	•
Pantry	0	0	•		0	
Scrub-up and Gowning	0	•				
Shower	0	•				
*Staff Base	0	0	0	•	0	0
*Trolley Space	0	0	0	•	0	0
WC	0	0	0		•	
<b>Maternity – Nursing section</b>						
Assisted Shower, WC, Wash	0	•				
Baby Feed, Demonstration Room	0	0	0		•	
Bathroom	0	•				
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Maternity – Nursing section (continued)</b>						
Utility	o	o	o		•	
Day Room, Dining Room	o	o	o		•	
Dirty Utility	o	o	o		•	
Disposal	o	o	o		•	
Equipment Store	o	o	o	o	o	•
*Flower Bay	o	o	o	•	o	o
Linen Store	o	o	o		•	
Multi-bed Room	o	o	o		•	
Nursery	o	o	o		•	
Office	o	o	o	o	o	•
Pantry	o	o	•		o	
Seminar Room	o	o	o	o	o	•
Single-bed Room	o	o	o		•	
*Staff Base	o	o	o	•	o	o
Staff Changing	o	o	o	o	o	•
Switchroom	o	o	o	o	o	•
WC	o	o	o		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Maternity – Special care baby unit and central baby feed kitchen</b>						
Bedroom	0	0	0		•	
Beverage Point, Baby Feed Demonstration	0	0	0		•	
Blood Gas Analysis Room	0	0	0		•	
Central Milk Kitchen	0	0	•		0	
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Clean Utility	0	0	0		•	
Day Room and Play Room	0	0	0		•	
Dirty Utility	0	0	0		•	
Disposal	0	0	0		•	
Entrance, Visitors' Gowning	0	0	•		0	
Incubator Nursery	•					
Linen Room	0	0	0		•	
Nursery	0	0	•		0	
Office, Interview, Seminar Room	0	0	0	0	0	•
Reception, Breast Milk	0	0	0		•	
Shower	0	•				
*Staff Base	0	0	0	•	0	0
<b>Maternity – Special care baby unit and central baby feed kitchen (continued)</b>						
Staff Changing	0	0	0	0	0	•
Store	0	0	0	0	0	•
Switchroom	0	0	0	0	0	•
WC	0	0	0		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Medical photography and illustration</b>						
Changing Cubicle	0	0	0		•	
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Darkroom	0	0	0		•	
Display	0	0	0	0	0	•
Editing	0	0	0	0	0	•
Finishing Room	0	0	0	0	0	•
Office	0	0	0	0	0	•
Reproduction and Copying Room	0	0	0	0	0	•
Staff Room	0	0	0	0	0	•
Store	0	0	0	0	0	•
Studio	0	0	0	0	0	•
WC	0	0	0		•	
<b>Mental illness – Day hospital</b>						
Art Room	0	0	0	0	0	•
Beauty, Hairdressing	0	0	0	0	0	•
Behavioural Therapy	0	0	0	0	0	•
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Cloakroom	0	0	0	0	0	•
Dining Room	0	0	0		•	
Disposal	0	0	0		•	
Games Room	0	0	0	0	0	•
Group Therapy, Library, Music, Quiet, Sitting	0	0	0	0	0	•
Heavy Workshop	0	0	0	0	0	•
Hobbies Room	0	0	0	0	0	•
Horticulture	0	0	0	0	0	•
Interview Room	0	0	0	0	0	•
Kiln Room	0	0	0	0	0	•
Kitchen	0	•				
Laundry	0	•				
Light Workshop	0	0	0	0	0	•
Observation Room	0	0	0	0	0	•
Office	0	0	0	0	0	•

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Mental illness – Day hospital (continued)</b>						
Patients' Washroom	0	0	0	•		0
Pottery Room	0	0	0	0	0	•
Recreation Store	0	0	0	0	0	•
Servery	0	•				
Sitting	0	0	0	0	0	•
Staff, Seminar Room	0	0	0	0	0	•
Store	0	0	0	0	0	•
Switchroom	0	0	0	0	0	•
Timber Store	0	0	0	0	0	•
Treatment, Clean Utility	0	0	0		•	
WC	0	0	0		•	
<b>Mental illness – ECT</b>						
Ante-room	0	0	0	0	0	•
*Circulation Space, Reception	0	0	0	•	0	0
Disposal Room	0	0	0		•	
Recovery Room	0	0	0		•	
Store	0	0	0	0	0	•
Treatment Room	0	0	0		•	
Washroom, Assisted WC	0	0	0		•	
<b>Mortuary and post-mortem</b>						
Attendants' Room	0	0	0	0	0	•
Bier Room	0	0	0		•	
Body Store, Trolley Room	0	0	0		•	
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Clean Stock	0	0	0		•	
Compressor and Switchroom	0	0	0	0	0	•
Instruments	0	0	0	0	0	•
Linen Room	0	0	0		•	
Medical Observation Room	0	0	0	0	0	•

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Mortuary and post-mortem (continued)</b>						
Office	o	o	o	o	o	•
Pathologists' Changing Room	o	o	o	o	o	•
Post-mortem Room	•					
Refrigerated Chambers	Special					
Shower	o	•				
Sluice	o	•				
Specimen Room	o	o	o		•	
Viewing Cubicle	o	o	o	o	o	•
Viewing Room	o	o	o	o	o	•
*Visitors' Entrance	o	o	o	•	o	o
Waiting Room	o	o	o	o	o	•
WC	o	o	o		•	
<b>Operating</b>						
Anaesthetic Room	•					
*Beverage Bay	o	o	o	•	o	o
Central Store	o	o	•			
Changing Room	o	o	•			
*Circulation Space	o	o	o	•	o	o
*Clean Corridor	o	o	o	•	o	o
Clean Utility	o	o	•			
Dirty Utility	o	o	•			
Disposal, Holding or Collection	o	o	•			
*Entrance, Reception, Transfer Area	o	o	o	•	o	o
Equipment Store	o	o	•		o	
*Exit Bay	o	o	o	•	o	o
Office	o	o	o		o	•
Operating Theatre	•					
Outer Corridor	o	o	o	•	o	o
Plaster Room	•					
Post-operative Recovery Area	•					
Preparation	•					
Scrub-up	•	o				
Shower	o	•				
Staff Control Base	•					
Staff Rest Room	o	o	o	o	o	•
Switchroom	o	o	o	o	o	•
WC	o	o	o		•	
X-ray Processing	o	o	o		•	



Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Out-patient – Audiology</b>						
Reception	o	o	o	o	o	•
Waiting Area	o	o	o	•	o	o
Children's Play Space	o	o	o		•	
Toilet Facilities	o	o	o		•	
Audiometric Testing Area	o	o	o	o	•	•
Vestibular Test Room	o	o	o	o	•	•
Audiology Equipment Store	o	o	o	o	o	•
Principal Audiologist's Office	o	o	o	o	o	•
Staff Office	o	o	o	o	o	•
<b>Out-patient – Children</b>						
*Circulation Space	o	o	o	•	o	o
Consulting, Examination	o	o	o		•	
Dirty Utility	o	o	o		•	
Mother and Baby Room	o	o	o		•	
Office	o	o	o	o	o	•
*Pram, Wheelchair Area	o	o	o	•	o	o
Treatment Room	o	o	•		o	
WC	o	o	o		•	
Weighing, Measuring Room	o	o	o		•	
<b>Out-patient – Children's Comprehensive Assessment Type A</b>						
Assessment, Observation, Remedial Therapy, Treatment	o	o	o		•	
Office, Seminar	o	o	o	o	o	•
Store	o	o	o	o	o	•
Viewing	o	o	o	o	o	•
Waiting, Dining Room	o	o	o	o	o	•

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Out-patient – Children’s Comprehensive Assessment Type B</b>						
Assessment, Observation, Remedial Therapy, Treatment	o	o	o		•	
*Circulation Space	o	o	o	•	o	o
Consulting, Examination Room	o	o	o		•	
Dirty Utility	o	o	o		•	
Office	o	o	o	o	o	•
Office, Seminar	o	o	o	o	o	•
*Pram Store, Wheelchair Park	o	o	o	•	o	o
Staff Locker Room	o	o	o	o	o	•
Store	o	o	o	o	o	•
Switchroom	o	o	o	o	o	•
Viewing Room	o	o	o	o	o	•
Waiting, Dining Room	o	o	o	o	o	•
WC	o	o	o		•	
<b>Out-patient – General</b>						
Consulting, Examination Room	o	o	o		•	
*Changing Cubicle	o	o	o	•	o	o
*Circulation Space	o	o	o	•	o	o
Cleaners’ Room	o	o	o		•	
Clean Utility	o	o	o		•	
Dirty Utility	o	o	o		•	
Disposal	o	o	o		•	
Office	o	o	o	o	o	•
Ophthalmic Room	o	o	o		•	
Porters’ Room	o	o	o	o	o	•
Reception	o	o	o	o	o	•
Store	o	o	o	o	o	•
Test Room	o	o	o		•	
Treatment Room	o	o	•		o	
*Trolley and Wheelchair Area	o	o	o	•	o	o
WC	o	o	o		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Out-patient – Mental illness</b>						
Assisted Washroom and WC	0	0	0		•	
*Circulation Space	0	0	0	•	0	0
Cloakroom, Patients'	0	0	0	0	0	•
Consulting, Examination Room	0	0	0		•	
Dirty Utility, Disposal	0	0	0		•	
Interview Room	0	0	0	0	0	•
Medical Records	0	0	0	0	0	•
Office	0	0	0	0	0	•
Psychological Testing Room	0	0	0	0	0	•
Staff Changing	0	0	0	0	0	•
Store	0	0	0	0	0	•
Treatment, Clean Utility	0	0	0		•	
WC	0	0	0		•	
<b>Out-patient – Ophthalmic</b>						
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Clean Utility	0	0	0		•	
Consulting, Examination Room	0	0	0		•	
Darkroom	0	0	0		•	
Dirty Utility	0	0	0		•	
Dispensing Optician	0	0	0	0	0	•
Fluorescein, Angiography	0	0	0		•	
Office	0	0	0	0	0	•
Orthopist	0	0	0	0	0	•
*Staff Base	0	0	0	•	0	0
Locker Room	0	0	0	0	0	•
Store	0	0	0	0	0	•
Switchroom	0	0	0	0	0	•
Treatment Room	0	0	•		0	
*Waiting, Recovery Area	0	0	0	•	0	0
Patients'WC	0	0	0		•	
Staff WC	0	0	0		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Pathology</b>						
Blood Bank	Special					
Centrifuge Room	o	o	o		•	
*Circulation Space	o	o	o	•	o	o
Cleaners' Room	o	o	o		•	
Cloakroom	o	o	o	o	o	•
Disposal Room	o	o	o		•	
Examination Room	o	o	•		o	
Hot or Cold Room	Special					
Laboratory	o	o	•		o	
Media Room	o	o	•		o	
Mounting, Preparation	o	o	•		o	
Museum	o	o	o	o	o	•
Office	o	o	o	o	o	•
Staff Room	o	o	o	o	o	•
Sterilizing Room	o	•				
Store	o	o	o	o	o	•
*Waiting Area	o	o	o	•	o	o
Wash-up	o	•				
WC	o	o	o		•	
Workshop	o	o	o	o	o	•
<b>Pharmacy</b>						
Advisory Cubicle	o	o	o	o	o	•
Aseptic Filling	•					
Aseptic Room	•					
Balance Room	•					
Bottle Preparation	o	o	o		•	
Changing Room, Robing Interchange Area	o	o	•		o	
Chemicals Store	o	o	o	o	o	•
*Circulation Space	o	o	o	•	o	o
Cleaners' Room	o	o	o		•	
Cloakroom	o	o	o	o	o	•
Container Preparation	o	o	o		•	
Containers – clean	o	o	o		•	
Dispensary	o	o	•		o	
Dressing Store	o	o	•		o	
Drug Information Library	o	o	o	o	o	•
Emergency Store	o	o	o	o	o	•
Equipment Cleaning	o	o	o	o	o	•

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Pharmacy (continued)</b>						
Finished Products Store	o	o	o	o	o	•
Finished Products Quarantine Store	o	o	o	o	o	•
Flammable Store	Special					
Goods Reception	o	o	o	o	o	•
Incubation	o	o	•		o	
Incoming Materials (Quarantine)	o	o	•		o	
Inspection, Label Preparation, Labelling	o	o	o		•	
Laboratory	o	o	o		•	
Laundry Facility	o	•				
Materials Store	o	o	o	o	o	•
Media Kitchen	o	o	•		o	
Medical Gas Cylinder Store	Special					
Microbiological Media Store	o	o	o		•	
Office	o	o	o	o	o	•
Packaging and Overwrap	o	o	o	o	o	•
Patient Waiting	o	o	o	o	o	•
Porters' Room, Base	o	o	o	o	o	•
Preparation, Filling Area	o	o	•		o	
Preparation Room	o	o	•		o	
Reference Samples Store	o	o	o	o	o	•
Repackaging	o	o	o	o	o	•
Re-usable Container Collection	o	o	o	o	o	•
Security Store	o	o	o	o	o	•
Seminar	o	o	o	o	o	•
*Staff Entrance	o	o	o	•	o	o
Sterilization	o	•				
Still Room	o	•				
Store	o	o	o	o	o	•
*Trolley and Equipment Park	o	o	o	•	o	o
Ward Service Area	o	o	o		•	
WC	o	o	o		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Radiodiagnostic</b>						
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Clean Utility	0	0	0		•	
Darkroom	0	0	0		•	
Dirty Utility	0	0	0		•	
Disposal	0	0	0		•	
*Dressing Cubicle	0	0	0	•	0	0
Lavage Room	0	0	0		•	
Linen Store	0	0	0	0	0	•
Mobile X-ray Store	0	0	0	0	0	•
Office	0	0	0	0	0	•
Radiodiagnostic Room	0	0	0		•	
Radiographer	0	0	0	0	0	•
Records	0	0	0	0	0	•
Recovery Room	0	0	0		•	
Staff Room	0	0	0	0	0	•
Store	0	0	0	0	0	•
*Trolley Space	0	0	0	•	0	0
Ultrasound	0	0	0		•	
Viewing and Sorting Room	0	0	0		•	
WC	0	0	0		•	
<b>Rehabilitation</b>						
Apparatus Bay	0	0	0	0	0	•
Apparatus Bay – Hydrotherapy	0	•				
Apparatus Store	0	0	0	0	0	•
Bathroom	0	•				
Bedroom	0	0	0	0	0	•
Changing Cubicle – Gymnasium	0	0	0	0	0	•
Changing Cubicle – Hydrotherapy	0	•				
Changing Cubicle – Treatment	0	0	0		•	
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Clinical Room	0	0	0		•	
Consulting, Examination Room	0	0	0		•	
Disposal Room	0	0	0		•	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Rehabilitation (continued)</b>						
Electronystrography Room	o	o	o		•	
Gymnasium	o	o	o	o	o	•
Heavy Workshop	o	o	o	o	o	•
Hydrotherapy	o	•				
Individual Open Exercise Area	o	o	o	o	o	•
Interview Room	o	o	o	o	o	•
Kitchen	o	•				
Laundry	o	•				
Light Workshop	o	o	o	o	o	•
*Main Waiting	o	o	o	•	o	o
Patients' Shower	o	•				
Plaster and Plaster Splints	o	o	o		•	
Porters' Base	o	o	o	o	o	•
Preparation Bay	o	o	o		•	
Reception, Records Office	o	o	o	o	o	•
Recovery Room	o	o	o		•	
Speech Therapy	o	o	o	o	o	•
Staff Changing	o	o	o	o	o	•
Staff Changing Cubicle – Hydrotherapy	o	•				
Staff Room, Seminar	o	o	o	o	o	•
Store	o	o	o	o	o	•
Switchroom	o	o	o	o	o	•
Timber, Materials Store	o	o	o	o	o	•
Treatment Cubicle	o	o	o		•	
Wax Treatment Room	o	o	o		•	
WC	o	o	o		•	
*Wheelchair Bay	o	o	o	•	o	o
<b>Residential accommodation</b>						
Bathroom	o	•				
Bedroom	o	o	o	o	o	•
Bed-sitting Room	o	o	o	o	o	•
*Circulation Space	o	o	o	•	o	o
Cleaners' Room	o	o	o		•	
Cloakroom	o	o	o	o	o	•
Common Room	o	o	o	o	o	•
Kitchen	o	o	•		o	

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Residential accommodation (continued)</b>						
Living Room	o	o	o	o	o	•
Office	o	o	o	o	o	•
Shower	o	•				
Sitting Room	o	o	o	o	o	•
Utility Store	o	o	o	o	o	•
WC	o	o	o		•	
<b>Secure unit</b>						
Bathroom	o	•				
*Circulation Space	o	o	o	•	o	o
Classroom	o	o	o	o	o	•
Clinical, Examination Room	o	o	o		•	
Cleaners' Room	o	o	o		•	
Communal Area	o	o	o	o	o	•
Duty Room	o	o	o	o	o	•
Group Therapy Room	o	o	o	o	o	•
Gymnasium	o	o	o	o	o	•
Interview, Conference	o	o	o	o	o	•
Kitchen	o	o	•		o	
Launderette, Utility Room	o	•				
Library	o	o	o	o	o	•
Linen Store	o	o	o	o	o	•
Office	o	o	o	o	o	•
OT Hobbies Room	o	o	o	o	o	•
Quiet Room	o	o	o	o	o	•
Secure Room	Special					
Shower	o	•				
Single-bed Room	o	o	o		•	
Staff Rest Room	o	o	o	o	o	•
Store	o	o	o	o	o	•
Study Room	o	o	o	o	o	•
Training Room	o	o	o	o	o	•
Visitors' Room	o	o	o	o	o	•
WC	o	o	o		•	



Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Sterilizing and disinfecting unit</b>						
*Circulation Space	0	0	0	•	0	0
Cleaners' Room	0	0	0		•	
Disposal Collection	0	0	0		•	
Disposal Holding Area	0	0	0		•	
Materials Holding Store	0	0	0	0	0	•
Medical Equipment Test Area, Service, Work	0	0	0	0	0	•
Office	0	0	0	0	0	•
Reception – Clean Supply	0	0	0		•	
Reception – Soiled Goods	0	0	0		•	
Staff Changing	0	0	0	0	0	•
Staff Room	0	0	0	0	0	•
Sterile Goods Store	0	0	0	0	0	•
Sterilizer Working Area	0	•				
Trolley Unloading, Maintenance Area	0	0	0	0	0	•
Trolley Wash	0	•				
Wash Room	0	•				
WC	0	0	0		•	
Work Area	0	0	0		•	
<b>Street</b>						
Circulation				•		
Sub-waiting			•			
Stairs				•		
Lift Lobby				•		
Disposal Room	0	0	•	0	0	0
<b>Main entrance</b>						
Entrance Lobby				•		
Entrance Foyer/Waiting				•		
Quiet Room	0	0	0	0	0	•
Reception/Enquiries				•		
Shop				•		
Store	0	0	0	0	0	•
Office	0	0	0	0	0	•
Duty Room	0	0	0	0	0	•

Department/Activity Space	Categories					
	1	2	3	4	5	6
<b>Works unit</b>						
*Circulation Space	0	0	0	•	0	0
Office	0	0	0	0	0	•
Staff Accommodation	0	0	0	0	0	•
Staff Changing	0	0	0	0	0	•
Store	0	0	0	0	0	•
WC	0	0	0		•	
Workshop	0	0	0	0	0	•
<b>Younger disabled unit</b>						
Bathroom	0	•				
Bedroom	0	0	0		•	
*Circulation Space	0	0	0	•	0	0
Clean Utility	0	0	0		•	
Cleaners' Room	0	0	0		•	
Clinical, Examination	0	0	0		•	
Day Space	0	0	0		•	
Dining Room	0	0	0		•	
Dirty Utility	0	0	0		•	
Hobbies Room	0	0	0	0	0	•
Office	0	0	0	0	0	•
Pantry	0	0	•		0	
Quiet Room	0	0	0	0	0	•
Shower	0	•				
Store	0	0	0	0	0	•
Visitors' Room	0	0	0	0	0	•
WC	0	0	0		•	

## References

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### Acts and regulations

**(The) Building (Scotland) Regulations 2004 and amendments.** ISBN 0 954 6292 3 x Ref: Scottish Building Standards Agency. <http://www.sbsa.gov.uk/>

**Construction (Design and Management) Regulations 2007.** HMSO.

**Construction (Design and Management) (Amendment) Regulations 2000 (SI 2000: 2380).** HMSO, 2000.  
<http://www.legislation.hmso.gov.uk/si/si2000/20002380.htm>

### NHSScotland Publications

Health Facilities Scotland website: <http://www.hfs.scot.nhs.uk/>

**SHFN 30: 'Infection Control in the built environment: Design and Planning'.** Health Facilities Scotland, 2007

**SHTM 56: partitions.** Health Facilities Scotland, 2006

**HAI-Scribe (Healthcare Associated Infection System for Controlling Risk in the Built Environment).** Health Facilities Scotland, 2007

**The NHSScotland National Cleaning Services Specification.** SEHD / CMO (2004) 8

**NHS Quality Improvement, Scotland – Healthcare Associated Infection (HAI) Cleaning Services Standards.** CSBS / NHSQIS. 2002 ISBN 1 903766 12 5

**The NHSScotland Code of Practice for the Local Management of Hygiene and Healthcare Associated Infection.** Healthcare Associated Task Force CMO (2004) 09

**Clinical Standards Board for Scotland Healthcare Associated Infection (HAI) Infection Control Standards.** December 2001 CSBS 2001 ISBN 1-903766-12-5

### British standards

**BS 476-4:1970** Fire tests on building materials and structures. Non-combustibility test for materials.

**BS 476-6: 1989** Fire tests on building materials and structures. Method of test for fire propagation for products.

**BS 476-7:1997** Fire tests on building materials and structures. Method of test to determine the classification of the surface spread of flame of products.

**BS 476-10:2009** Fire tests on building materials and structures. Guide to the principles and application of fire testing and their outputs.

**BS 476-11:1982** Fire tests on building materials and structures. Methods for assessing the heat emission from building materials.

**BS 476-12:1991** Fire tests on building materials and structures. Method of test for ignitability of products by direct flame impingement.

**BS 476-13:1987, ISO 5657:1986** Fire tests on building materials and structures. Method of measuring the ignitability of products subjected to thermal irradiance.

**BS 476-15: 1993, ISO 5660-1:1993** Fire tests on building materials and structures. Method for measuring the rate of heat release of products.

**BS 476-20:1987** Fire tests on building materials and structures. Method for determination of the fire resistance of elements of construction (general principles).

**BS 476-21:1987** Fire tests on building materials and structures. Methods for determination of the fire resistance of loadbearing elements of construction.

**BS 476-22:1987** Fire tests on building materials and structures. Methods for determination of the fire resistance of non-loadbearing elements of construction.

**BS 476-23:1987** Fire tests on building materials and structures. Methods for determination of the contribution of components to the fire resistance of a structure.

**BS 476-24:1987, ISO 6944:1985** Fire tests on building materials and structures. Method for determination of the fire resistance of ventilation ducts.

**BS 476-32:1989** Fire tests on building materials and structures. Guide to full scale fire tests within buildings.

**BS 476-33:1993, ISO 9705:1993** Fire tests on building materials and structures. Full scale room test for surface products.

**BS 4761:1971** Specification for sprayed unfused metal coatings for engineering purposes.

**BS 5250:2002** Code of practice for control of condensation in buildings. British Standards Institution, 2002.

**BS 6100-9:2007** Building and civil engineering. Vocabulary. Work with concrete and plaster. British Standards Institution, 2007.

**BS 6150:2006** Code of practice for painting of buildings. British Standards Institution, 1991.

**BS 6750:1986** Specification for modular coordination in building. British Standards Institution, 1986.

**BS EN 520:2004** Gypsum plasterboards. Definition, requirements and test methods British Standards Institution, 2004.

**BS EN 10143:2006** Continuously hot-dip metal coated steel sheet and strip. Tolerances on dimensions and shape. British Standards Institution, 2006.

**BS EN ISO 140** Acoustics. Measurement of sound insulation in buildings and of building elements. British Standards Institution, various dates 1998-2006.

**BS EN ISO 717-2:1997** Acoustics. Rating of sound insulation in buildings and of building elements. Impact sound insulation. British Standards Institution, 1997.

**BS EN 13278-1:2008** Gypsum binders and gypsum plasters. Definitions and requirements. British Standards Institution, 2008.

**BS EN 13278:2004** Gypsum binders and gypsum plasters. Test methods. British Standards Institution, 2004.

## Other publications

**Activity DataBase** <http://www.adb.dh.gov.uk/>.

Anderson, J, Shiers, DE and Sinclair, M (2002), **The Green Guide to Specification**, 3rd Edition, Blackwell, Oxford.

Woolley, T, Kimmins, S, Harrison, R and Harrison, P (1997), **Green Building Handbook: A Guide to Building Products and their Impact on the Environment**: Vol 1, Spon Press, London.

## Trade associations

Suspended Ceilings Association, 29 High St, Hemel Hempstead, Herts HP1 3AA.