NHS National Services Scotland

In-patient care
Scottish Health Planning Note 04-01:

Adult in-patient facilities

Health Facilities Scotland
Property and Capital Planning

October 2010

A33662215

Health Facilities Scotland

NHS National Services Scotland

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Preface

About Scottish Health Planning Notes

Scottish Health Planning Notes (SHPNs) give best practice guidance on the design and planning of new healthcare buildings and can also be used on the adaption/extension of existing facilities.

They provide information to support the briefing and design processes for individual projects in the NHSScotland building programme.

This document has been updated by Health Facilities Scotland (HFS) using the core text provided by the Estates and Facilities Division of the Department of Health (DH), England.

Aims and objectives

The document is aimed at a broad audience and covers the subject from its clinical and operational roots through to the design and equipping of accommodation for adult in-patient facilities.

The key role is to advise on the built environment required to implement the planning, construction, commissioning and operation of a new or upgraded facility.

This document also aims to employ innovation in the built environment, advancing the modernisation of diagnosis and treatment, and raising the quality of service in order to provide an environment that is genuinely sympathetic to the needs of all users and recognise the broad range of activities present and their significance.

Other resources in the Health Facilities Scotland knowledge series

Scottish Health Technical Memoranda

Scottish Health Technical Memoranda (SHTMs) give comprehensive advice and guidance on the design, installation and operation of specialised building and engineering technology used in the delivery of healthcare. For example medical gas pipeline systems, ventilation systems, acoustics etc.

SHTMs are applicable to new and existing sites, and are for use at various stages during the inception, design, construction, refurbishment and maintenance of healthcare facilities.

All SHPNs (and HBNs where there are no equivalent SHPNs) should be read in conjunction with the relevant parts of the SHTM series.

Scottish Health Technical Memorandum Building Component series

All SHPNs refer to SHTM Building Component documents for specifications and design guidance on building components for healthcare buildings. All SHPNs should therefore be read in conjunction with the relevant parts of the SHTM Building Component series.

Activity DataBase (ADB)

The Activity DataBase (ADB) data and software assists project teams with the briefing and design of the healthcare environment. The use of ADB is mandatory for all NHSScotland bodies when procuring both new build and refurbishment projects [HDL (2006) 58]. ADB data is based on guidance given in the HBNs, HTMs and HTM Building Component series but are generally compatible with Scottish equivalent guidance documents.

- room data sheets provide an activity-based approach to building design and include data on personnel, planning relationships, environmental considerations, design character, space requirements and graphical layouts;
- schedules of equipment/components are included for each room, which may be grouped into ergonomically arranged assemblies;
- schedules of equipment can also be obtained at department and project level;
- fully loaded drawings may be produced from the database;
- reference data is supplied with ADB that may be adapted and modified to suit the users' project-specific needs.

For further information please refer to the following DH website: www.adb.dh.gov.uk.

How to obtain publications

To find out about new finalised publications, and also older existing guidance, look on the Space for Health website (www.spaceforhealth.nhs.uk) which should be fully operational in 2010.

To access Scottish guidance click on the 'Scotland' tab at the top of the page or click on 'Scotland' on the small map of the UK at the top left of the page.

Board Project Teams and healthcare facility design teams should always check the Space for Health website to ensure that they are using the most up-to-date guidance documents.

Significant changes since the previous edition of this guidance

Scottish Health Planning Note (SHPN) 04 'In-patient accommodation: Options for choice' (2000) provided an evidence-based approach to the planning of facilities, which was based on providing a minimum of 50% single-bed rooms. Further evidence has been gathered on the benefits of single-bed rooms and ergonomic studies have established how much space is needed around the hospital bed for various tasks. The results have shown that the provision of a minimum clear space around the bed is essential in achieving an efficient and effective environment. The Department of Health report on the research by NHS Estates is entitled 'Ward layouts with single rooms and space for flexibility' (DH, 2005).

The Scottish Government announced in CEL 48 (2008) that for all new build hospitals or other healthcare facilities which will provide in-patient accommodation there should be a presumption that all patients will be accommodated in single-bed rooms, unless there are agreed clinical reasons for multi-bed rooms to be available.

Following this an Expert Consultation took place in which the Speciality Advisors considered for which of the specialities 100% provision is appropriate. On conclusion of the expert consultation, the Scottish Government issued CEL 27 (2010) stating that the Chief Medical Officer had concluded that the guidance set out in CEL 48 (2008), that there should be a presumption of 100% single rooms in future hospital developments, is confirmed as the policy for NHSScotland except for:

- *"existing accommodation which is being refurbished, where taking into account the constraints of the existing building, a minimum of 50% single room accommodation would be allowed but as close to 100% as possible would be expected; and*
- *in new developments where there are clinical reasons for not making 100% single room provision they should be clearly identified and articulated in the appropriate Business Case. However, each case would be subject to Scottish Government agreement as part of the Business Case approval process."*

In addition, studies have been carried out to determine efficient space layouts for an en-suite shower room for a single-bed room that meets the needs of the majority of patients. The study resulted in two new layouts for an en-suite shower room, both of which are referred to in this guidance and HBN 00-02: 'Sanitary spaces'.

In 2001 a review of the Department Cost Allowance Guides (DCAGs) concluded that an additional 2.5m^2 per bed should be added to the schedules of accommodation for single-bed rooms and multi bedded rooms.

Since SHPN 04 was published in 2000 the following changes have been made:

- total single-bed rooms - the size of the total single-bed rooms has increased from 21m^2 to 23.5m^2 as a result of the review of DH DCAGs, which added 2.5m^2 to each bed space;
- total four-bed rooms - the size of these rooms has increased from 60m^2 to 72.5m^2 as a result of the reviews which have added 2.5m^2 to each bed space;
- the impact of the Disability Discrimination Act (to be replaced by the Equality Act late 2010), which requires that sanitary facilities should be provided for independent users and those requiring assistance from staff. As a result the assisted shower room, which now includes a WC as well as a shower and wash-hand basin, has increased in area from 4.5m^2 to 6.5m^2. This has increased the overall dimensions of the multi-bed room;
- space increase around the bed - the minimum recommended clear space (see paragraph 2.12) around the bed is now 3.6m wide × 3.7m deep. This can be achieved within the new space allowances for single-bed rooms and four-bed rooms;
- en-suite sanitary facilities for single-bed rooms - the recommended new en-suite shower room layouts for a single-bed room are the same dimensions as in previous guidance but they are more flexible in terms of use and accessibility. They are suitable for ambulant and semi-ambulant patients, the majority of independent wheelchair users, and patients requiring assistance from staff (see HBN 00-02: ‘Sanitary spaces’);
- isolation suites – single-bed rooms provide effective isolation for many patients. In some cases however, a greater degree of isolation may be required. SHPN 04 Supplement 1: ‘Isolation facilities in acute settings’ gives detailed guidance on isolation suites (bedroom, en-suite sanitary facilities, and lobby);
- dirty utility rooms - ideally, a dirty utility room should serve no more than 15 beds. This reduces travel distances for staff, making better use of nursing time and reducing the risk of spillage and cross-contamination. A second dirty utility room on a ward is also helpful during outbreaks of illness or infectious diseases. Where there is 100% single-bed room provision and the staff support zone is in a central position a single-bed room may be acceptable as there may be less requirement for the use of bedpans. Dirty utility rooms in previous guidance served 24 to 30 beds. For more information on utility rooms see HBN 00-03:’Clinical and clinical support rooms’;
- schedules of accommodation - the previous SHPN was based on a modular approach to planning and the schedules of accommodation were presented in modules for eight-bed clusters. This new guidance is based on 24 beds, which provides a typical example of an average-sized ward. Where smaller or larger wards are required, design teams can adapt the guidance to suit local clinical need.

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Summaries of changes in space requirements

Area	SHPN 04 2000 (m^2)	Schedules of Accommodation 2003 (m^2)	Difference (m^2)	SHPN 04-01 2009 (m^2)	Difference (m^2)
Single-bed room	13.5	16.0		19.0	
Family and clinical support area	3.0	3.0		Included above	
Sub-total	16.5	19.0	+2.5	19.0	0.0
En-suite shower room	4.5	4.5	0.0	4.5	0.0
Total for single-bed room	**21.0**	**23.5**	**+2.5**	**23.5**	**0.0**

Table 1: Summary of changes in space requirements for a single-bed room since 2000

Area	SHPN 04 2000 (m^2)	Schedules of Accommodation 2003 (m^2)	Difference (m^2)	SHPN 04-01 2009 (m^2)	Difference (m^2)
Four-bed room	48.0	58.0		64.0	
Clinical support area	3.0	3.0		included above	
Sub-total	51.0	61.0	+10.0	64.0	+3.0
En-suite assisted shower & wash	4.5	4.5	0.0	not included	-4.5
En-suite assisted WC/wash	4.5	4.5	0.0	not included	-4.5
Assisted shower room (en-suite)	not included	not included		6.5	+6.5
Semi-ambulant WC without luggage space (en-suite)	not included	not included		2.0	+2.0
Total for 4-bed room	**60.0**	**70.0**	**+10.0**	**72.5**	**+2.5**

Table 2: Summary of changes in space requirements for a four-bed room since 2000

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Executive summary

This Planning Note provides best practice guidance on the planning and design of in-patient facilities for adults. The accommodation described includes:

- bed and sanitary facilities;
- patient support facilities;
- storage facilities;
- utility facilities;
- administration area and staff facilities.

The recommended space standards for bed areas are applicable to in-patient rooms in any setting, including acute, day surgery and community facilities. Schedules of accommodation are available for HBN 04-01, based on a 24 bed ward with options for 50%, 80% and 100% single-bed rooms. These are published on the Space for Health website under 'Spaces and Costs' (http://www.spaceforhealth.nhs.uk/).

In Scotland, 100% single-bed rooms is the requirement for new build facilities and a minimum of 50% is required for refurbishment projects. The 80% single-bed room option therefore will only be considered for refurbishment projects or where a clinical necessity has been established (see paragraphs 1.4 to 1.8).

This best practice guidance essentially applies to 'new build' facilities. However the principles are equally valid, and should be applied when existing accommodation is being upgraded or new accommodation is being constructed within an existing building that may previously have been used for other purposes. This document gives guidance on general and specific design considerations for both patient and support areas. It also covers general functional design requirements and engineering services. Example room layouts are provided in the Appendices along with a comprehensive list of references.

For the current guidance from the Scottish Government Health Directorates on the provision of single-bed room accommodation and bed spacing refer to paragraphs 1.4 to 1.8.

1. Introduction

1.1 This document replaces SHPN 04: 'In-patient accommodation - options for choice' (2000) and provides guidance on the planning and design of in-patient facilities for adults. For particular care groups such as mental health and critical care, reference should also be made to the SHPNs relating specifically to the care group.

1.2 The space standards for bed areas are applicable to in-patient rooms in most settings, including acute critical care (at levels 1 and 0[1]), day surgery and community facilities – some mental health facilities are likely to be an exception. It is important to note that the diagrams throughout this document are provided to support the evidence from the research programme. They are not design solutions and should not be used as such.

It should be noted that teaching hospitals might require some single-bed rooms to be larger to provide sufficient space for students when they are present. These hospitals are also likely to require separate teaching spaces.

1.3 Each project is unique and it is the responsibility of project teams to satisfy themselves that initial briefing and out turn designs are compatible with all their operational requirements. Project designs should continue to evolve and develop innovative solutions that maximise 'in use' flexibility and are affordable.

Provision of single-bed room accommodation and bed space

1.4 The current guidance from the Scottish Government Health Directorates set out in CEL 27 (2010) is as in paragraphs 1.5 to 1.8 below.

New build facilities

1.5 For all new-build hospitals or other healthcare facilities which will provide in-patient accommodation there should be a presumption that all patients will be accommodated in single rooms, unless there are clinical reasons for multi-bedded rooms to be available. These reasons should be clearly identified and articulated in the appropriate Business Case and will be subject to Scottish Government agreement as part of the Business Case approval process.

Refurbishment of existing healthcare facilities

1.6 For projects where existing accommodation is being refurbished it is recognised that each building to be refurbished will present unique problems. Taking into

[1] Levels of critical care as described in 'Comprehensive critical care' (DH 2000): Level 1 Patients at risk of their condition deteriorating, or those recently relocated from higher levels of care, whose needs can be met on an acute ward with additional advice and support from the critical care team. Level 0 Patients whose needs can be met through normal care in an acute hospital. For higher levels of critical care see SHPN 27: 'Intensive care unit' (to be replaced by SHPN 57: 'Facilities for critical care').

account the constraints of the existing building, a minimum of 50% single room accommodation will be allowed but as close to 100% as possible will be expected.

Bed space

1.7 In relation to the issue of bed spacing for multi-bedded rooms, the current advice remains unchanged. That is, taking account of ergonomic criteria, primarily the space required for patient handling and other activities which take place in the immediate vicinity of the bed, it is recognised that the minimum bed space should not be less than 3.6m wide x 3.7m deep.

1.8 When carrying out refurbishment work to existing multi-bedded ward accommodation NHS Boards should seek to achieve this bed spacing. This may require considering reducing the number of beds in the room. NHS Boards should also seek to achieve this bed spacing standard in accommodation which is not being refurbished or replaced.

Policy background

Impact of "Better Health, Better Care Action Plan" on in-patient accommodation

1.9 The Scottish Government's 'Better Health, Better Care Action Plan' (SGHD 2007) sets out a range of measures to improve the quality of Scotland's National Health Service. It gives effect to the Government's commitments to local care whenever possible, embedded in communities and tailored to people's needs. The Scottish Government's key priorities for healthcare therefore require a drive towards locally provided services, including activity that can be safely and effectively provided outside the acute hospital. In-patient accommodation remains largely in acute settings, particularly for complex cases or where major surgery requiring general anaesthesia is required. However, in-patient accommodation may also be provided in community settings for those patients with less complex conditions. Planning teams will need to consider the number of in-patient beds required and where they may be most appropriately located.

Scottish Healthcare Quality Strategy

1.10 The 'Scottish Healthcare Quality Strategy', which is a development of Better Health Better Care, has a number of Quality Ambitions, one of which is that "*there will be no avoidable injury or harm to people from healthcare they receive, and an appropriate, clean and safe environment will be provided for the delivery of healthcare services at all times*". The Quality Ambitions provide the focus for all activity within NHSScotland to support the Scottish Government's aim of delivering the best quality healthcare to the people of Scotland and through this making NHSScotland a world leader in healthcare quality.

1.11 The Strategy itself seeks to improve the quality of care patients receive from the NHS, recognising that the patient's experience of the NHS is about more than speedy treatment – it is the quality of care they get that matters most to them. The Quality Strategy will see the quality of care provided by the NHS measured for the first time through patients' experience and the information used to drive up standards. The Quality Strategy will put patients at the heart of everything the NHS does and give people a new confidence in the health service.

Patient rights and expectations

1.12 The Scottish Government has consulted on agreed ideas on eight different rights for a proposed Patients' Rights Bill. The eight rights are that all of us, as patients, should expect:

- access to health services;
- a right to be treated with dignity and respect;
- a right to safe and effective care;
- a right to be communicated with in a way that each of us can understand;
- a right to information about the services we use;
- a right to be involved in making decisions about care and the services we use;
- a right to privacy and confidentiality, and;
- a right to comment about our care and have any concerns dealt with.

1.13 Thus, increasingly, patients are becoming 'empowered' to demand better environments in which they receive healthcare. It is appropriate that NHSScotland embraces such matters and seeks to deliver facilities that provide the high quality and sustainable caring environments within which patients expect to be treated.

1.14 Preserving the privacy, dignity and confidentiality of patients is essential at all times. Sufficient space is required to allow for both aural and visual privacy during clinical consultation and intervention and at visiting times with family and friends. This must also be balanced with the need for adequate observation of patients by staff.

Prevention of healthcare associated infection

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

1.16 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.

1.17 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.

1.18 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.

1.19 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.

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

1.21 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);
- NHSScotland National Cleaning Services Specification;
- NHS Quality Improvement, Scotland – HAI Cleaning Services Standards;
- The NHSScotland Code of Practice for the Local Management of Hygiene and Healthcare Associated Infection;
- Clinical Standards Board for Scotland HAI Infection Control Standards.

Scale of provision

1.22 The number of patients admitted to hospital each year depends on local workload patterns. The number of bed spaces required will be calculated from factors such as:

- data on number of admissions, number of refused admissions, number of premature discharges, bed occupancy and length of stay;
- local admissions policy;
- future developments influencing demand for acute services, for example increasing day case surgery rates, improved chronic disease management, and the potential for more care at home;

- availability of beds in other settings, for example community hospitals.

Evidence base for this guidance

1.23 Since the previous edition of this SHPN in 2000, considerable work has been carried out to establish how much space is needed around a bed for patient and staff safety, accessibility and clinical need. Subsequent to this work DH published 'Ward layouts with single-bedrooms and space for flexibility' in 2005. This document comprised literature reviews, ergonomic studies and mock-up trials that provided the evidence base for the revised English guidance that has subsequently contributed to this SHPN.

1.24 In addition, with the need for accessibility to en-suite sanitary facilities and the implications for increasing space, evidence-based studies have been carried out to design en-suite shower rooms that will meet the needs of the majority of patients without increasing current space standards. The results of this work were incorporated into HBN 00-02: 'Sanitary spaces' published in July 2008.

2. General functional and design considerations

Location and departmental relationships

2.1 Historically, in-patient accommodation has been the core of the hospital. Now however current trends in the delivery of health services have eliminated in-patient care for some patients who previously would have been admitted. In-patient accommodation however still accounts for a significant proportion of the space in a hospital.

2.2 Patients who are admitted are often acutely ill and in need of observation. One of the primary goals of designers, therefore, is to ensure that staff observation of patients is easily achieved and managed.

2.3 Traditionally, in-patient accommodation has been located either above the diagnostic and treatment floors of a hospital or adjacent to them. Critical care beds are prioritised to be closest to surgical or medical interventions, whereas rehabilitation and long-stay beds can be significantly further away from the core clinical services. In-patient facilities can be organised horizontally over large floor areas or stacked into towers. A recent tendency in the UK has been to put beds into multi-storey wings that are separate from diagnostic and treatment facilities. This allows more consistent planning of in-patient accommodation, increases flexibility in the way that beds can be organised, and enables maintenance and refurbishment to be carried out more easily.

2.4 The location of wards must ensure privacy, particularly at night. Ground-floor locations should be considered only where the adjacent environment is free of hospital traffic and publicly accessible areas. Views outside, together with access to sunshine or direct daylight, have been shown to benefit a patient's recovery. The orientation and aspect of in-patient accommodation must be prioritised when developing a hospital master plan.

2.5 The ability to isolate components of in-patient accommodation is important for infection control, particularly during outbreaks of infectious illness. It is also important in the event of a fire or other emergency, when patients will generally be evacuated to a safe space on the same floor.

2.6 The ability to combine clusters of beds will allow for different needs over time. Support facilities can be more flexibly located.

2.7 Because in-patient accommodation is such a large component of the hospital, its departmental relationships are mostly dependent on the number and location of access points, lifts, and distance from diagnostic and treatment facilities. Small discrete and specialist wards, for example oncology, will require direct access to their own specialist diagnostic and treatment centre within the whole hospital or within the same floor.

Key features of a desirable environment

2.8 Studies (Malkin J, 1992 and Scher P, 1996) have shown that the following features are necessary to provide a desirable in-patient environment.

- Space for:
- clinical activity at the bedside;
- clinical activity elsewhere;
- storage/display of patients' possessions in the bedroom;
- storage of bulky equipment;
- staff support and training;
- social support of patient, including overnight accommodation for a relative/friend in the bedroom.

- Suitability of:
- services and supplies at the bedside for clinical activity;
- access to and within the bedside area for physically and sensory impaired people;
- services to enable personal communication by patient ;
- services to enable direct admin/clinical communication from the bedside;
- a reassuring, stress reducing, environment;
- a safe and hazard free facility.

- Privacy:
- during clerking and clinical discussions between patient and staff;
- during clinical treatment ;
- for bodily functions and personal care;
- for personal discussions and telephone calls;
- for staff communications;
- for staff rest and beverage breaks.

- Patient choice, control, comfort:
- to be alone or in company, including visitors;
- of temperature, ventilation, lighting and sound from the bed;
- of diversion, outlook, entertainment;
- with access to beverages for patients and relatives;
- with local storage of personal belongings of staff;
- with access to the outside world.

Space requirements

2.9 The main issues addressed in the NHS research 'Ward layouts with single-bedrooms and space for flexibility' which established the space required around the hospital bed were:

- meeting the needs of patient privacy and choice;
- contributing to control of healthcare associated infections (HAI);
- complying with the Disability Discrimination Act 1995 and 2005;
- meeting the needs of the Manual Handling Operations Regulations 1992, particularly with regard to lifting patients.

2.10 In addition there is now a great deal more activity taking place at, or close to, the bedside than previously has been the case. These activities fall into three categories:

- clinical treatment and care;
- personal care and maintenance;
- support activities.

2.11 There must be adequate space to carry out the above activities, and also for fixtures, furniture and equipment. The provision of sufficient space will enable these activities to be carried out comfortably, easily and safely, and without obstruction.

2.12 The provision of sufficient space in clinical areas, particularly for each bed space, is one of the most important considerations in the planning and design of in-patient accommodation. Ergonomic studies have established that most activities carried out at the bedside can be accommodated within the dimensions 3.6m (width) × 3.7m (depth). This represents the clear bed space and does not include space for fixed storage, clinical support zone, family support zone, preparation and worktops. It is important to ensure that there is adequate access for cleaning and that bedrooms and bed areas are easy to clean. Space requirements are discussed more fully in Section 3 and also some typical room layouts are included in the Appendix 1.

Sanitary facilities

2.13 For infection control purposes, in-patients, clinical staff and visitors require to be provided with separate sanitary facilities, these must be clearly labelled. Facilities for visitors and non-clinical staff will be located close to the ward reception and waiting area. Sanitary facilities for clinical staff may be provided in association with staff changing and rest room areas. Where staff changing and rest rooms are located away from the ward, a designated WC for clinical staff will generally be required in the ward. Sanitary facilities for in-patients must be located en-suite to bed areas.

2.14 All single-bed rooms (and multi bedded rooms if provided) must have en-suite sanitary facilities. The increasing acuity of illness of in-patients means that a great proportion of patients may require assistance during their hospital stay. For greatest flexibility of use, all sanitary facilities in in-patient areas should be accessible and manageable by people with physical or sensory disabilities with or without assistance.

2.15 As part of the development of the DH guidance, research was carried out into the size and layout of en-suite shower rooms to identify a space-efficient design that would, as far as possible, meet the needs of the majority of patients. It was acknowledged during the research that some aspects of ambulant/semi-ambulant/independent wheelchair access and assisted use are not compatible. For example, the provision of a wash-hand basin next to the WC for independent wheelchair users would have conflicted with access for patients requiring assistance. As the number of patients requiring assistance is likely to be greater than the number of independent wheelchair users in in-patient accommodation, the primary concern should be to provide space and facilities for people requiring assistance. Certain limitations on independent access are therefore considered acceptable within a healthcare setting.

2.16 The new layout for an en-suite shower room forms the basis for the guidance and example layouts in this SHPN. There should be access to a fully assisted bathroom or shower room where shower trolleys may be used. This could be shared between adjacent wards and is listed as essential complementary accommodation in the schedules of accommodation. Alternative layouts for en-suite sanitary facilities are described in HBN 00-02: ‘Sanitary spaces’.

Hand hygiene

2.17 Antibacterial hand-rub dispensers should be provided at the ward entrance.

Figure 1: Hand rub dispenser

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2.18 Each room must contain a clinical wash-hand basin[2]. The basin should be located so as to be highly visible to staff entering and leaving the room and convenient for them to use. The use of sensor taps may be appropriate to reduce the risk of infection

In projects where four bedded rooms are included, two clinical wash-hand basins should be provided, one close to the entrance to the room and the other placed in an obvious and convenient position for staff working at the other end of the room. The multi bedded room layout in Appendix 1 indicates a possible location of clinical wash-hand basins.

2.19 For further guidance on clinical wash-hand basins refer to SHTM 64: 'Sanitary assemblies' and HBN 00-03: 'Clinical and clinical support spaces'. Infection control advisors should always be consulted regarding these basins to confirm that the proposed arrangement is acceptable for each project.

Isolation facilities

2.20 Single-bed rooms provide the most effective facility for isolating patients with a variety of infections, such as MRSA. However in some circumstances it may be necessary to provide a higher level of isolation, particularly for those patients with airborne diseases or for immuno-suppressed patients who may be at risk of infection from others. In these cases an isolation suite will be required; this will include an entrance lobby, bedroom and en-suite sanitary facilities. This is listed as optional in the schedule of accommodation. The need for, and number of, isolation suites should be decided locally and in consultation with local Health Protection Scotland staff. Also refer to SHPN 04 In-patient Accommodation: Options for Choice Supplement 1: 'Isolation Facilities in Acute Settings' (2008).

Isolation suites are described in paragraph 3.24.

Cleaning services

2.21 Recent research ('An integrated approach to hospital cleaning', DH 2007) indicates that a microfibre system for day-to-day cleaning in combination with periodic steam cleaning is an effective approach to cleaning in-patient facilities. The guidance in this SHPN is based on this approach. If other cleaning systems are to be adopted, design teams should give careful consideration to the facilities required in each case.

2.22 In terms of facilities, a microfibre system requires:

- space for storing the microfibre cleaning trolley and clean microfibre cloths and mops (the cleaners' room, see paragraph 3.47);
- space for holding dirty microfibre cloths (the disposal hold, see paragraph 3.48);

[2] The requirement for a clinical wash-hand basin in the room may not apply to all mental health facilities.

- suitable laundry facilities for washing and drying used microfibre cloths.

2.23 The laundering of microfibre cloths and mops requires special conditions and dedicated facilities. The laundry process should be carefully managed. Project teams should decide locally whether laundry facilities are provided in-house or contracted out. More information on the laundering of microfibre cloths is contained in the research and development report, available through the Department's KIP website at http://estatesknowledge.dh.gov.uk.

2.24 A supply of disposable cleaning materials requires to be stored locally for clinical staff to use when the cleaning staff are not available. These may be held separately in the dirty utility room.

2.25 This guidance assumes that steam cleaning equipment for periodic deep cleaning will be stored centrally and brought to the ward as required. Storage space for this equipment on the ward is not required.

Decontamination of equipment

2.26 The effective decontamination of medical devices is essential in reducing the risks to patients from HAI. Facilities for decontaminating medical devices will ideally be provided in a Central Decontamination Unit (CDU).

2.27 Reference should be made to advice and guidance in SHTM 2010: 'Sterilization', SHTM 2030: 'Washer disinfectors' and SHTM 2031: 'Clean steam for sterilization' (all to be replaced by SHTM 01-01). Further information can be obtained from the Medicines and Healthcare products Regulatory Agency (MHRA) – see http://www.mhra.gov.uk/Safetyinformation/Generalsafetyinformationandadvice/Technicalinformation/Decontaminationandinfectioncontrol/index.htm.

Reference should also be made to SHPN 13: 'Decontamination facilities' (published in three parts) and SHFN 30: 'Infection control in the built environment'.

Ward size

2.28 The schedules of accommodation on the Space for Health website are based on HBN 04-01 and a ward of twenty four beds. These are generally compatible with SHPN 04-01 but Project Teams may require to modify them to suit individual projects.

2.29 The twenty four bed ward has been selected as an example only, chiefly because this size is common throughout NHSScotland hospitals. It also supports the assumption that an eight-bed cohort is the preferred workforce planning unit, with one clinician and one support worker caring for each cohort, although this may vary according to the dependency level of patients in a cohort. Wards may be larger or smaller than the twenty four bed example. The number of beds in each ward should be determined locally.

Observation and communication

2.30 Clinical staff must be able to observe and communicate easily with patients. Many clinicians consider that engagement with patients improves in a single-bed room environment because with better privacy, communication improves and they are able to complete a whole episode of care privately without being disturbed by others.

2.31 Careful design can support good observation. For example, glazed walls or very large windows between rooms and corridors will enable staff to observe patients and, equally importantly, patients to see staff. Views into busy internal spaces such as circulation areas can provide a distraction for patients and are just as important as views of the outside world. Patients should have the means to obscure windows if required. For example, integral Venetian blinds that can be lowered and closed to provide privacy.

Figure 2: An example of good observation into a single-bed room

2.32 In addition to observation through windows, the use of electronic surveillance equipment such as cameras may be considered. However, in order to guard against the potential invasion of privacy, patients must be able to choose whether cameras in their bedroom are switched on or off. In particular, the dignity and safety of patients with mental health conditions and patients who may be in a state of confusion must be carefully considered.

2.33 Use of a two-way speech facility as part of the help call system can be reassuring for patients and can reduce journey frequencies for staff.

Two-way speech facilities can be made significantly more effective by including an option to enable staff to key in and out of rooms (staff presence). Smart technology allows such systems to be automated so that each member of staff wears a radio frequency identification (RFID) tag that remotely indicates their

presence. This function allows staff to locate, and communicate with, each other more effectively. These facilities are particularly relevant now in wards with 100%, or a high percentage, of single-bed rooms. Call systems must operate on a 'follow the light' principle whereby over-door lights and discrete indicator units mounted at strategic positions (staff rest rooms etc) guide staff to the call origin. In addition this can be supplemented by the use of Wi-Fi/IP technology, which can be interfaced with other site communication facilities (for example single staff handset, which combines phone, pager, cardiac and help call facilities).

Clinical administration

2.34 Advances in IT are enabling clinicians to move away from traditional paper-based patient records towards more flexible computer-based systems. Electronic patient records (EPR) and picture archiving and communication systems (PACS) mean that a significant amount of direct clinical administration can now take place at the bedside using a computer.

2.35 Wireless and infra-red technologies provide an alternative to networked computers in fixed locations. They enable EPRs to be accessed from laptops and other mobile and hand held devices that can move with staff between clinical spaces. Where computers are fixed in bed areas, designers should ensure that patients will not be disturbed by the light from VDUs or by staff entering data at night time.

2.36 This Planning Note describes two types of workstation for clinical administration:

- in bedrooms: a simple workstation with space for recording clinical data. In multi bedded rooms, one workstation serving all four beds is sufficient;
- touchdown base: a workstation located close to patients but not within single-bed rooms or multi bedded rooms. This is where EPRs can be accessed and updated. The touchdown base is at standing height with a perching stool. There should be a number of touchdown bases throughout the ward, which may be located in a variety of ways:
- a dedicated touchdown base immediately outside each bedroom; or
- a touchdown base shared between a pair of bedrooms; or
- a touchdown base serving a small cluster of bedrooms.

2.37 It is assumed in this guidance that there is no central staff base, as staff will be working locally throughout the ward unit. It is recognised, however, that this is only one design solution and that planning teams may wish to include a central staff base. See paragraph 3.28 and for further guidance on staff communication bases, refer to HBN 00-03: 'Clinical and clinical support spaces'.

Figure 3: Working at a touchdown base

2.38 The greeting of patients and visitors, and general administration, will be carried out at the ward reception desk by clerical staff. Depending on the layout of wards, the reception desk could be shared between two or more wards.

2.39 Pre-admission and post-discharge correspondence, private telephone calls and patient handover meetings may take place in the office/meeting room.

2.40 See Section 3 for detailed descriptions of clinical administration spaces.

Moving and handling patients

2.41 Patient moving and handling tasks are associated with the greatest proportion of staff musculoskeletal disorders in the health services (HSE 2001). One way of avoiding such injury is to move patients by use of a hoist, which requires sufficient space around the bed for staff to perform these tasks and to manoeuvre the required equipment around the bed.

2.42 If mobile hoists are to be used, designers must ensure that there is sufficient space within the ward to store them. Other devices for transferring patients will also need to be stored.

2.43 If ceiling mounted hoists are preferred, designers will need to consider the potential conflict with medical service units, patient entertainment systems and where tracks go through walls above doorways into the ensuite facilities. Consideration must also be given to the 'parking' of the hoist sling when not in use. Where ceiling mounted hoists are installed, there will still be a need for some mobile hoists, for example for lifting patients who may have fallen beyond the reach of the ceiling track. Design teams will need to consider adequate storage space for these.

The use and positioning of ceiling mounted hoists in isolation suites requires careful consideration. See paragraph 3.25.

Careful consideration will also be required in the positioning and detailing of ceiling hoist tracks where there are services in the ceiling, such as ceiling mounted radiant heating panels.

In multi-bed rooms the hoisting of patients around the bed space may compromise their privacy and dignity. The use of hoists should be restricted to bed to chair, trolley or wheelchair transfers only.

2.44 The decision on the extent of lifting equipment provided will depend on several factors including the patient profile, and should be decided locally.

2.45 For further guidance on the space required for moving and handling patients see 'Ward layouts with single rooms and space for flexibility' DH, 2005 and 'Risk assessment and process planning for bariatric patient handling pathways' HSE, 2007.

Separate treatment room

2.46 In a ward of 100% single-bed rooms the provision of a separate treatment room is optional, as procedures that cannot be undertaken at the patient's bedside will take place in the appropriate departments. Wards with a combination of single-bed rooms and multi-bed rooms will require a separate treatment room. For further guidance see paragraph 3.28.

Supplies, storage and disposal

2.47 Supplies, storage and disposal are whole-hospital issues. An increasing number of UK hospitals have adopted a 'just-in-time' supplies system, which involves a large centralised store on each site. These central stores keep all non-specialised clinical supplies for regular distribution on a 'top-up' basis to the different departments when required. Local policy will influence how much storage space is needed within or adjacent to acute wards.

2.48 Two options for delivering and storing clean supplies and consumables are:

- Option 1: Local clean utility room
- Each ward contains a clean utility room, which is restocked regularly from the hospital's central stores and pharmacy. Clinical supplies for individual bedrooms are held on supplies trolleys, which are topped up in the clean utility room and then parked in the clinical support area of each bedroom. Medicines are stored and prepared in the clean utility room. See Figure 4;
- Option 2: Shared clean supply room plus local medicine store/preparation room
- Clinical supplies are stored in a clean supply room serving a number of wards. Clinical supplies trolleys are restocked here and then returned to patient bedrooms where they are parked in the clinical support area. Medicines are stored and prepared separately in the ward's medicine store/preparation room. See Figure 5.

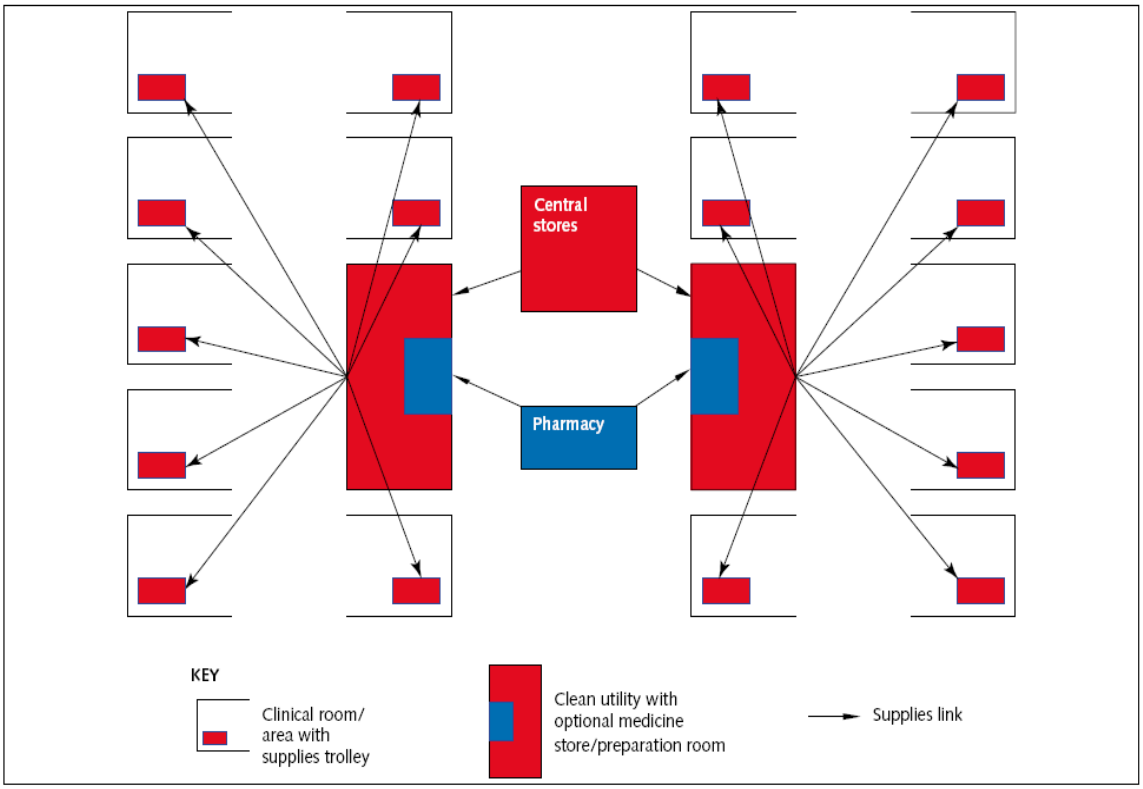

Figure 4: Option 1 – Central store and clean utility room

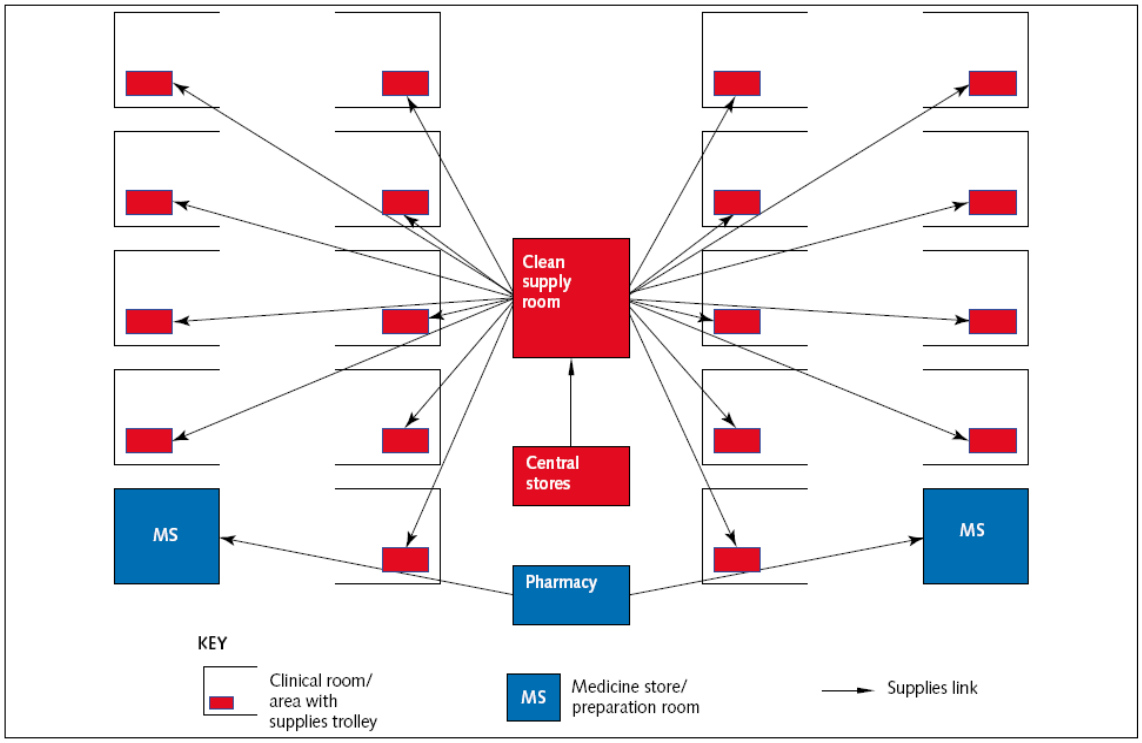

Figure 5: Option 2 – Clean supply room and medicine store/preparation room

2.49 The Space for Health schedules of accommodation are based on Option 2, which is the provision of a shared clean supply room (essential complementary accommodation) and a local medicine store/preparation room. The provision of a clean utility room instead of a clean supply room and medicine store/preparation room is optional.

2.50 Items for disposal will be placed in the disposal hold. Some items will be held temporarily in the dirty utility room before being transferred to the disposal room.

2.51 Design teams must ensure that supplies policies and storage systems are agreed early in the design process, as they generally have a significant impact on planning and room areas. See also paragraphs 3.39 to 3.44.

Dirty utility room

2.52 Generally it has been accepted that a dirty utility room should serve no more than 15 beds to reduce travel distances for staff, making better use of nursing time and reducing the risk of spillages and cross-contamination. A second dirty utility room on a ward is also helpful during outbreaks of illness or infectious diseases. The Space for Health schedules of accommodation includes two dirty utility rooms for a 24 bed ward. Depending on the ward design it may be acceptable to have only one room as with the Hillingdon Hospital single-bed room pilot ward where the bedrooms are located in three short wings of eight beds and the utility room is in the central support zone.

Education and training facilities

2.53 Staff education is important in acute wards, and appropriate facilities will be required. Trainee clinical staff will form a proportion of staff working in acute areas. While some teaching takes place in the clinical area on a one-to-one basis or in small groups, the teaching of large groups can be an imposition on the function of the area. A seminar room, which may be shared with other wards, should be provided as essential complementary accommodation. See paragraph 3.64 for design requirements.

Lighting

2.54 Scientific evidence (Rubin & Owens 1996) indicates that daylight has beneficial effects on patients, visitors and staff. It has been shown to reduce psychological problems, improve patient outcomes, increase morale and reduce sickness levels amongst staff. An external view is also extremely beneficial, even if limited. Windows should always be located so that the patient can see out from their bed, and sized to provide an acceptable level of natural light.

All bed areas should receive natural daylight. Where artificial lighting is provided in spaces where patients are examined or treated, it must enable changes in skin tone and colour to be clearly defined and easily identified. Artificial lighting should be colour-corrected. The quality of lighting will need to be considered if video consultation is likely to take place. Lighting is also important for effective cleaning of corners and edges that can harbour dust. Adjustable task lighting requires to be provided at the bedhead to allow patients to read.

2.55 To avoid glare and discomfort to patients, ceiling-mounted fixed luminaires must not be sited immediately above positions where they may be lying on a bed, couch or trolley. This also applies to all spaces where people are consulted, examined and treated. Consideration should be given to patient control of the lighting in single-bed rooms.

Refer to paragraph 4.46 for more detailed guidance.

Views from windows

2.56 Wherever possible, bedrooms in new developments should be located in positions to enable patients to have a view of the outside world. The view can either be of external distant views, landscaped gardens or suitably sized courtyards with good-quality natural planting. Small 'light-wells' should be avoided, particularly as they may allow bedrooms to be overlooked. Window cill heights must be low enough to allow patients in beds and seated people to see outside. Views ideally should include ground and sky, 'busy' views are considered beneficial for some patients. Views out over blank walls, other close by buildings, flat roofs and roof top plant rooms etc. are to be avoided. For further information see 'Does the environment affect staff and patients health outcomes?', DH R&D Project 2006.

2.57 The means for patients to control curtains or blinds from the bed for comfort and privacy should be included, motorised blinds/curtains are an option for non-ambulant patients. For further guidance refer to SHTM 55: 'Windows'.

Courtyards

2.58 Well designed and suitably proportioned, courtyards enable rooms to receive natural daylight and ventilation in addition to providing a stimulating outlook. The form of the layout and planting can help to preserve privacy in surrounding rooms. Courtyards may also provide a suitable location for artwork. The level of ongoing maintenance needs to be carefully considered.

2.59 It is necessary to provide access to courtyards. Where courtyards provide recreational space all doorways, thresholds and ramps must be designed to facilitate access for all patients, staff, visitors, etc. In some situations patients may require to access these areas while on their beds. Seating should be provided and short lengths of handrail should also be provided at strategic points around the courtyard for patients who need support. Access for maintenance and cleaning should be located so that patients and staff within the building are not disturbed. Adequate water points, power points and lighting should be provided where required.

Figure 6: Courtyard, Queen's Centre for Oncology & Haematology, Hull

(Reproduced with the permission of HLM Architects – photographer Ian Bruce)

Art

2.60 There is now sufficient evidence to demonstrate that appropriate art and decor reduces the physical and emotional stress of patients and staff. It can also be used to assist with wayfinding. Art should be integrated into a scheme rather than added as an afterthought.

2.61 Works of art and craft often lend special identity to individual spaces and help give a sense of locality. Care should be taken to cater for all age ranges. A proposal for very young in shared areas might not be appreciated by older children.

2.62 Advice should be sought from experts on:

- obtaining grants. In some cases, moneys for art within a capital scheme can be matched by grants from charities or regional arts boards;
- ensuring quality in all art and craft works;
- appropriately locating art and craft works;
- selecting artists and craftspeople.

2.63 Art need not be limited to pictures on a wall. It can also include furniture, prints, murals, photographs, sculptures, floor designs, decorative tiles, ceramics and textile hangings. Works of art by local artists and craftspeople may lend a special identity to the facility.

2.64 Careful consideration should be given to the ease of cleaning and minimizing dust traps when choosing artworks. Design teams should seek the advice of the infection control team as to the suitability of all proposed artworks in clinical areas.

2.65 For further guidance refer to 'The art of good health – A practical handbook' and 'The art of good health – Using visual arts in healthcare' (both 2002 DH publications and available from The Stationery Office).

Environmental control

2.66 As noise is such a significant issue for patients, design that separates busy activity areas and patient bed spaces and the use of sound absorbing materials should be adopted. Partitions and ceilings between areas for confidential discussions must be sufficient to prevent overhearing (see SHTM 2045: 'Acoustics' - to be replaced by SHTM 08-01).

Telephone, TV and radio facilities

2.67 It is beneficial for patients to have convenient access to telephone, TV and radio facilities. Planning teams should identify suitable systems to meet local requirements. For guidance on the use of Mobile phones see 'Guidance on the use of Mobile Communication Devices in healthcare premises' (HFS 2008).

Finishes

2.68 The choice of finishes will form an integral part of the design process and be co-ordinated within the overall design scheme. The selection of colours and reflectance quality can have a significant impact on the lighting within the room and will need to be coordinated with the lighting design. Finishes must also be functional and compatible with the need for comfort, cleanliness and safety. Cleaning regimes require to be considered when selecting materials. The advice and/or approval of the infection control team and FM provider should be sought throughout the project, but particularly at the specification stage.

Floors

2.69 Flooring should be smooth, impervious, easily cleanable and wear-resistant. All patient access, clinical, support, etc. rooms will require coved skirtings. These allow easy cleaning and avoid microbial colonisation. The material used for skirtings must be integral with, and have similar properties to the floor finish. In areas where frequent wet cleaning methods are employed, the flooring material must be unaffected by disinfectants.

2.70 Carpets must not be used in clinical areas. Short pile carpets may possibly be considered for use in offices and the seating areas of staff rest rooms, but not for reception areas. Carpets are extremely difficult to keep clean and need to be

meticulously maintained so very careful thought must be given before specifying their inclusion.

2.71 All flooring should be slip-resistant. Design teams could also consider the use of impact-absorbing floor finishes, which will reduce the severity of injury should a patient fall and also the level of impact noise.

2.72 For further guidance on the selection of flooring refer to SHTM 61: 'Flooring' (HFS) and 'Safer surfaces to walk on – reducing the risk of slipping' (CIRIA 2006).

Walls

2.73 Wall finishes must be durable and where appropriate able to withstand repeated wet cleaning and the accidental impact of trolleys and mobile equipment. Especially vulnerable points and corners will require additional protection. Smooth paint surfaces are the easiest for cleaning, for example eggshell or vinyl silk emulsion. Matt finishes are not recommended and all paints used should be solvent free.

2.74 Walls in kitchen, shower and toilet areas require to be easily cleanable. The advice of the infection control team should always be sought.

2.75 For further guidance see SHTM 56: 'Partitions' and for handrails on walls in circulation areas, refer to HBN 00-04: 'Circulation and communication spaces'.

Ceilings

2.76 Adequate ceiling heights in clinical areas are crucial. The underside of a finished ceiling in bedded areas will require to be at least 2700mm from the floor. There may be difficulties in complying with ceiling heights throughout the hospital in the case of refurbishments, but within a new build facility the required heights should always be achievable.

2.77 Care must be taken when assessing the correct position and weight bearing factors for hoists and other lifting equipment, lighting, patient entertainment and data management systems.

2.78 The use of acoustic ceiling materials in corridors and public spaces such as waiting areas may be helpful in reducing noise levels.

2.79 The design team, infection control officer and facilities manager require to work together to ensure that the choice of ceiling and the maintenance routines are satisfactory and compatible. Service access panels should be avoided in bedrooms wherever possible.

For further guidance refer to SHTM 60: 'Ceilings' (HFS).

Doors and frames

2.80 Materials used for doors and frames should be able to withstand frequent impact from mobile equipment and also must be easily cleanable. All double-swing doors will require appropriate glass vision panels. For privacy, safety and other considerations bedroom doors require the panels to be capable of being obscured. Integral blinds are one option that should conform to infection control strategies.

2.81 Sometimes it may be desirable to secure certain doors in the open position for a period of time. In the case of fire doors this must only be by means of an approved or recognised product linked to the fire alarm and detection system. These will require to fail to safety which is the closed positions. Magnetic door retainers must not restrict the movement of traffic.

2.82 Reference should also be made to SHTM 58: 'Internal doorsets', HBN 00-04: 'Circulation and communication spaces' (which includes updated information on doorsets) and NHSScotland Firecode SHTM 81: 'Fire precautions in new healthcare premises'.

Windows

2.83 Guidance on types of window and their safety aspects is available in SHTM 55: 'Windows'.

In addition to the guidance and various statutory requirements, the following issues require consideration:

- daylight and prevention of glare;
- safety;
- natural ventilation and user comfort;
- views;
- attenuation of noise;
- ease of use;
- energy conservation, solar control (the use of tinted glass and films should be avoided due to their effect on patient well-being - see research);
- control of blinds/curtains from the bed; and
- the provision of a visual link with the outside world balanced with the need to obscure the views into some areas from the outside.

2.84 Windows in single-bed rooms should be openable. Where ward accommodation requires mechanically cooling to prevent the summer ambient temperature exceeding the prescribed limit, a regime of closing windows when the cooling is in operation needs to be employed. Opening windows above ground floor will require safety restrictors.

2.85 All windows must be double glazed as a minimum to provide thermal and sound insulation.

2.86 It should be possible for cleaners to gain easy safe access to the inside and outside of all windows.

Maintenance and cleaning

2.87 Materials and finishes should be selected to minimise maintenance and be compatible with their intended function. Building elements that require frequent redecoration and are difficult to service or clean must be avoided. Special design consideration requires to be given to entrances, major circulation routes, corners, partitions, counters and all other elements that may be subjected to heavy use. Wall coverings should be chosen with cleaning requirements and regimes in mind.

Wayfinding

2.88 The use of colour and art to identify particular routes and rooms can help to reduce the number of signs required. Certain doors, for example fire exit doors, will require conventional labelling. Where signs are used they should not detract from the overall ambience, and should be simple yet sufficiently explicit to be understood without being confusing. Names of departments, areas and rooms should be consistent to avoid confusing patients, visitors and new staff.

Reference should be made to NHSScotland Wayfinding: ‘Effective Wayfinding and Signing Systems - guidance for healthcare facilities’ (HFS).

Security

2.89 There are a number of security issues to be considered in the planning and design of in-patient accommodation. These include access control, windows and doors, natural and mechanical surveillance (CCTV), lighting, wayfinding, security of property and assets, security of drugs and the protection of NHS staff against violence. The Local Security Management Specialist (LSMS) or Security Advisors will be able to identify security risks and offer advice on measures that can be implemented to reduce them.

2.90 Where entryphone/intercom systems and CCTV are installed, they will require to be linked to the reception desk and appropriate touchdown bases in order to control access through the main entrance. The LSMS should be consulted on the installation of all access control systems.

Fire safety

2.91 It is important to establish during the design stage those aspects of fire safety strategy that affect the design, configuration and structure of in-patient

accommodation. The design team will require to discus and verify their proposals with the Client's Fire Safety Advisor and the local Building Control Authority. The design team and all other design staff must be fully acquainted with the fire safety strategy for the design in terms of operation (staff responsibilities, equipment provision, and building and engineering layouts). For further guidance refer to 'Fire policy for NHSScotland', CEL 25 (2008) and NHSScotland Firecode; in particular SHTM 81: Part 1 'Fire precautions in new healthcare premises' and Part 2 'Guidance on the fire engineering of healthcare premises' if appropriate. It should also be noted that, when occupied, the compliance provisions of the 'Fire (Scotland) Act 2005 as Amended' and the 'Fire Safety (Scotland) Regulations 2006' must be met, including the requirement to conduct fire risk assessments.

Compliance with statutory and other requirements

2.92 As far as possible this guidance takes account of statutory and other requirements as well as guidance in force, or available, at the time of publication. The following is intended only as a brief summary of compliance requirements.

People with accessibility difficulties (Disability Discrimination Act 2005)

2.93 Boards must comply with the provisions of the Disability Discrimination Act, 2005 (to be replaced late 2010 by the new Equality Act) and the relevant sections of the Scottish Building Regulations. Reference should also be made to BS 8300:2009 'Design of buildings and their approaches to meet the needs of disabled people – Code of Practice'. Design teams should also refer to HBN 00-02: 'Sanitary spaces', HBN 00-03:'Clinical and clinical support spaces' and HBN 00-04: 'Circulation and communication spaces'. These set out the standards required specifically for healthcare premises and are in some cases are more demanding than other more general guidance. Reference should also be made to NHSScotland 'Wayfinding: Effective Wayfinding and Signing Systems - guidance for healthcare facilities' (HFS).

Manual Handling Operations Regulations 1992

2.94 Manual handling and health and safety regulations relate to lifting and turning patients and moving heavy equipment. They state that 'Each employer shall, so far as is reasonably practical, avoid the need for his employees to undertake any manual handling operations at work which involve a risk of their being injured'. Client Project Teams should consider the increasing numbers of overweight and obese patients. Client Project Teams and their design teams should take these into account when designing facilities. Refer also to paragraphs 2.41 – 2.45.

The Construction (Design and Management) Regulations 2007

2.95 These regulations, and the related Approved Code of Practice, focus attention on health and safety planning and management throughout construction projects, from design concept onwards. Designers have a duty to eliminate hazards and reduce risks. Planning teams have a duty to provide project-specific health and safety information needed to identify hazards and risks.

Safety regulations

2.96 A selection of health and safety regulations are included within Appendix 2: References.

Environmental Protection

2.97 Various acts, some specific to Scotland, are listed within Appendix 2: References.

3. Specific functional and design requirements

Functional relationships

3.1 A twenty four bed ward may function as a stand-alone unit that has beds grouped into two or more clusters. Depending on the layout of in-patient floors bed clusters may be configured to allow them to be shared between, or 'attached' to, adjacent wards in order to provide flexibility. See Figure 7.

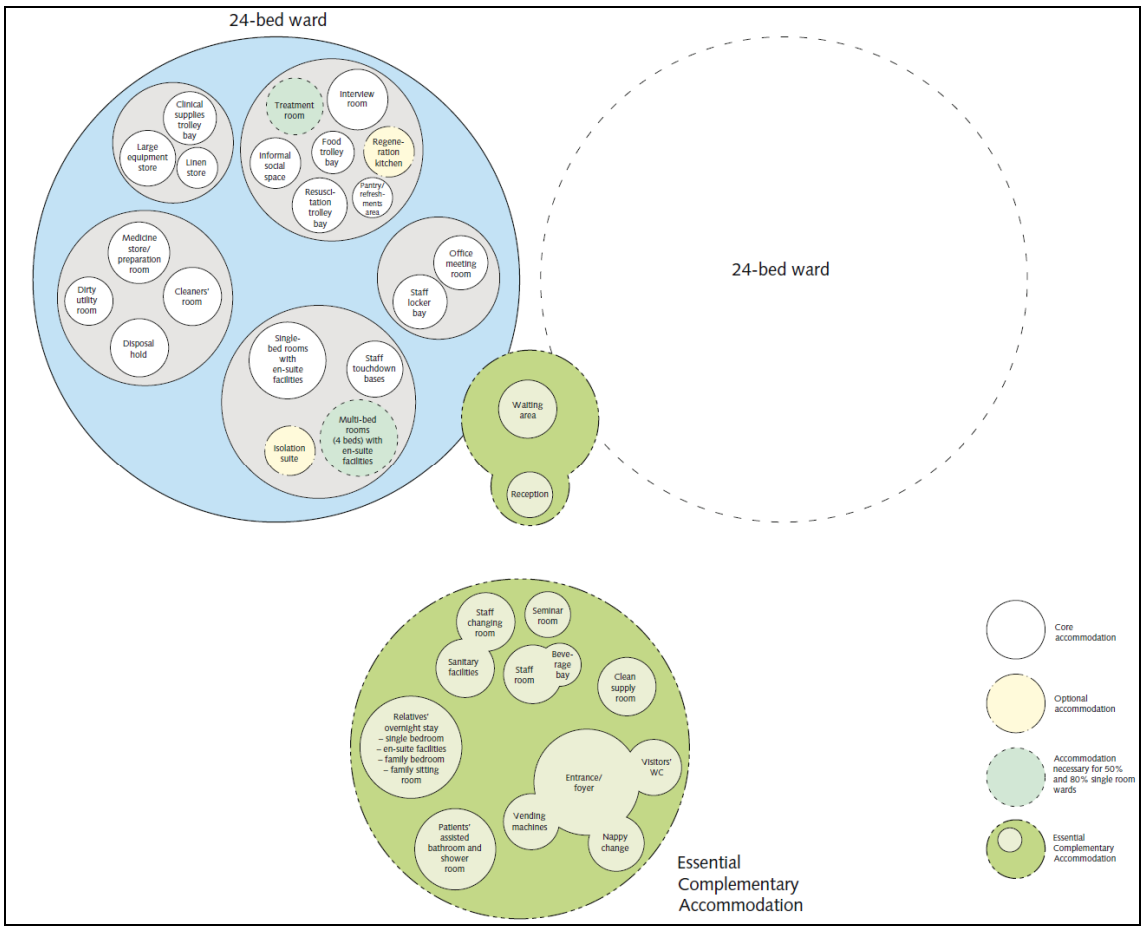

Figure 7: Functional Relationships

3.2 Each bed cluster will be serviced by staff and support facilities, therefore access to supplies and means of disposal should ideally be local to each cluster. It is recommended that rooms be serviced by trolley, like hotels, so that staff do not need to walk far from their bed cluster unless they require access to a shared facility, for example the medicine store/preparation room. The preferred option will be to stock each room for linen, clinical consumables and disposable items, and rely on 'just-in-time' and 'top-up' supplies.

3.3 The reception desk will be at the entrance to a ward or group of wards it is serving, together with a waiting area and toilet facilities for visitors. The

entrance to the ward accommodation is usually controlled by staff via an intercom system.

3.4 Regeneration kitchens should not be situated centrally within a ward, although the food trolley bay will need to be located between the bed clusters.

3.5 Ward layouts will ultimately depend on local conditions and overall bed numbers.

Description of room spaces

Bed and Sanitary Facilities

Bed spaces

3.6 The number of activities taking place at the bedside is increasing. The period that a patient spends in hospital is shortening, and is limited to active interventions for diagnosis, treatment and immediate recovery. The level of acuity and dependence of patients once interventions begin until discharge is relatively high; movement by staff around the patient may be considerable, and there is likely to be an increasing but intermittent use of equipment and aids at the bedside. The activities and the patient's response to interventions are recorded, increasingly on computer held databases. Relatives and visitors are encouraged to be more involved in patient care and support.

3.7 There are three distinct categories of direct activity that take place:-

- clinical treatment and care:
- admission, with the intimate discussion of personal matters;
- specific medical and nursing interventions and observation;
- rehabilitation;
- informing, discussing, listening and advising both patients and relatives.
- personal care and maintenance:
- sleeping and resting;
- eating, drinking, washing and toileting;
- entertainment/diversion, reading, watching the television;
- receiving visitors.
- support activities;
- preparation of clinical procedures;
- maintaining records;
- holding stores;
- communicating;

- developing staff skills.

3.8 The example layouts for a single-bed room in Appendix 1 shows the zones to enable these activities to take place around a bed space.

3.9 The bed space should allow procedures to be carried out from either side of the bed with adequate circulation space so that medical emergency teams and equipment can gain access to the patient. There should be adequate space for moveable furniture and unobstructed access for wheelchairs, as well as space to accommodate overnight visitors.

3.10 The alternative to a single-bed room is a multi-bed room. These will only occur in refurbishment projects or in new build projects where a clinical need has been established. In a multi-bed room the different activity zones move to a greater or lesser degree further away from the bedside, and may be shared to support all the beds in the room. The acceptable maximum number of beds in a multi-bed room is four as it gives each patient a corner as a 'home base' and a neighbour on one side only.

A high percentage of single-bed rooms within a twenty-four bed ward will provide the flexibility necessary to allow gender separation and improved privacy.

3.11 All single-bed and multi-bed rooms must be provided with en-suite sanitary facilities and, whether in a single-bed or a multi-bed room, all bed spaces should be provided with:

- furniture:
- a variable-height bed;
- a bedside locker, with a lockable compartment for storing medication;
- an over-bed table;
- an easy chair;
- a bedhead luminaire, task lighting (see Para 2.53).
- a coordinated bedhead services arrangement incorporating:
- electrical socket-outlets;
- luminaire control switch;
- oxygen, medical air and vacuum outlets (refer to SHTM 2022: 'Medical gas pipeline systems' to be replaced by SHTM 02-01);
- a patient services system (which may be incorporated into the bedhead services panel) including:
- help call button, including two-way speech facilities (see paragraph 2.32), consideration might also be given to alternative call systems, such as blow devices, for patients who cannot use their hands;
- reassurance light;

- luminaire switch.
- patient entertainment facilities including:
- radio;
- TV;
- telephone;
- headset outlet.
- Additionally, in single-bed rooms:
- space for storing clothes and shoes;
- space for a relative's overnight stay bed;
- a small refrigerator for a patient's personal use (optional);
- Facilities for staff:
- a workstation with at least a double data outlet;
- a worktop with space below for clinical supplies and disposal;
- a clinical wash-hand basin (two required in 4-bed rooms), plus antibacterial hand-rub dispensers;
- storage for a day's supply of linen and surgical goods/supplies.

These provisions are necessary as the basis of a desirable environment.

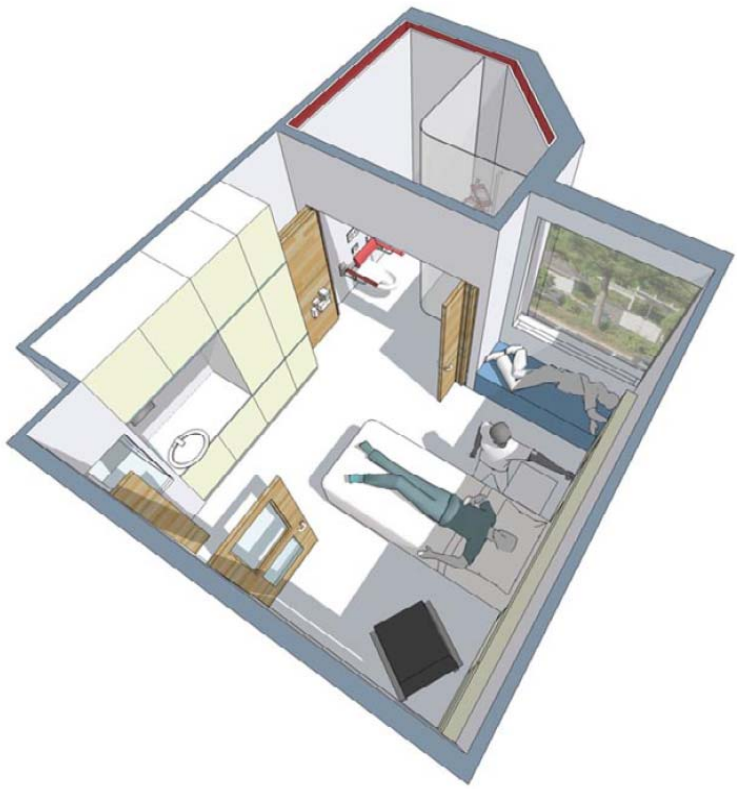

Figure 8: Single-bed room layout Hillingdon Hospital

3.12 Where the provision of multi-bedded rooms has been agreed, each bed space must be separated to provide a degree of privacy. If curtains are used they require being shadow-proof and flame- retardant. When full-height curtains are drawn the bed space must still be well illuminated and ventilated. Curtains may be disposable. Highly patterned curtains should be avoided, as they can cause visual disturbances in patients who are confused or heavily sedated.

3.13 Each four-bedded room must include two clinical wash-hand basins for staff use. These will be located so as to be highly visible and convenient for staff to use on entering and leaving the room and also when moving from one patient to another. A workstation is required for each multi bedded bay with space for a computer, storage for a day's supply of linen and clinical goods. A single workstation will suffice for a group of beds.

3.14 If project teams wish to omit doors to multi bedded rooms they must consult with the local Board's fire advisor and infection control team. Doors can only be omitted where they are not required for fire safety, infection control or acoustic reasons.

3.15 Each multi-bedded room should have easy access to informal social space as the majority of patients, even when highly dependent, are encouraged to leave their beds.

Example layouts of single-bed and multi-bedded rooms are contained in Appendix 1.

Figure 9: Single-bed room and en-suite Hillindon Hospital

(Reproduced with the permission of The Hillingdon Hospital NHS Trust)

Sanitary facilities

Single-bed room en-suite shower room

3.16 Each single-bed room en-suite will have a WC, shower and general washbasin.

For detailed guidance on this en-suite and alternative designs for sanitary facilities, refer to HBN 00-02: 'Sanitary spaces' and SHTM 64: 'Sanitary assemblies'.

Multi bedded room sanitary facilities

3.17 Multi-bed rooms must have en-suite sanitary facilities. Best practice is to provide an assisted shower room (with WC, shower and wash-hand basin) and a separate semi-ambulant WC (with hand-rinse basin), both en-suite to the bedroom area. This allows one person to shower without preventing others from using the WC. However, privacy and dignity should be ensured by the provision of appropriate sound proofing, security devices, locks etc. En-suite doors should not open directly onto adjacent bed areas.

3.18 Appendix 1 provides an example layout for multi bedded room sanitary facilities. For detailed guidance on sanitary facilities for multi bedded rooms, refer to HBN 00-02: 'Sanitary spaces'.

General

3.19 Design teams should consider the provision of motion sensors for lighting in sanitary facilities. If motion sensors are used designers should ensure that the lighting comes up to full illumination without delay and remains on for a suitable length of time. This may help to avoid the problem of fragile patients using sanitary facilities in the dark.

3.20 The wet shower area of the compartment should be separated by a curtain which should extend almost to the floor surface; the remainder of the area will serve as the drying area. There must not be a step between the wet and dry areas. The wet area floor should fall towards the floor outlet with sufficient gradient to ensure proper drainage and prevent ponding or spread of water into the dry area. The floor surface requires to be slip-resistant. Access to other sanitary fittings should not require wheelchairs and patients to cross the graded wet area.

3.21 Help call system cords must be easily identifiable, accessible from the wet area and WC area and descend far enough to be within the reach of a patient who has fallen or collapsed. All pull cords must be cleanable.

3.22 Ventilation should prevent excessive heat, humidity and odours.

3.23 For more detailed guidance on sanitary facility layouts, refer to HBN 00-02: 'Sanitary spaces'.

Assisted bathroom or shower room (Essential complementary accommodation)

3.24 In addition to en-suite facilities, an assisted bathroom and/or shower room is required, although this/these may be shared with adjacent wards. These must have doors suitable to allow patient hoists, wheelchairs and trolleys to access the room.

3.25 Patients using an assisted bathroom or shower room may arrive in a wheelchair or on a shower trolley. Staff assist the patient in bathing/showering and associated activities, and may also give treatments. In bathrooms a variable-height peninsular bath is essential. In both bathrooms and shower rooms there must be sufficient space to accommodate three staff, and to permit the manoeuvring of support equipment such as a hoist. The rooms should also contain a WC and washbasin.

For more detailed guidance refer to HBN 00-02: ‘Sanitary spaces’.

Isolation suite (Optional accommodation)

3.26 An isolation suite comprises a single-bed room, en-suite facilities and a ventilated entry lobby.

For detailed guidance on isolation suites and example layouts see SHPN 04 Supplement 1: ‘Isolation facilities in acute settings’.

Ceiling hoist track

3.27 Where it is proposed to install a ceiling hoist track system between a bedroom and its en-suite facilities, the design should not compromise the airflow pattern between the two rooms. In isolation rooms the design of the isolation suite works on the principle of supplying air from the lobby at high level to the bedroom and removing it at low level via a transfer grille in the en-suite door. This ensures good mixing of the air in the bedroom, with a consequent dilution of possible contaminants. The wall area above the outward-opening door that is penetrated by the track and suspension system should not therefore allow unrestricted airflow between the bedroom and en-suite at high level. Suitably profiled filler boards and the use of brush seals will ensure an adequate resistance to flow and prevent short-circuiting.

Touchdown bases

3.28 In addition to workstations in bedrooms, space will be required adjacent to, but not within bedrooms, for clinical administration. The touchdown base provides a place for accessing and updating electronic patients records (EPRs) and other computer work. It should only be used for short periods of time. It should be recessed sufficiently from circulation routes so that a member of staff, either standing or perching on a stool, does not cause an obstruction. The base will require power and data points, alarm panel, lamp repeat for drugs cupboard,

task lighting and a computer (security to be considered when the computer is not in use/not manned).

For detailed guidance on touchdown bases see HBN 00-03: 'Clinical and clinical support spaces'.

Figure 10: Touch down base

Patient Support Facilities

3.29 A variety of support facilities are required for patients. For example in refurbishment projects or other projects where multi-bed rooms may be provided there will be a need for separate rooms for treatment, one-to-one discussions, interviews or education.

Treatment room

3.30 Wards with multi-bed rooms will require a treatment room where clinical procedures can be carried out in private. In wards with 100% single-bed rooms, the provision of a treatment room is optional.

3.31 Patients using the treatment room may be ambulant, in a wheelchair, on a trolley or on a bed. The entry door width and the circulation area outside the room must be sufficient to permit the turning and passage of a patient in a bed.

Refer to HBN 00-03: 'Clinical and clinical support spaces' for more detailed guidance.

Interview room

3.32 Discussions with patients and relatives may be carried out in an interview room. This room can also be used by staff for staff interviews, appraisals and counselling. Good acoustic privacy is required, for more information refer to SHTM 2045: 'Acoustics' (to be replaced by SHTM 08-01). Visual privacy must be ensured through the use of blinds or curtains at any windows. Double glazed panels in doors must also be capable of being obscured, preferably with integral blinds.

3.33 The designer should aim to create an environment that is cheerful, comfortable and warm. Appropriate lighting and decorative textures such as pictures and plants can help to provide a pleasant atmosphere. Finishes and furniture will have an important influence on the room. Easy chairs and coffee tables will normally be provided. It is important that rooms in which patients will be sitting are free from draughts. The room must be accessible to wheelchair users, the designers should be informed of any additional requirements.

Refer to HBN 00-03: 'Clinical and clinical support spaces' for more detailed guidance.

Informal social space

3.34 Patients from both single-bed and multi-bed rooms will require informal social spaces. Open yet intimate areas recognisably intended for casual meeting and talking may be all that is required. These spaces will enable patients to socialise without the provision of dedicated day rooms, social spaces should be designed in a way that allows patients in wheelchairs and beds to make use of them. Where day rooms are provided they should be as inviting as possible, with hotel or domestic style furnishing. It should be possible for patients to control environmental features such as lighting. Planning decisions should consider patients' culture and preferences in terms of privacy, modesty and same sex accommodation

Pantry/refreshments area

3.35 The pantry/refreshments area will be equipped with facilities for:

- the preparation of beverages and light snacks;
- potable water supply;
- the storing and filling of patients' water jugs;
- storage of dry goods, and a suitable amount of crockery and cutlery;
- refrigeration of a small quantity of perishable food;
- washing of cutlery and crockery;
- washing hands.

3.36 An industrial-grade mechanical dishwasher is required in order to meet the rinse cycle temperatures required for infection control purposes. Separate facilities for washing-up and hand washing are required. Crockery and cutlery used for main meals will generally be returned to the central washing-up service. There should also be adequate storage for patient jugs.

For further guidance refer to HBN 00-03: 'Clinical and clinical support spaces'.

Regeneration kitchen (Optional accommodation)

3.37 A regeneration kitchen will be required where the local catering policy requires food to be delivered to a department for regeneration and then distributed to a number of wards. The catering contractor should determine the design of the regeneration kitchen. Generally in new build facilities this is likely to serve a number of wards. Waste disposal process will be in accordance with the appropriate hospital policy. Substantial heat gains should be expected within this accommodation.

Parking bay: food trolley

3.38 Each ward will require at least one centrally located bay for parking the food trolley/trolleys while meals are distributed to patients. These bays will require appropriate electrical outlets for the trolleys and they should also be located adjacent to, or close by, suitable hand-washing facilities.

Resuscitation trolley bay

3.39 Emergency equipment - such as the resuscitation trolley which includes a defibrillator, medical gas cylinder and portable suction machine - should be parked in a bay where it is accessible from the bedrooms, but should not obstruct circulation areas and escape routes.

Storage Spaces

3.40 Store rooms can be a costly means of providing storage, as they require internal circulation space. Where storage only requires relatively shallow cupboards it may be more convenient and cost effective to provide cupboard opening directly from circulation areas. The latter is particularly useful for goods for which stocks are maintained by an exchange trolley service. If cupboards require to be recessed so that the open doors do not obstruct movement in the corridor then the potential saving in circulation space may be lost.

Clean supply room (Essential complementary accommodation)

3.41 This room provides storage for sterile supplies and consumables for a number of wards. Supplies trolleys are brought here for restocking. See HBN 00-03: 'Clinical and clinical support spaces'.

Clinical supplies trolley

3.42 Clean and sterile goods for daily use will be held on trolleys, usually kept at the point of use in bedrooms under worktops or workstations.

Large equipment store

3.43 This store is required for bulky items of equipment, bed accessories and therapy aids. Open shelving, hanging rails and hooks as well as freestanding space for heavy equipment such as hoists and weighing machines are required. Sockets will be required for equipment that needs charging. Disposable items delivered in bulk packages to the clinical area will require storage.

3.44 Design teams may decide that more than one large equipment store is required. A number of local stores adjacent to single-bed rooms or four bedded rooms may be more efficient.

Linen store

3.45 For infection control purposes, clean linen will be kept in a closed store rather than on trolleys in an open bay. Local policy will determine whether linen is stored in single-bed rooms or in a central store, storage of linen in single-bed rooms can improve staff efficiency.

Utilities

Preparation room and Medicine store

3.46 The preparation room/medicine store is required for the storage and preparation of all the medicines to be used on the ward. This will include controlled drugs, medicines requiring refrigeration, and consumables such as syringes and needles. Rechargeable syringe drivers and infusers may be stored here.

See HBN 00-03: ‘Clinical and clinical support spaces’ for more detailed guidance.

Dirty utility room

3.47 The dirty utility room serves as the temporary storage point and testing area for urine specimens. It also contains equipment for the destruction of disposable bedpans or cleansing of non-disposable bedpans etc. Such equipment may generate significant noise levels so care should be taken to eliminate or contain this. Suitable space will be required for all the sack holders for the colour-coded disposal bags used for the bagging of waste materials and dirty linen skips. If clinical waste is stored here the room must be secured/lockable.

See HBN 00-03: ‘Clinical and clinical support spaces’ for more detailed guidance.

Cleaners' Room/Domestic Service Room (DSR)

3.48 The cleaners' room is the base from which domestic service staff will provide the immediate day-to-day cleaning service. Care must be taken to ensure that the room is large enough to hold, store and park all the required fittings, equipment, storage cupboards and shelves. Fittings will include stainless steel sink, low level bucket sink and separate hand washing facilities.

See HBN 00-03: 'Clinical and clinical support spaces' for more detailed guidance.

Disposal hold

3.49 The disposal hold provides the temporary storage point for all items of supplies and equipment that have to be removed for cleaning, reprocessing, disposal or destruction. Materials include clinical and non-clinical waste and also items to be transferred to the sterile services department.

3.50 The disposal of waste and used items must be consistent with the current hospital policy for the disposal of clinical waste.

See HBN 00-03: 'Clinical and clinical support spaces' for more detailed guidance.

Switchgear cupboard

3.51 A departmental switchgear cupboard housing the main isolators and distribution switchgear must be:

- accessible directly from the circulation area (access space may be part of the circulation area);
- sited away from water services and overhead drainage pipework;
- lockable.

3.52 Where possible, the cupboard should be sited within the department, usually adjacent to the main entrance. There must be clear and safe access for maintenance staff. Care must also be taken to ensure that safety is not compromised during maintenance, from passing traffic or the opening of adjacent doors.

Administration Areas and Staff Facilities

Reception and waiting area (Essential complementary accommodation)

3.53 The reception desk should be located in a prominent position at the main entrance to the ward. The counter needs to be stepped so that a person in a wheelchair can see and speak easily to the receptionist. The desk requires sufficient working space for a receptionist and one other who will welcome patients, relatives, visitors and staff. They will also undertake the local clerical

and administrative duties. Adjacent wards may share the reception desk and waiting area.

Figure 11: Reception desk, Altnagelvin area hospital

(Reproduced with the permission of HLM Architects – photographer Christopher Hill)

3.54 The reception desk will be linked by computer to all areas. Space is required for at least one computer terminal and associated equipment, including a printer. The reception desk should be designed to allow surveillance of all entrances, waiting areas and corridors leading to treatment rooms. CCTV should be installed to enable monitoring of all entrances, reception and waiting areas. Alarms from Area Valve Service Units (AVSUs) for piped medical gases should be installed here.

3.55 A seated area should be provided near the reception desk for patients, relatives and visitors waiting to be received. Access to visitors' WCs, nappy change facilities and vending machines is required. The waiting area may also serve as additional informal day space for patients.

Office/meeting room

3.56 This office is a multi-purpose office, but is likely to be used principally by clinical staff to complete notes on discharged patients, hold patient handover meetings, make telephone calls and for staff discussions.

3.57 Ideally it will be located close to bed areas and sized to accommodate two computer workstations, a table and eight to ten people. A cupboard or shelves for storing a limited amount of stationery will be required.

Generally there will be no separate medical staff or ward manager's office.

Staff locker bay

3.58 Staff will require local security lockers to hold small personal belongings while on duty. It may be convenient to locate lockers within or adjacent to the staff rest room/beverage bay where provided or within lobbies to staff toilets.

In wards that contain staff changing facilities, staff will have easy access to the lockers in the changing rooms and a separate locker bay will not be necessary.

Staff WC

3.59 A WC is required for clinical staff working on the ward. In wards that contain staff changing facilities, staff will have easy access to sanitary facilities and a separate WC will not be necessary.

Staff changing room (Essential complementary accommodation)

3.60 Facilities are required for staff changing, clothes storage, showers and sanitary facilities. These facilities may be shared between several wards or may be centrally located and serve the whole hospital. Calculations for the required amount of changing space and locker provision should take into account the numbers of full-time and part-time staff, including trainees and students.

3.61 Separate changing rooms for males and females will be required, each with their own shower rooms, WCs, shaving point, power points for hair dryers and a large well-illuminated mirror with a shelf. The sanitary (WC and WHB) and shower facilities will be within self-contained rooms with full-height partitions providing maximum privacy. The provision of rows of cubicles is not an acceptable alternative.

3.62 Access control should be fitted to all staff changing and sanitary facilities.

See HBN 00-03: ‘Clinical and clinical support spaces’ for more detailed guidance.

Staff rest room (Essential complementary accommodation)

3.63 Rest room facilities are required where staff can relax and take beverages. These may be shared between several adjacent wards. Rest rooms should have windows of a suitable size to provide an acceptable level of daylight together with a pleasant outlook. The room should be suitably and comfortably furnished.

3.64 The rest room will include a beverage bay with facilities to allow staff to prepare beverages, wash and store crockery and cutlery. It should also provide storage for a limited quantity of dry goods and for the refrigerated storage of milk etc.

See HBN 00-03: ‘Clinical and clinical support spaces’ for more detailed guidance.

Seminar room (Essential complementary accommodation)

3.65 It is assumed that a designated education centre with conference facilities for multi-disciplinary use will be available on site.

4. General engineering and environmental principles

Introduction

4.1 This section provides general guidance on the engineering, technical and environmental aspects of healthcare building design. Specific guidance in relation to in-patient facilities for adults is shown in **bold**.

4.2 Consultation should take place at project and design team levels to ensure the understanding of key issues, healthcare delivery and the appropriate standards for healthcare engineering services.

4.3 Designers should ensure that they read this publication as a whole since further engineering guidance may be outlined in, and cross-referenced within, other sections.

4.4 The engineering Scottish Health Technical Memorandum (SHTM) series is supported by the overarching publication SHTM 00: 'Best practice guidance for healthcare engineering - Policies and Principles' which covers the following issues:

- overview of engineering services guidance;
- statutory and legislative requirements;
- professional support;
- operational policy;
- training and workforce development;
- emergency procedures and contingency planning;
- training, information and communications;
- maintenance;
- engineering services.

4.5 Guidance on specific types of engineering services can be found within the SHTM series of documents that are listed within the References appendix.

Space requirements for services and plant

4.6 A high level of availability of engineering plant and services is critical to the ability of the facility to function safely and efficiently. It is therefore essential that the building design incorporates adequate space for the full range of building services and the requirements for installation and maintenance of plant, ductwork, pipework and cabling.

4.7 Space for plant and services must provide:

- easy and safe means of access for personnel and equipment ;
- secure accommodation protected from unauthorised access;
- adequate space around the plant services to permit full and safe inspection, maintenance and replacement.

4.8 Guidance on spatial requirements for engineering plant and services is contained within the SHTM guidance documents for healthcare engineering. Further useful information regarding the provision of space for plant is contained in BSRIA Technical Note TN 9/92, and for building services distribution systems in BSRIA Technical Note TN 10/92.

4.9 With the exception of drainage and some heating pipework, engineering services must not be brought up from the above-ceiling space of a floor below. Service distribution to a particular area should generally be contained within service spaces on that floor.

4.10 Plant rooms, particularly for temperature cooling and ventilation, will be located as close as possible to the areas they serve, thus minimising the amount of space necessary to accommodate large ducts.

4.11 Care should be taken to ensure that noise and structure-borne vibration is not transmitted beyond the plant rooms. Further guidance on acoustics and vibration can be found in SHTM 2045: ‘Acoustics’, 2001 (to be replaced by SHTM 08-01: ‘Acoustics’).

Decontamination

4.12 Decontamination is the combination of cleaning, disinfection and sterilization used to render a re-usable item safe for further use on patients and handling by staff. The effective decontamination of re-usable surgical instruments is essential in minimising the risk of transmission of infectious agents. Sterilization and decontamination guidance is available on the HFS website (http://www.hfs.scot.nhs.uk/).

Mechanical services

Piped medical gases

4.13 Piped medical gases should be designed in accordance with the requirements of SHTM 2022: ‘Medical gas pipeline systems’ (to be replaced by SHTM 02-01).

Heating

4.14 General space heating requirements may be met by a variety of systems including radiators, radiant panels or within the ventilation system. Designers

should ensure that the most appropriate method is employed with for the healthcare environment being provided.

4.15 Where heat emitters are used and are accessible to touch the surface temperature must not exceed 43ºC. Exposed heating pipework accessible to touch must be encased and/or insulated. Further information is given in SHGN 'Safe hot water and surface temperatures' (to be replaced by SHTM 04-01). Particular care should be taken when providing systems within facilities for elderly and mental health. Where radiators are encased/covered these require to be secured in a way that allows the cover to be easily removed by cleaners without the need of technical assistance.

Care should be taken to ensure that heat emitters do not adversely affect the local temperature conditions of adjacent storage and preparation areas.

4.16 When radiators are installed they should be located under windows or against exposed walls. There should be space between the top of the radiator and the windowsill to prevent curtains reducing the output. There should also be adequate space underneath to allow cleaning equipment to be used easily and correctly.

4.17 Where appropriate, heating controls should be provided to modulate heating circuit flow temperatures in accordance with external temperature. Radiators or radiant panels may also be used to offset building fabric heat losses in mechanically ventilated spaces. The system should be designed to ensure that the heating and ventilation systems operate in a coordinated manner and do not cause the space to overheat. Heat emitters in single-bed rooms should be provided with controls operated from the bedhead so that patients can adjust the room temperature.

4.18 Ceiling-mounted heating panels can operate at higher temperatures than 43°C as long as the surface temperature is not easily accessible. Panels should not be located over beds, patient trolley positions, or in other locations where they might radiate directly onto a patient or member of staff for a prolonged period. In new construction complying with the latest Building Regulations, heat losses are sufficiently low so as to allow a modular approach to be adopted for panel selection, thereby allowing them to fit into the ceiling grid pattern. In refurbishment projects where this does not apply, panels should be kept as narrow as practical and routed around the perimeter of rooms.

All ceiling panels should be selected to match aesthetically the adjacent ceiling and should be sealed to it by means of a gasket or similar.

Ventilation

4.19 For areas where it is absolutely necessary to install mechanical ventilation, the systems should be designed in accordance with the requirements of SHTM 2025: 'Ventilation in healthcare premises' (to be replaced by SHTM 03-01).

4.20 Air movement induced by mechanical ventilation will be from clean to dirty areas, where these areas can be defined. The design should allow for adequate flow of air into any spaces having only mechanical extract ventilation. This can be achieved via transfer grilles in doors or walls. However, such arrangements should avoid the introduction of untempered air and also must not prejudice fire safety, acoustic requirements or privacy.

4.21 Local exhaust ventilation (LEV) will be required where exposure (by inhalation) to substances hazardous to health cannot be controlled by other means. The Health and Safety Executive publishes guidance notes, updated annually, on occupational exposure limits (Guidance Note EH40 – 'Occupational Exposure Limits') for the control of exposure by inhalation of substances hazardous to health. The limits specified form part of the requirements of compliance with the Control of Substances Hazardous to Health Regulations 2002 (COSHH).

Further guidance on the design of LEV systems may be found in SHTM 2025 (to be replaced by SHTM 03-01).

Hot and cold water systems

4.22 Hot and cold water storage and distribution systems should be designed in accordance with the requirements of SHTM 2040: 'The control of *Legionella* in healthcare premises - a code of practice and SHGN 'Safe' hot water and surface temperatures' (both being replaced by or incorporated within SHTM 04-01 parts A & B).

Automatic water conserving taps operated by proximity detectors should be used where possible, where provided these should be powered from the mains (with backup) and not battery powered. It is also advantageous if fault detection and warning systems are fitted. In locations where basins may not be used for long periods of time consideration should be given to installing automatic systems that will periodically run taps for flushing of *Legionella*. The system should be able to provide evidence for recording.

Further information will be contained in SHTM 04-01.

4.23 Exposed hot-water pipework accessible to touch must be encased and/or insulated. Special care should also be taken when facilities are being provided for older, confused or mental health patients.

Building management systems

4.24 All engineering plant and equipment associated with the internal environment should be controlled, monitored and regulated by a building management system (BMS) in accordance with the provisions of SHTM 2005: 'Building management systems'.

4.25 Requirements for the monitoring and control of plant and systems are also covered in the SHTMs that relate to the particular plant or system.

Internal drainage

4.26 A system of soil and waste drainage including anti-siphon and ventilation pipework should be provided in accordance with BS EN 12056.

4.27 Where plastic pipework materials are used, apart from some small diameter pipes, suitable intumescent collars require to be fitted when breaching fire compartments. Acoustic wrapping should be applied where drainage runs above wards and other sensitive areas.

4.28 The gradient of branch drains should be uniform and adequate to convey the maximum discharge to the stack without blockage. Practical considerations such as available angles of bends, junctions and their assembly, space constraints will normally limit the gradient to about 1:50 (20mm/m).

4.29 For larger pipes, for example 100mm in diameter, the gradient may be less but this will require high quality workmanship if an adequate self-cleaning flow is to be maintained. **Bedpan washers or macerators should discharge with a short branch to a vertical stack or horizontal drain. The waste pipe should not be installed above or close to heating or hot water mains. If a bedpan washer or macerator discharges to a 100mm drain, frequently used large-volume appliances should be situated upstream of its connection to provide additional flushing. The manufacturers' technical guidance should be followed when determining the location of washers and distance from vertical stacks.**

4.30 Provision for inspection, rodding and maintenance should ensure 'full bore' access; also these inspection points should be located outside user accommodation. The location of manholes within the building is to be avoided.

4.31 To prevent the ingress of bacteria, waste outlets from distillation plant and refrigerators should be connected outside of the department, should not be directly connected to the drainage system and should discharge via a trapped tundish or gully.

4.32 Drainage/waste systems from cooling units should be installed to prevent Legionnaires' disease and other bacteria back-feeding.

Acoustics

4.33 Consideration should be given at the earliest opportunity to the requirements for privacy and the impact of any intrusive noise that may affect the function of the healthcare facility. Guidance in relation to functional relationships is given in SHTM 2045: 'Acoustics' (to be replaced by SHTM 08-01).

4.34 Acoustic design is fundamental to the quality of healthcare buildings. Sound affects us both physiologically and psychologically. Noise, which can be defined as 'unwanted sound', can increase heart rate, blood pressure, respiration rate and even blood cholesterol levels. Pleasant sounds help create a sense of well being. Music can be used to treat depression, to reach autistic people and to calm and relax tense patients.

4.35 Good acoustic conditions improve patient privacy and dignity, and promote essential sleep patterns. Such conditions are key to healing. Good acoustic design brings other benefits in terms of patient and staff comfort and morale, as well as improved efficiency and usability of equipment.

4.36 SHTM 08-01: 'Acoustics' will cover the acoustic design criteria that are important for healthcare premises, and will address issues such as the provision of temporary healthcare facilities, refurbishments and the control of noise and vibration during construction.

4.37 Consultation with a specialist acoustic adviser should be considered. Detailed acoustic theory is not included in SHTM 08-01, although sufficient detail is given for a basic understanding of the acoustic issues. It would be unwise to design a healthcare development without specialist acoustic advice from the outline design stage.

4.38 Guidance in relation to functional relationships is currently given in SHTM 2045: 'Acoustics' (to be replaced by SHTM 08-01).

Fire safety

4.39 Fire safety standards in healthcare premises require to be high due to the vulnerability of occupants. The policy in respect of fire safety is set out in NHSScotland Firecode suite of documents including Fire Policy for NHSScotland, CEL (2008) 25. The design team must satisfy itself that the design meets the objectives of this guidance or provide a fire engineered solution that achieves at least the same minimum objectives and requirements. Guidance on fire engineering for NHSScotland is provided in Firecode SHTM 81: Part 2 'Guidance on the fire engineering of healthcare premises'.

4.40 It is critical to establish during the design stage those aspects of fire strategy that may affect the planning of a project. At appropriate stages of the design process, the appropriate design team members must discuss their proposals with the relevant Board fire safety advisor and the Building Control Authority and they should also ensure that the Project team and all other design/planning staff are fully acquainted with the fire strategy for the design. This will include equipment provision, building and engineering layouts and will assist the Client/Board with operational aspects, staff responsibilities etc.

Fire detection and control systems

4.41 Fire detection, alarm and control systems are an integral part of the overall fire plan for a building. Fire alarm provisions for in-patient facilities are based on the principle of phased evacuation to support the provision of progressive horizontal evacuation. Measures to limit and mitigate the effects of unwanted fire signals due to fire alarm and detection systems are a significant imperative and specific guidance on this issue is contained in NHSScotland Firecode SFPN 11: 'Reducing unwanted fire signals in healthcare premises'. For these reasons it is recommended that the Board Fire Safety Advisor is consulted with regard to the

design of the fire alarm and detection system. Close co-ordination between the architect and design engineers is essential to ensure that compartmentation, high-risk processes, dangerous goods and other fire-related risk issues are fully understood and embraced in the fire management solution.

A copy of the current NHSScotland Firecode suite of documents should be provided by the NHSScotland Board in accordance with the requirement specified in SHTM 81: Part 1 'Fire precautions in new healthcare premises', paragraph 1.9a.

For guidance see NHSScotland Firecode suite of documents (SHTMs and SFPNs) available at www.hfs.scot.nhs.uk/ or contact HFS at nss.hfsenquiries@nhs.net.

Electrical services

General

4.42 Electrical installations must comply with the current edition of BS 7671 IEE Wiring Regulations together with Guidance Note 7 (Special Locations) and relevant SHTMs for electrical services. See also 'Medical Electrical Installation Guidance Notes' (MEIGaN; MHRA).

4.43 Prior to final design, a full assessment must be made of the risk, function, occupation, equipment and resilience requirements for the area. This will influence the extent and location of services, the availability of alternative electrical supply distribution and the need for local standby supplies if appropriate.

Electromagnetic compatibility

4.44 Care should be taken to avoid mains-borne and electrical radio frequency interference affecting diagnostic and monitoring equipment, computers or other sensitive electronic equipment. Guidance on the avoidance and abatement of electrical interference is given in SHTM 2014: 'Abatement of electrical interference' (to be replaced by SHTM 06-01).

Main intake switchgear and distribution boards

4.45 The main electrical supply should be part of the whole site/building network, and must provide adequate capacity for both normal and all assessed business-critical needs.

4.46 Main intake and distribution equipment will be sited away from patient areas and areas where access would disrupt normal communication routes.

4.47 Careful consideration must also be given to the impact from flooding, pipework leaks and mechanical damage.

Emergency electrical supplies

4.48 Emergency electrical provision should comply with the requirements of SHTM 2011 'Emergency Electrical Services' (to be replaced by SHTM 06-01).

Small power distribution systems

4.49 Depending upon the capacity of the emergency generator installation and risk assessment (see paragraphs 4.45 – 4.47 above), it may be appropriate to provide separate essential and non-essential small power distribution systems.

4.50 Adequate provision should be made in circulation areas, for example corridors and lobbies, to allow the use of domestic cleaning equipment having flexible cords up to 9m long.

Lighting systems

4.51 Lighting services, including lighting controls should comply with CIBSE 'Code for Lighting'; Guide LG2: 'Hospitals and Health Care Buildings'; and Guide F: 'Energy Efficiency in Buildings'. Also see SHTM 2015: 'Bedhead services' (to be replaced by SHTM 08-03).

4.52 In areas where VDUs are in use, lighting must be designed to comply with the guidance given in CIBSE Guide LG7: 'Office lighting'.

To achieve energy efficiency, lighting systems will be designed to:

- maximise use of natural daylight;
- avoid unnecessarily high levels of illumination;
- incorporate efficient luminaires, control gear and lamps;
- incorporate effective controls.

4.53 Lighting and the appearance of luminaires should be coordinated with architectural design. In particular collaboration is required to ensure that decorative finishes are compatible with the colour-rendering properties of lamps and that the spectral distribution of the light source is not adversely affected. See also 'Lighting and colour for hospital design – a report on an NHS funded research project' (Dalke et al, 2004). Refer to CIBSE 'Code for Lighting' for minimum recommended daylight factors.

4.54 Light switches should be provided in easily accessible positions for all uses of the facilities and at appropriate locations in corridors and general circulation areas. In areas with multiple luminaires, switches should permit the selection of luminaires appropriate to the area requiring illumination.

4.55 Where local circumstances permit, the provision of time switches or occupancy controls using infrared, acoustic or ultrasonic detectors should be encouraged. Additionally, low energy or ultra-low energy lighting should be considered as the primary lighting source.

4.56 Safety escape lighting must be provided on primary escape routes in accordance with the provisions of SHTM 2011 'Emergency Electrical Services' (to be replaced by SHTM 06-01), SBSA Technical handbooks, NHSScotland Firecode and the CIBSE Lighting Guide LG2 – 'Hospitals and Health Care Buildings'.

4.57 It is essential that fluorescent lighting in all areas where medicines or containers are processed, including stores, be derived from lamps having suitable colour-rendering characteristics.

Help call systems

4.58 Help call systems should comply with the requirements of SHTM 2015: 'Bedhead services' (to be replaced by SHTM 08-03).

4.59 Patient/staff call points should be provided in all spaces where a patient/attendee may be left alone temporarily – for example consulting, examination and treatment rooms and WCs.

4.60 Staff emergency call points are for a member of staff to call for assistance from another member of staff. They should be provided in all spaces where staff consult, examine and treat attendees/patients. Call facilities may also be provided on hand-held devices.

4.61 The help call systems may be hard-wired, secure wireless or secure radio systems.

4.62 Where considered necessary, staff crash call points may be specifically provided for members of staff to call the crash team. This is not required as a standard installation, and needs to be specified for individual rooms where the patient is at high risk of suffering a cardiac arrest.

4.63 A visual and audible indication of the operation of each system should be provided to give responding staff unambiguous identification of the call source, with a repeater unit in a suitable location.

Security

4.64 Measures should be incorporated in the design of all NHS buildings to help protect the safety of staff, patients and visitors and the security of the premises. Security systems will require a local risk assessment and crime prevention survey to be carried out for both daytime and out of hours. Systems will include swipe cards, smart cards, CCTV, panic alarms and other available technological solutions. The project team should discuss security with the local police crime prevention officer and the Board's nominated local security management specialist (LSMS) at an early stage in the design process. Also see SHTM 2015: 'Bedhead services' (to be replaced by SHTM 08-03).

The local fire officer and LSMS should be consulted concurrently to avoid the possibility of the demands of security and fire safety conflicting.

IT and telephone wiring systems

4.65 The IT and telephone infrastructure within the facility may be determined by existing systems within the building. However, where possible, a structured wiring system as described in Heath Guidance Note 'Structured cabling for IT systems' should be provided. This will permit a unified approach to the provision of cabling for:

- voice systems;
- data systems;
- imaging systems;
- alarm systems.

4.66 While this 'universal' cabling system is initially more expensive than separate voice and data systems, the long-term cost of ownership should prove beneficial.

4.67 In determining the nature of the IT system to be provided, it is necessary to identify:

- areas to be served;
- whether structured cabling will be used;
- what density of outlets is to be provided (not fewer than two per workstation);
- whether wiring will be on a 'flood' or 'as required' basis.

Bedhead services and entertainment systems

4.68 Allowance should be made for the introduction of television and radio systems to create a relaxing atmosphere in waiting areas, staff rest areas and in locations where it will be beneficial in masking sound transfer.

Other services will be provided in accordance with SHTM 2015: 'Bedhead services'.

Pneumatic tube transport systems

4.69 If a pneumatic tube system is to be installed, investigation should be undertaken to ensure that the system will meet the needs of the whole, or the required part, of the hospital site. Careful consideration should be given by the Client and end users regarding the siting and orientation of all 'stations'. For further guidance on the design of pneumatic tube systems, see SHTM 2009 'Pneumatic air tube transport systems'.

Lifts

4.70 For buildings other than single storey lifts will be required in order to comply with the requirements of the Disability Discrimination Act (DDA), which is to be replaced by the Equality Act in late 2010,and the Scottish Building Regulations. Separation between clinical, visitor and FM clean and dirty flows is important in vertical circulation. For further guidance on the design of lift installations, see SHTM 2024 and HBN 00-04: ‘Circulation and communication spaces’.

Controlled Drugs storage

4.71 Controlled Drugs cupboards within wards or clinical areas must be fitted with a red lamp indicating when the cupboard is unlocked. A repeater lamp should be sited outside the doorway of the room in which the cupboard is located. If appropriate a secondary repeater should be taken to a permanently staffed station.

4.72 The normal power supply for each cupboard must be backed up by an integral battery to cover the period between mains failure and the generator becoming available.

4.73 To assist in keeping their contents secure, controlled drugs cupboards will be fitted with a seven-lever mortice lock designed to meet BS 3621.

Sustainability and energy efficiency

4.74 The environment in which people live and work has a key influence on their health and the Scottish Government Health Directorates have required that all NHSScotland Bodies engaged in the procurement of both new-build and refurbishment of healthcare buildings must carry out independent environmental accreditation for projects. The Scottish Capital Investment Manual requires that all new builds above £2m obtain a BREEAM Healthcare (or equivalent) 'Excellent' rating and all refurbishments above £2m obtain a 'Very Good' rating. If the capital costs are less than £2m, projects should undertake a BREEAM pre-assessment to establish whether BREEAM Healthcare is a viable option.

Attaining the required BREEAM rating will ensure that environmental considerations are taken into account when designing new buildings or adapting existing facilities.

Areas that are considered as being of particular importance are:

- building orientation;
- natural daylighting;
- natural ventilation;
- night set-back;
- building regulations;

- heat recovery;
- water conservation;
- control systems; and
- control of solar gain.

4.75 Efforts should be made to maximise the use of natural lighting. Passive solar design (PSD) should be employed as far as possible to ensure that areas such as wards, recovery units and offices are located where they can benefit from natural daylight. Other areas including stores, WCs, utility rooms, etc. can be located towards the core of the facility.

4.76 Areas where glare may be a problem, for example where VDUs are routinely used, should be designed to avoid direct sunlight affecting monitors.

4.77 Where appropriate and possible, natural ventilation of rooms should be employed. Design should incorporate measures for minimising solar heat gains, which, if controlled properly, will avoid the need for mechanical ventilation. Measures to minimise the need for cooling may include locating temperature-sensitive accommodation away from south-facing fascias and shading windows.

4.78 Energy consuming systems including heating, ventilation, cooling and lighting should be controlled to minimise consumption. Consideration may be given to utilising the thermal properties of the building when the facility is not in use, for example at night or weekends.

4.79 Energy recovery systems should be employed when possible, and particularly on ventilation systems.

4.80 For further guidance on sustainability and energy efficiency, see HTM 07-02 ‘Encode: making energy work in healthcare’.

Commissioning and maintenance

4.81 On completion of an installation and prior to hand-over it is important that the engineering services and equipment are fully commissioned to validate their function and achievement of performance, including load testing any cooling systems that are installed.

4.82 The final acceptable performance details should be recorded and, together with full manufacturers’ details, made available to users and the maintenance organisation before the facilities are handed over.

4.83 When full operational conditions are achieved, once the facilities are operational, the overall performance should again be performance tested to check that the interface between systems has not been compromised and that the systems operate to the designed criteria.

4.84 Risk management, operational procedures and contingency plans should be fully evaluated with staff to ensure that, in the event of an emergency,

procedures can be put in place to maximise the safety of patients, staff and visitors. In order that staff continue to be fully conversant with what is required of them every opportunity should be taken to practise these procedures when it is safe to do so.

5. Schedules of Accommodation

Introduction

5.1 For all types of health building, it is important that building costs and revenue expenditure achieve best value consistent with acceptable standards.

5.2 In applying this guidance, the need for economy should be of prime concern. Where appropriate, space should be shared between similar activities taking place at different times. However, this solution should not be detrimental to the proper functioning of the spaces involved, nor to the needs of users.

Schedules of accommodation

5.3 Standard schedules of accommodation can be found on the Space for Health website http://www.spaceforhealth.nhs.uk/ under 'Spaces and Costs'. These have adopted a modular approach to the planning of appropriate units to enable project teams to 'pick and mix' those facilities that are required.

5.4 Using this modular approach, notional examples have been built up. The areas given are for guide purposes only and will alter depending on the design solution. The DH Departmental Cost Allowance Guides (DCAGs), for use in England, have been calculated using the example units as a cost base.

5.5 Percentage allowances covering planning, engineering and circulation are also included in the totals.

5.6 The schedules of accommodation show a notional whole department, which highlights the scope for sharing accommodation. The examples are not to be taken as ideal provision for any particular project.

The examples are as follows:

- 24-bed ward, 50% single-bed rooms;
- 24-bed ward, 80% single-bed rooms;
- 24-bed ward, 100% single-bed rooms.

5.7 The schedules of accommodation for HBN 04-01 may be updated from time to time. For the latest version always check the schedule of accommodation database on Space for Health (www.spaceforhealth.nhs.uk).

Dimensions and areas

5.8 The critical dimensions of an area are determined by the spatial requirements of any activities to be carried out within it. Space requirements for various generic

activities appear in HBN 00-02: ‘Sanitary spaces’, HBN 00-03: ‘Clinical and clinical support spaces’ and HBN 00-04: ‘Circulation and communication spaces’

5.9 Planning teams should have data available at the earliest stages of a project to enable the approximate assessment of sizes involved. Areas used for the purpose of establishing cost allowances are listed in the schedules of accommodation. These areas do not represent recommended sizes and should not be regarded as specific individual entitlements.

5.10 The efficient planning of a building may necessitate a variation to the areas given. For example, in the refurbishment/conversion of older property:

- rooms tend to be larger than the areas given;
- some rooms may be too small or in the wrong location for efficient use;
- circulation space tends to form a larger than normal proportion of the total area.

Circulation spaces

5.11 All internal corridors, small vertical ducts, spaces occupied by partitions/walls and other space for circulation, are costed in the DCAGs. Provision is also made for a 5% planning zone and 3% engineering zone adjacent to the external walls.

5.12 Circulation figures included in the DCAGs are those anticipated for new build facilities. Where constraints are encountered, for example in refurbishment or conversion of older types of property, this figure may increase.

Communication spaces

5.13 Hospital ‘streets’, staircases and lifts (linking spaces between ‘departments’) are not included in the schedules.

Figure 12 illustrates typical room, circulation and communication spaces.

Rules of measurement diagram

The **Net Floor Areas** of the rooms or spaces is defined by the green and blue shaded blocks. The departmental circulation is defined by light yellow shading.

The **Net Floor Area** of Department A comprises the sum of the **Net Floor Areas** of Rooms A1, A2, A4 and A5 and Space A3.

The **Gross Floor Area** of Department A is the area within the red line, and Department B within the green line. Plant areas are defined with grey shading.

Communication is circulation between departments. Count stair and lift areas at every level.

Figure 12: Diagram indicating communication, circulation and net floor areas.

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Appendix 1: Example bedroom layouts

Introduction

Single-bed room

The layout for a single-bed room in this Appendix is an example only. Its purpose is to illustrate how the different elements of the room; bed space, en-suite, clinical support zone, and family zone can be brought together. Other configurations are possible.

In the design of the example layout, the following issues have been considered:

- clear space around the bed (3.6m × 3.7m);
- position of the en-suite shower room;
- bedroom door width into the room;
- location of the clinical wash-hand basin;
- provision of storage and clinical support facilities
- provision of space for a fold down bed or reciner;
- sightlines from touch down base and corridor (at the doorway).

It is assumed that conventional bedhead services are used, although the use of ceiling or wall mounted pendant fittings is possible.

The en-suite - comprising WC, wash-basin and shower – is shown with a chamfered profile. For a rectangular layout, refer to HBN 00-02: ‘Sanitary spaces’.

The location of the en-suite can have a significant impact on the bedroom in terms of floor area, views to and from the bed, external views and support facilities such as the touchdown base. Four layouts, each showing a different location for the en-suite, have been included for illustrative purposes.

Multi-bed room

The layout for a multi-bed room is an example only. It shows a four bedded room with an assisted shower room and a second semi-ambulant WC, both being en-suite. Full details of these en-suite facilities are contained in HBN 00-02: ‘Sanitary spaces’.

An en-suite with fully opening wall cannot be used in this layout because of the loss of privacy in a multiple occupancy room. Each en-suite has an outward-opening single leaf door.

The two en-suites are located inboard, forming a recess at the entrance to the bed areas, providing some privacy to the bed areas.

Two clinical wash-hand basins are located centrally, one next to the room entrance and the other on the outside wall. There is room for one clinical workstation.

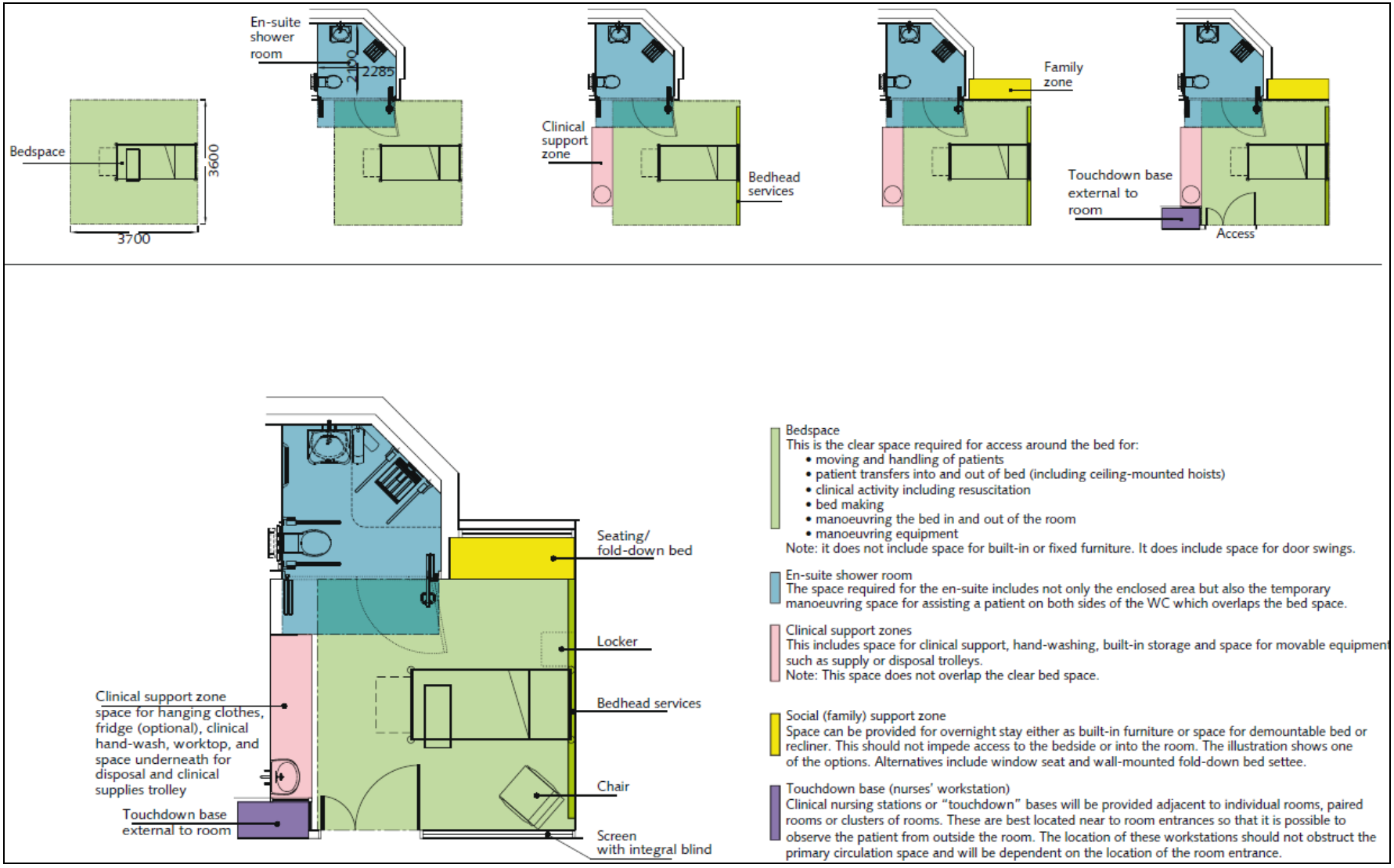


Figure 13: Example layout for a single-bed room

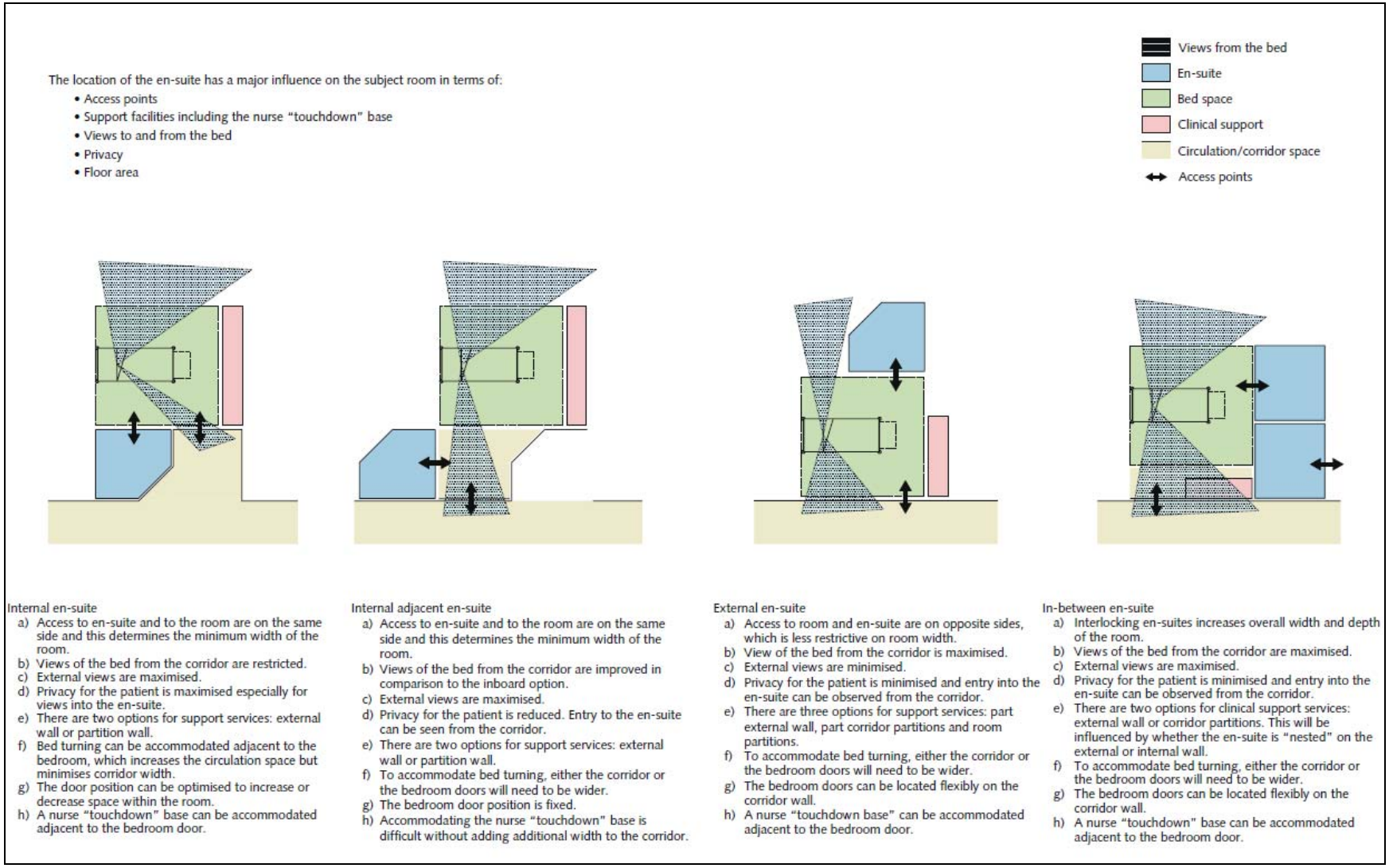
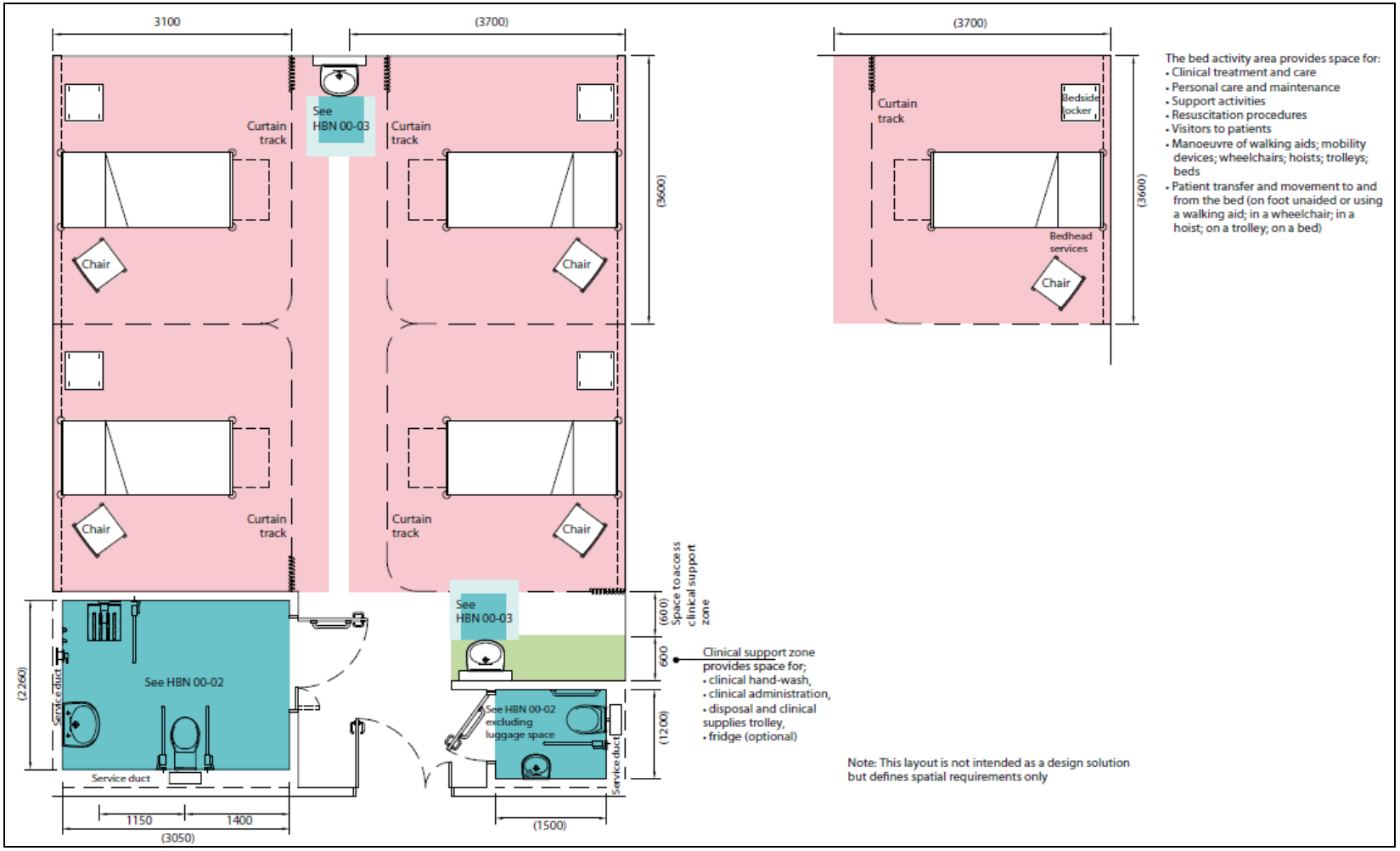


Figure 14: En-suite location



NOTE: Whilst the evidence base for the layout of this multi-bed room (as set out in 'Ward layouts with single rooms for space and flexibility') was based on optimum space standards, there has been a move towards providing minimum space standards, therefore some dimensions may have been marginally reduced.

Figure 15: Example layout for a four bedded room

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A33662215

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