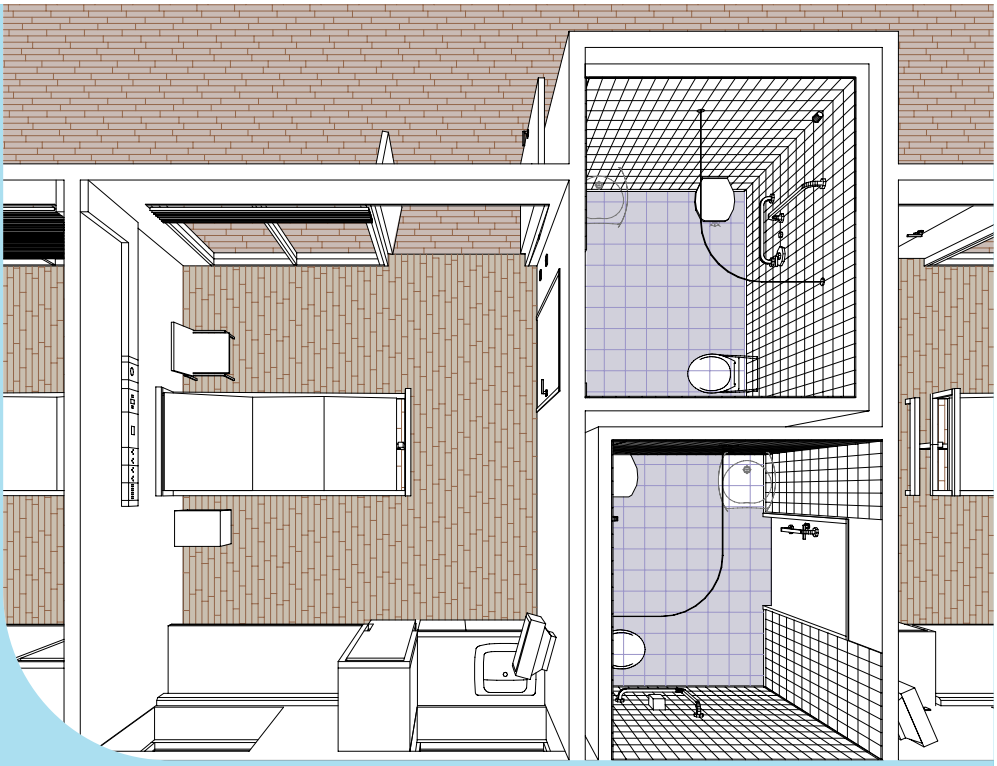
NHS

Ward layouts with single rooms and space for flexibility



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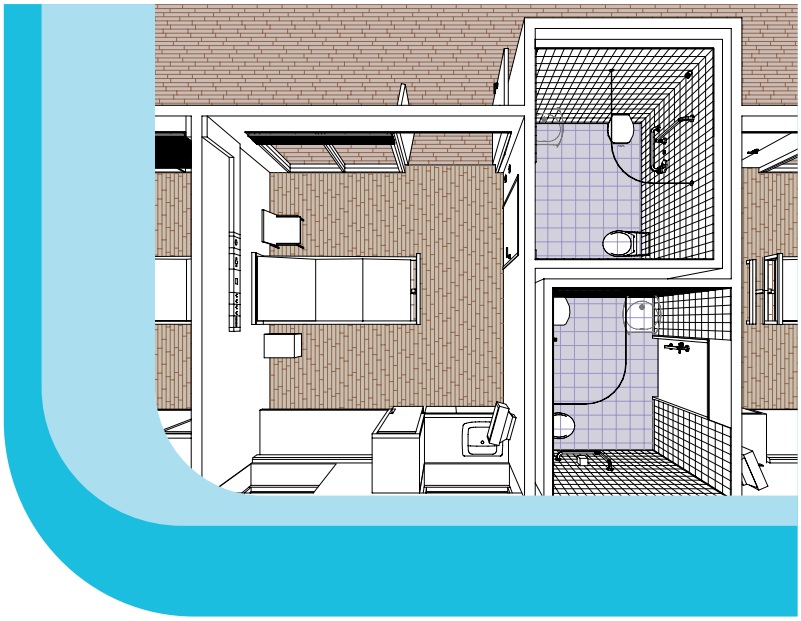

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Executive summary

This report is the result of a three-year programme of research by NHS Estates, which examines the benefits of single rooms in acute hospital accommodation and establishes the minimum space requirements around the hospital bed. This is not intended to form the basis of design briefing, but will underpin the updating of HBN 4 which is currently in progress.

The main issues addressed in the research are:

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

In addition, perhaps the most important item has been to seek an affordable solution that encompasses all of the above issues.

The research has been conducted through literature surveys, ergonomic studies using mock-up bed spaces, and the production of a series of exemplar ward layouts which have been costed against the current Departmental Cost Allowance Guides (DCAGs) to assess affordability.

The key findings are as follows:

1. Single rooms provide considerable benefits for patients, clinicians and NHS trusts, which include contributing to the control of infection, reducing the risk of adverse clinical errors, allowing privacy, and providing flexibility with the potential for increased capacity.
2. With the provision of single room accommodation in acute hospitals currently at less than 20%, there is a need to significantly increase numbers of single rooms.
3. There is a need to provide a minimum clear space of 3600 mm x 3700 mm around in-patient beds in both single and 4-bed rooms. This space is adequate to accommodate most activities at the bedside, including the use of equipment and the manoeuvring of wheelchairs and mobile hoists.
4. Through the application of the minimum clear space of 3600 mm x 3700 mm around each bed to a series of 32-bed ward layouts, it has been shown that this space can be accommodated within current space allowances for 50% single/50% 4-bed rooms.
5. In addition, with a minor modification to the schedule of accommodation, it has been shown that 100% single rooms can be accommodated within the same area as 50% single/50% 4-bed rooms.
6. The cost per bed of 100% single rooms accommodated within the 50% single room space allowance is negligibly higher. It may be possible to offset this cost by increased capacity and taking a new approach to service planning and delivery.
7. There are indications that there may be cost advantages to the provision of single rooms through reduced costs from the containment of HCAI, increased flexibility, shorter patient stays, easier access for cleaning, and compliance with health and safety and other statutory requirements.

Contents

Methodology for the research

This document brings together a number of studies carried out by NHS Estates with assistance from several organisations.

ACHIEVING MORE SINGLE ROOMS AND MORE SPACE

To establish the affordability of providing more single rooms and more space, MAAP Architects have produced a series of theoretical ward layouts based on the current space allowances in the Schedules of Accommodation (V1.0 April 2003 – HBN 4).

SINGLE ROOMS

A study on single room accommodation, including a literature review, has been carried out by the School of Architectural Studies, The University of Sheffield School of Architecture; MAAP Architects; and HERC Associates. This is the basis for the information in Chapter 3. It also draws on the report of an NHS Estates workshop, 'Exploring the patient environment' (2003), which includes a presentation from Professor Roger Ulrich, Director of the Centre for Health Systems and Design at Texas A&M University in the USA. In addition, a summary of an interim report by the University of Sheffield School of Architecture on the benefits of single rooms' provision and their impact on staff and patient health outcomes within the NHS in England is provided in Appendix 3.

SPACE AROUND THE BED

To establish a clear evidence base for the minimum space required around the bed, significant research has been undertaken.

Aware that, over time, the dimensions for space around the bed varied over the HBN series, in 2000 NHS Estates commissioned a study by MAAP Architects to compare the differences in each document and to try to establish an optimum space standard – this unpublished report was the starting point for the current research.

Over the past two years, two further studies have been carried out by NHS Estates to study bedside manoeuvring and transfer space. The first was at Leeds General Infirmary and the second with Robert Feeney Associates (RFA, 2004), an ergonomics and design consultancy, at Loughborough University where NHS Estates has located its mock-up bed space. These studies provided a physical framework for the ergonomic assessment of the space required.

To inform the research described above, three other studies have particular relevance:

a. a study of the minimum space requirements for staff using appropriate equipment to transfer patients in and out of beds, to use sanitary facilities, and to circulate freely within a residential care facility. The results of this study were published by Arjo Ltd in 1996 and entitled 'Guidebook for architects and planners – nursing homes and an elderly care facilities';

b. carried out in the Netherlands, a study investigated experimentally the workspace required around bigger beds in hospital wards. The results were published by the STAGG study group in the report 'Area around bigger beds – floor areas in relation to costs' (1992);

c. an Australian study carried out as part of the Victorian Work Cover Authority's health and age to care project resulted in 'Guidelines for the Design of Health and Aged Care Facilities'. The aim of this study was to reduce the incidence and severity of back injuries in workplaces.

Status of this document

This document is not intended to form the basis of design briefing. It contains the evidence base supporting the provision of sufficient space around the bed and more single rooms. From January to 31 March 2005 there was an opportunity for readers to comment on the contents of the document. Thank you to those who have taken the trouble to comment. Where appropriate, amendments have been made to the document. Other comments will be taken into account for the publication of the new document HBN 4 – 'Adult acute in-patient accommodation' which is currently in preparation.

It is important to note that the diagrams throughout this document are provided to support the evidence. They are not design solutions and should not be used as such.

1 Introduction to the study

This document reports on research carried out by NHS Estates looking at the benefits of single rooms in acute hospital accommodation. It establishes that there are considerable benefits in the use of single rooms, including the control of healthcare associated infection (HCAI).

Along with the work on single rooms, further research has been carried out to establish how much space is needed around the hospital bed for various tasks. The result has shown that the provision of a minimum clear space around the bed is essential in achieving an efficient and effective environment that complies with current legislation.

There is a common assumption that providing more single rooms and a minimum clear space around the bed will have a huge impact on affordability of healthcare facilities. The study has shown, through several different ward configurations, that 50% single/ 50% 4-bed rooms can be achieved with sufficient space within the current schedule of accommodation (V1.0 April 2003 – HBN 4 – 'In-patient accommodation: options for choice'). There are also interesting results when looking at 100% ward layouts.

No matter how convincing the evidence provided in this document, which supports the provision of single rooms and sufficient space around the bed, affordability is the key issue that needs to be addressed. For this reason the document is arranged to focus first on how to achieve more single rooms and sufficient space around the bed within the current space allowances. The evidence that supports the use of single rooms and sufficient space is provided in subsequent chapters. There are several appendices containing supplementary information.

The rest of this chapter outlines the background that has driven this research.

DRIVERS FOR CHANGE

In the past 50 years, extensive research has been carried out into the design of in-patient accommodation. A primary motivation has been to find the most cost-effective layout, as in-patient wards have represented the largest and most costly volume of space in a hospital. The pressure to control costs has led to an emphasis on minimum space standards, efficient circulation patterns and the standardisation of construction. The main drivers for change are the need to control HCAI along with meeting patient expectations and legislative requirements.

Reduction of healthcare associated infection

The recent report by the Chief Medical Officer, 'Winning Ways: Working together to reduce Healthcare Associated Infection in England' (DH, December 2003) sets out for the NHS a clear direction on the action necessary to reduce the relatively high levels of certain healthcare associated infections (HCAIs) and to curb the proliferation of antibiotic-resistant organisms. One of the strategies adopted to control HCAI is to isolate patients in "side" or single rooms. The report goes on to describe the success in the Netherlands of controlling MRSA:

> "The Dutch strategy has been based on a policy of 'search and destroy'. This involves screening patients for MRSA and isolating those found to be positive (colonised or infected). The Dutch have been able to set aside sufficient numbers of single rooms in modern hospitals and maintain a high healthcare worker to patient ratio. As a result, this approach has been remarkably successful. The proportion of *Staphylococcus aureus* bloodstream isolates resistant to methicillin amongst hospital patients in the Netherlands is 1%."

In planning the new Erasmus University Hospital in Rotterdam a policy has been adopted of "single rooms only" as they are perceived to have several advantages for patients, including the potentially reduced risk of healthcare associated infections (Behrendt, 2003).

HCAI is costly. A recent study was carried out in Germany to determine the added costs for one year of barrier precautions, isolation, and decontamination for MRSA carriers on a surgical ward in a large university hospital. Total avoidable costs amounted to approximately 142,794 Euros per year. It should be noted that a large proportion of this cost would not be realisable in England as regulations are different from Germany. The most expensive single measure was blocked beds in multi-bed rooms. It was concluded that building an adequate number of single-bed rooms

should help prevent spread and would greatly lower the added costs of infection (Herr et al, 2003).

Patient expectations

The NHS Plan (2000) set out a major programme including improving the patient environment in the following ways:

- eliminating mixed sex accommodation;
- increasing privacy and dignity for patients and their families;
- significantly increasing the proportion of single-bed rooms.

The programme also implied the need for:

- improved ward layouts with increased space around the bed;
- accommodating increasing patient acuity and higher dependency levels in nursing units.

Photographer: Lisa Payne

More recently, through the Patient and Public Involvement initiative, patients have increasingly more say about how healthcare is provided in their communities. In addition, 'Improvement, Expansion and Reform: The Next 3 Years – Priorities and Planning Framework 2003–2006' (DH, 2002) and 'National Standards, Local Action: Health and Social Care Standards and Planning Framework 2005/06–2007/08' (DH, 2004) set out targets relating to patient choice, safety, quality, providing a comfortable environment, and improving the overall patient experience.

A key element that has to be addressed in all patient accommodation is that of privacy and dignity. 'The Essence of Care' (DH, 2001) identified several benchmarks of good practice, focusing on the issue of respect for the individual so that:

- patients feel that they matter all of the time;
- patients experience care in an environment that actively encompasses individual values, beliefs and personal relationships;
- patients' personal space is actively promoted by all staff;
- communication between patients takes place in a manner that respects their individuality;
- the care of patients actively promotes their privacy and dignity and respects their modesty; and
- patients can access an area that safely provides privacy.

Legislation

The following Act and Regulations have an impact on the design of facilities. In particular, there is a need to provide sufficient space for access and use of mobility aids and moving and handling equipment.

Manual Handling Operations Regulations 1992

The protection of the health and welfare of the workforce by observance of these Regulations also meets the requirements of the Health and Safety at Work etc Act (1974). The Royal College of Nursing (RCN) has produced a series of publications on manual handling based on these Regulations and EC Directives (RCN 1999a, b, c).

Disability Discrimination Act 1995, which should be fully implemented by 2004

The requirements of the Act have implications for current and future planning of facilities. These include access for all disabled patients, visitors and staff, along with provision for all people with sensory difficulties, who should be afforded the same level of privacy as the rest of the hearing and sighted population.

PLANNING FOR THE FUTURE

We are now planning facilities for the future. In the 2001 Wanless Report, 'Securing our Future Health: Taking a Long-Term View', the most significant conclusion about the future design of in-patient accommodation was:

> "The review expects that the number of patients preferring single rooms will increase over the next twenty years and will assume that the majority of beds in newly-built hospitals will be in single en-suite rooms." (paragraph 8.73, p 123)

The challenge now is to ensure that new facilities are planned with a high proportion of single rooms and sufficient space configured in a way that enables best practice from both the patient and the staff perspective.

2 Achieving more single rooms and sufficient space around the bed

INTRODUCTION

This chapter explores the viability of providing a clear minimum space around the bed, as defined in Chapter 4, to a 32-bed nursing unit with 50% single/50% 4-bed rooms. It also looks at the possibilities for 100% single rooms.

The study is in three parts:

1. What impact does the application of a clear minimum space around the bed have on single and 4-bed rooms?
2. Applying a clear minimum space around the bed to a 32-bed unit with 50% single/50% 4-bed rooms.
3. Can 100% single rooms be achieved within the same space allowance as 50% single/50% 4-bed rooms?

CRITERIA USED IN THE STUDY

In Chapter 4 it is established that most activities carried out at the bedside can be accommodated within the dimensions 3600 mm (width) x 3700 mm (depth), representing the clear space around the bed and not including space for storage, clinical hand-washing, preparation and worktops.

The current space allowance in the schedule of accommodation (V1.0 April 2003 – HBN 4) has been used as the benchmark to establish any additional space requirements that might have an effect on affordability of schemes.

WHAT IMPACT DOES THE APPLICATION OF A CLEAR MINIMUM SPACE AROUND THE BED HAVE ON SINGLE AND 4-BED ROOMS?

The first task is to examine the impact that introducing a clear space of 3600 mm x 3700 mm around the bed has on both single and 4-bed rooms compared with the current space allowance as shown in Table 1.

Table 1 Space allowances for the single room and 4-bed room from the schedules of accommodation V1.0 April 2003 – HBN 4

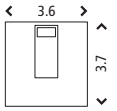
Area	Space allowance (m^2)
Single bedroom	16.0
Family and clinical support area	3.0
Ensuite assisted shower, WC & wash	4.5
Total single room	23.5
4-bed room	58.0
Clinical support area	3.0
En-suite assisted shower & wash	4.5
En-suite assisted WC/wash	4.5
Total 4-bed room	70.0

Photographer: Lisa Payne

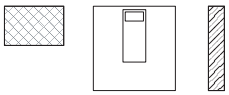
Single rooms

Diagrams 1–4 illustrate how a single room can be configured to include the clear bed space along with ensuite WC/shower, clinical workstation, storage, and an overnight stay facility for family.

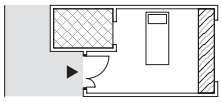
The diagrams show that the current space allowance for the single room of 23.5 m^2 provides sufficient space to encompass the 3600 mm x 3700 mm clear bed space.



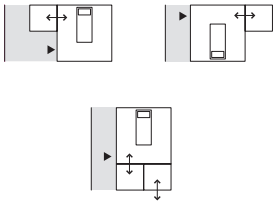
1. Clear space around the bed as defined in Chapter 4



2. Clear space around the bed + en-suite WC/hand-wash basin/shower (4.5 m^2) and clinical workstation, storage and overnight stay facility (up to 3 m^2)



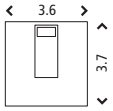
3. The single room – 23.5 m^2 in a typical layout includes allowance for planning and circulation within the room



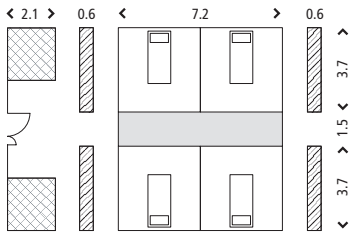
4. Alternative en-suite positions are possible

The 4-bed rooms

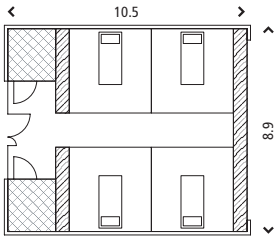
When applying the 3600 mm x 3700 mm clear bed space to the 4-bed room there could be a major impact on affordability. Diagrams 5–7 illustrate how the space around the bed requirements potentially increase the size of a 4-bed room by over 20 m^2.



5. Clear space around the bed

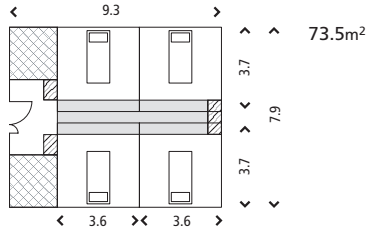


6. Bed spaces added to form 4-bed room
   +
   clinical support added for each bed
   +
   two en-suites (as HBN 4)
   +
   circulation added between ends of bed for access

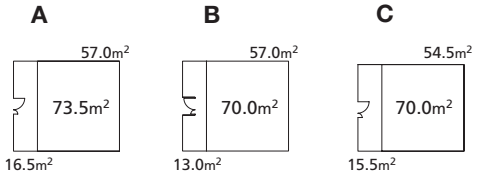


7. The 4-bed room = 93.5 m^2
   This exceeds the HBN 4 space allowance by over 20 m^2.
   This 4-bed room is almost the size of 4 single rooms @ 23.5 m^2 each.
   It is not the most effective use of space

By reorganising the space and making a small compromise on circulation space between the ends of the beds, diagrams 8–10 show that the clear space around the bed can be achieved within the current schedule of accommodation. **NB** Dimensions are between walls, not between gridlines.



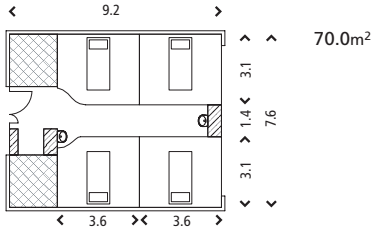
8. This layout shows how the recommended space allowance can be distributed to maximise space around the bed.
   Access circulation overlaps clear bed space to establish curtain position and achieve saving.
   Clear space either side of bed is maintained.
   Clinical work area is split by circulation.
   An 8.1 m structural grid would be required



9A. Space around the bed is achieved but the current HBN 4 area allowance is exceeded.

9B. In-setting the doors will save space in the room but compromises access to ensuites and clinical work areas.

9C. Reducing width of the room by overlapping clear space with access circulation achieves recommended area.



10. This 4-bed layout:
- maintains clear space around each bed;
- provides two en-suite WC/hand-wash basin/shower rooms within the unit;
- provides clinical support areas, including hand-wash at each end of the room;
- fits with the 7.8 m structural grid that is compatible with single rooms;
- offset door opening provides more efficient planning of clinical work area;
- the cubicle size is 3.6 m x 3.1 m. The remainder is shared circulation between screens.

APPLYING A CLEAR MINIMUM SPACE AROUND THE BED TO A 32-BED UNIT WITH 50% SINGLE/ 50% 4-BED ROOMS

Having established that the clear bed space 3600 mm x 3700 mm can be applied to both single and 4-bed rooms within the current space allowances, it is important to take a further step to prove that the space allowances can still be achieved within a whole nursing unit. Table 2 shows the current space allowances for a 32-bed unit with 50% single and 50% 4-bed rooms*.

Table 2 Schedule of accommodation for a 32-bed unit with 50% single/50% 4-bed rooms (V1.0 April 2003 – HBN 4)

32-bed unit with 50% single rooms	**Area m²**
Bed rooms	656.00
Support area	225.00
Total	**881.00**
Circulation including planning & engineering @ 34.3% allowance	302.50
Total gross area	**1183.50**
Total area per bed	**37.00**

*NB For consistency, "essential complementary/shared accommodation" or "optional accommodation" listed in the schedules of accommodation (SOAs) have not been factored into this exercise.
For brevity, the SOAs combine circulation, engineering and planning allowances. The tables are provided for comparative purposes only.

The nursing unit

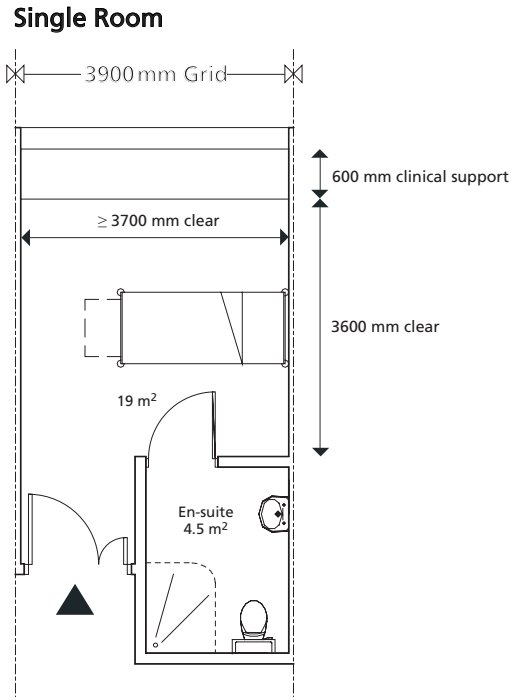
The 32-bed nursing unit (ward) is configured as:

- 4 x 4-bed rooms with two en-suites each;
- 16 x 1-bed rooms with en-suite;
- Patient support facilities;
- Utilities;
- Office and admin services;
- Planning – area allowance @ 5% of net area;
- Engineering – area allowance @ 3% of net area;
- Circulation* – area allowance @ 25% of net area.

*NB Actual circulation will vary according to layout and room configuration.

Figures 1 and 2 illustrate a single room with en-suite and an exemplar 4-bed room respectively, each configured to reflect the floor areas in the schedules of accommodation.

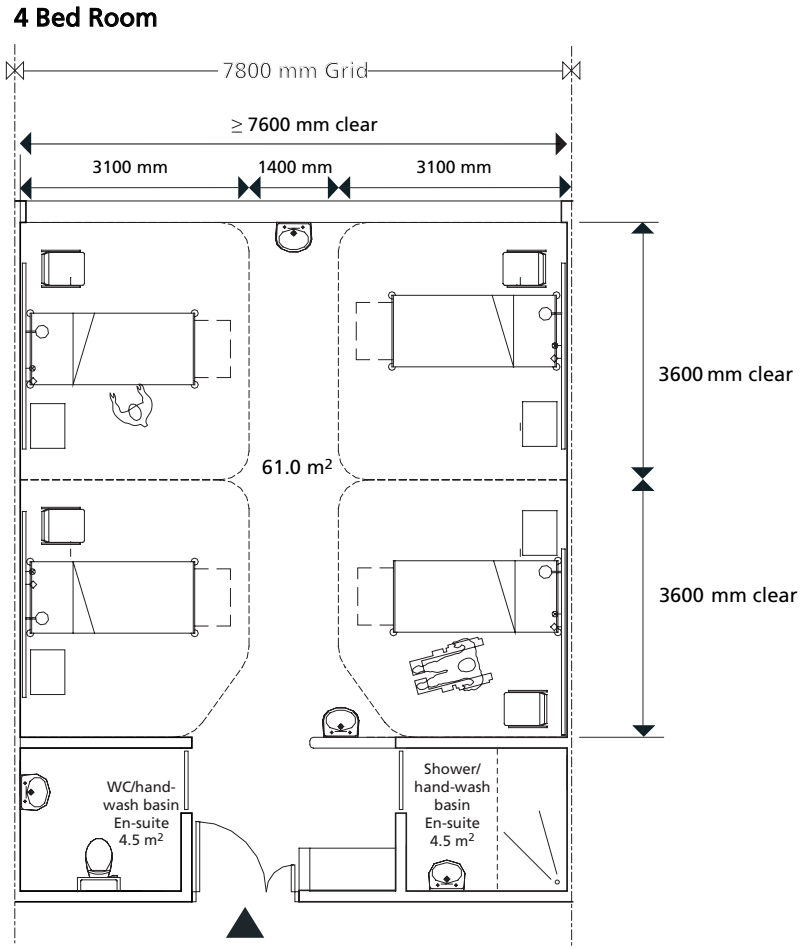
Figure 1 The single room with sufficient space around the bed and compliant with the space allowance in the current schedule of accommodation.



Bedroom, Clinical Support and En-suite WC/Shower/ hand-wash basin

Total Area = 23.5 m²

Figure 2 The 4-bed room adapted to encompass 3600 mm x 3700 mm clear bed space and compliant with the current schedules of accommodation



Bedroom, Clinical Support and two En-suites

Total Area = 70.0 m²

NB **It is important to note that these diagrams are not design solutions.** The areas for the bed room and en-suite will vary according to layout. The location and position of the en-suite can significantly affect their combined total area. The location of the door will also vary the total room area. The number and position of clinical hand-wash basins is a matter for local decision.

Layouts for a 32-bed unit with 50% single/50% 4-bed rooms

The final stage of the exercise is to show that the 32-bed unit with 50% single/50% 4-bed rooms can be designed with a clear bed space of 3600 mm x 3700 mm within the current space allowances.

In order to obtain robust data, more than one version of a 32-bed ward layout was attempted. The "T" shaped ward layout or one of its variants (based on a triangular layout) proved to be the most efficient arrangement, and data from these is used for comparative purposes. Layouts were configured using "internal" and "external" en-suites in conjunction with the single rooms. Two "internal" en-suites were included within the 4-bed wards. See ward layouts A, B, C, D, and E.

The diagrams show that, using a 7800 mm grid, it is possible to plan a 32-bed ward (50% single rooms) to the current schedules of accommodation (V1.0 April 2003 – HBN 4); that is, all 50% single room layouts can be achieved within the 1183.5 m^2 area allowance. See Table 3.

By placing projecting en-suites on the external wall, significant area savings of up to approximately 1.85 m^2 per bed may be possible. This finding was fairly constant across all the 50% single room layouts.

NB Support areas given on drawings include sitting/dining areas.

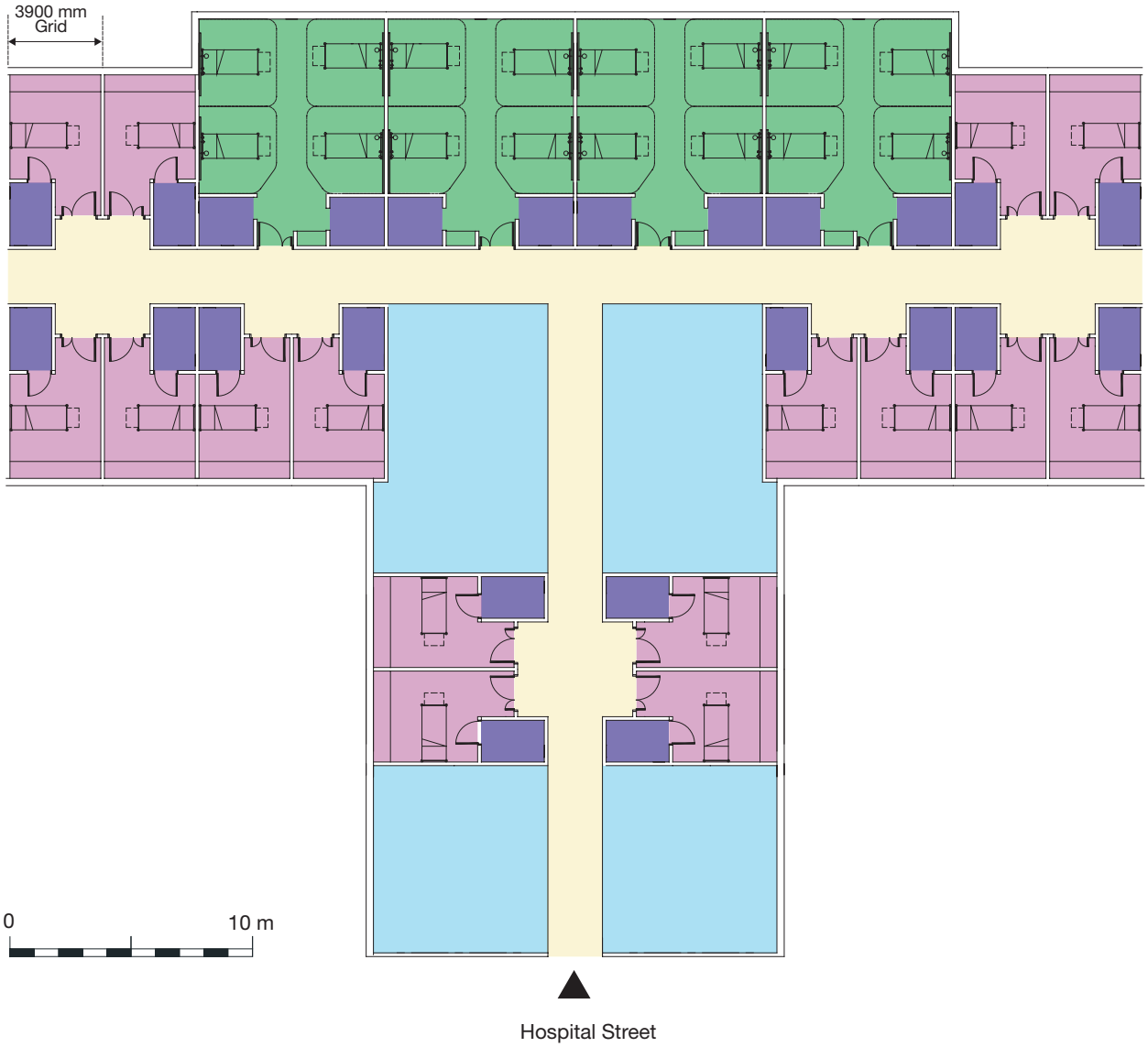
Maximum distance allowed from bed to hospital street = 60.0 m.

Table 3 Ward layouts (50% single rooms) based on 7800 mm structural grid

Layout type	A	B	C	D	E	SoA HBN 4 V.1/04/03
Total number of beds	32	32	32	32	32	32
Single beds (% of total)	16 (50%)	16 (50%)	16 (50%)	16 (50%)	16 (50%)	16 (50%)
En-suite position	internal	internal	external	internal	external	–
Area analysis (m^2)						
Bed area	656	656	656	656	656	656
Support area	224	200	208	206	204	205
Dining/sitting area	20	20	20	20	20	20
Net area	**900**	**876**	**884**	**882**	**880**	**881**
Circulation (incl. engineering and planning)	274	300	271	267	213	303
Gross area (GIFA)	**1,174**	**1,176**	**1,155**	**1,149**	**1,093**	**1,184**
Area per bed analysis (m^2)						
Bed area per bed	20.50	20.50	20.50	20.50	20.50	20.50
Support area per bed	7.00	6.25	6.50	6.44	6.38	6.41
Dining/sitting area per bed	0.63	0.63	0.63	0.63	0.63	0.63
Net area per bed	**28.13**	**27.38**	**27.63**	**27.56**	**27.50**	**27.53**
Circulation per bed	8.56	9.38	8.47	8.34	6.66	9.45
Gross area (GIFA) per bed	**36.69**	**36.75**	**36.09**	**35.91**	**34.16**	**36.98**
Ratio analysis						
% circulation/net area	30%	34%	31%	30%	24%	34%
Net to Gross Ratio	1.30	1.34	1.31	1.30	1.24	1.34
% Bed Area of Total	56%	56%	57%	57%	60%	55%
% Support Area of Total	21%	19%	20%	20%	20%	19%
% Circulation of Total	23%	26%	23%	23%	19%	26%
% Circulation of Sub-Total	30%	34%	31%	30%	24%	34%
Max Distance from Hosp Street (m)	**55.0**	**45.5**	**46.0**	**52.0**	**54.0**	**n/a**

Type A Ward Layout

NB **This is not a design solution. It is for comparative purposes only**



Gross internal floor area (GIFA) = 1,174 m²

36.69 m² per bed

50% single beds
50% 4 x 4 bed wards

274 m² circulation = 30.44%
244 m² support
656 m² beds

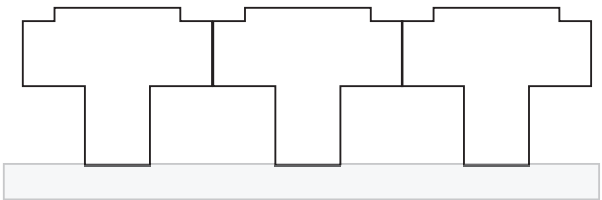
Single Bedrooms

4 Bed Ward

En-suite Bathrooms

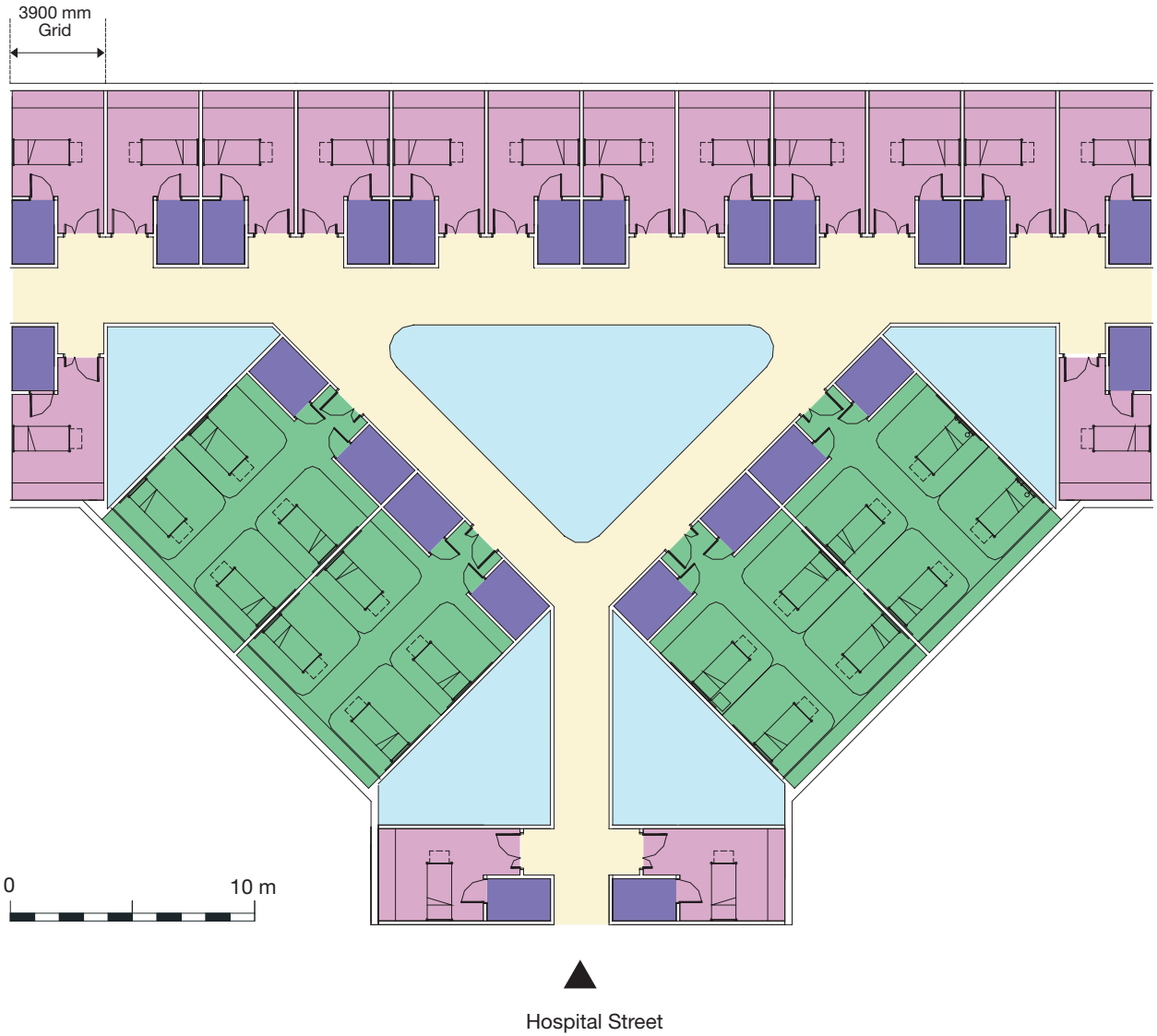
Support Areas

Circulation



Type B Ward Layout

NB **This is not a design solution. It is for comparative purposes only**



Gross internal floor area (GIFA) = 1,176 m²

36.75 m² per bed

50% single beds
50% 4 x 4 bed wards

300 m² circulation = 34.25%
220 m² support
656 m² beds

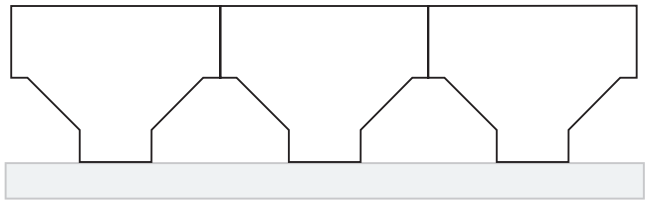
Single Bedrooms

4 Bed Ward

En-suite Bathrooms

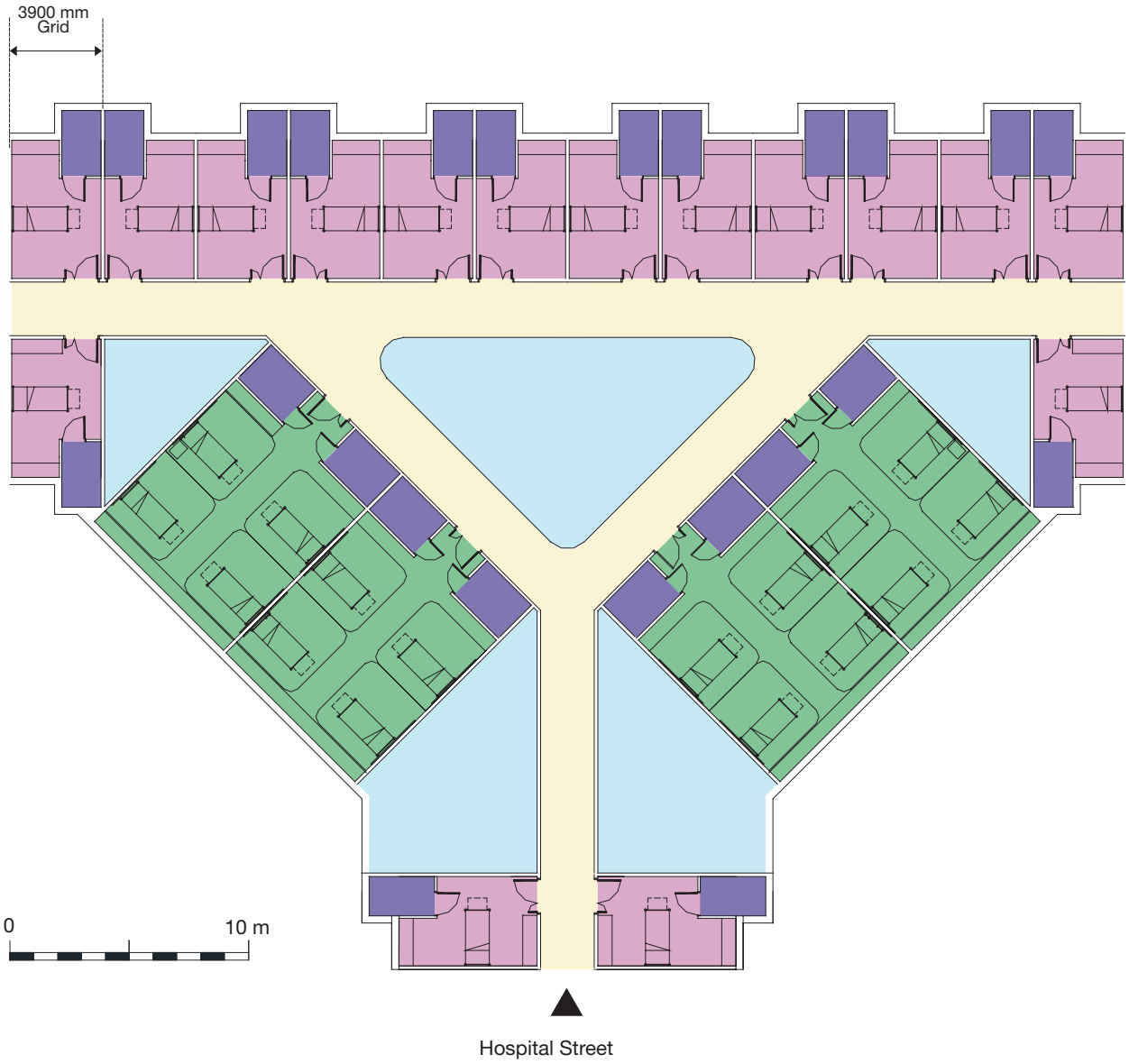
Support Areas

Circulation



Type C Ward Layout

NB **This is not a design solution. It is for comparative purposes only**



Gross internal floor area (GIFA) = 1,155 m²

36.09 m² per bed

50% single beds
50% 4 x 4 bed wards

271 m² circulation = 30.66%
228 m² support
656 m² beds

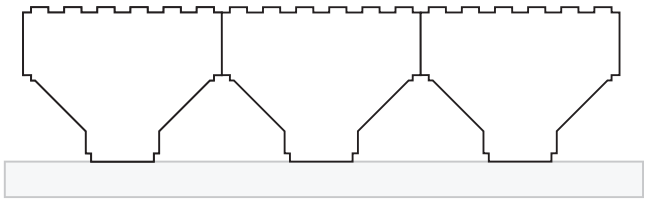
Single Bedrooms

4 Bed Ward

En-suite Bathrooms

Support Areas

Circulation



Type D Ward Layout

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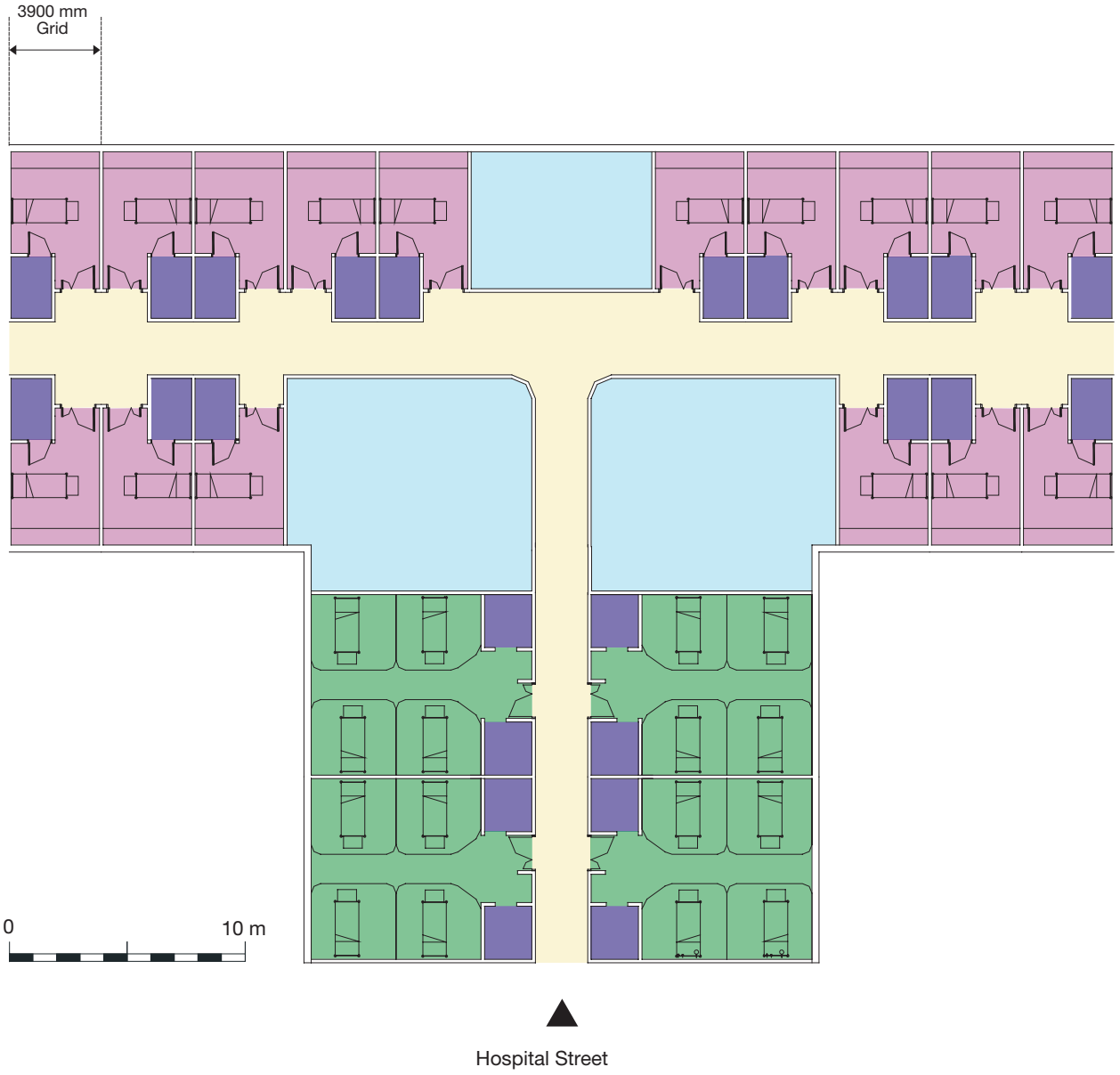


Gross internal floor area (GIFA) = 1,149 m²

35.91 m² per bed

50% single beds
50% 4 x 4 bed wards

267 m² circulation = 30.27%
226 m² support
656 m² beds

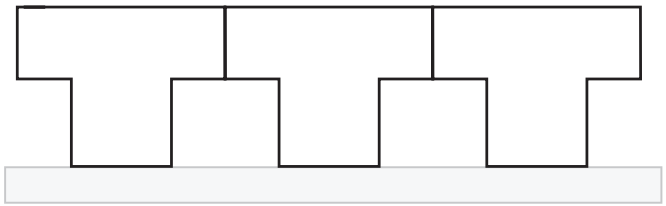
Single Bedrooms

4 Bed Ward

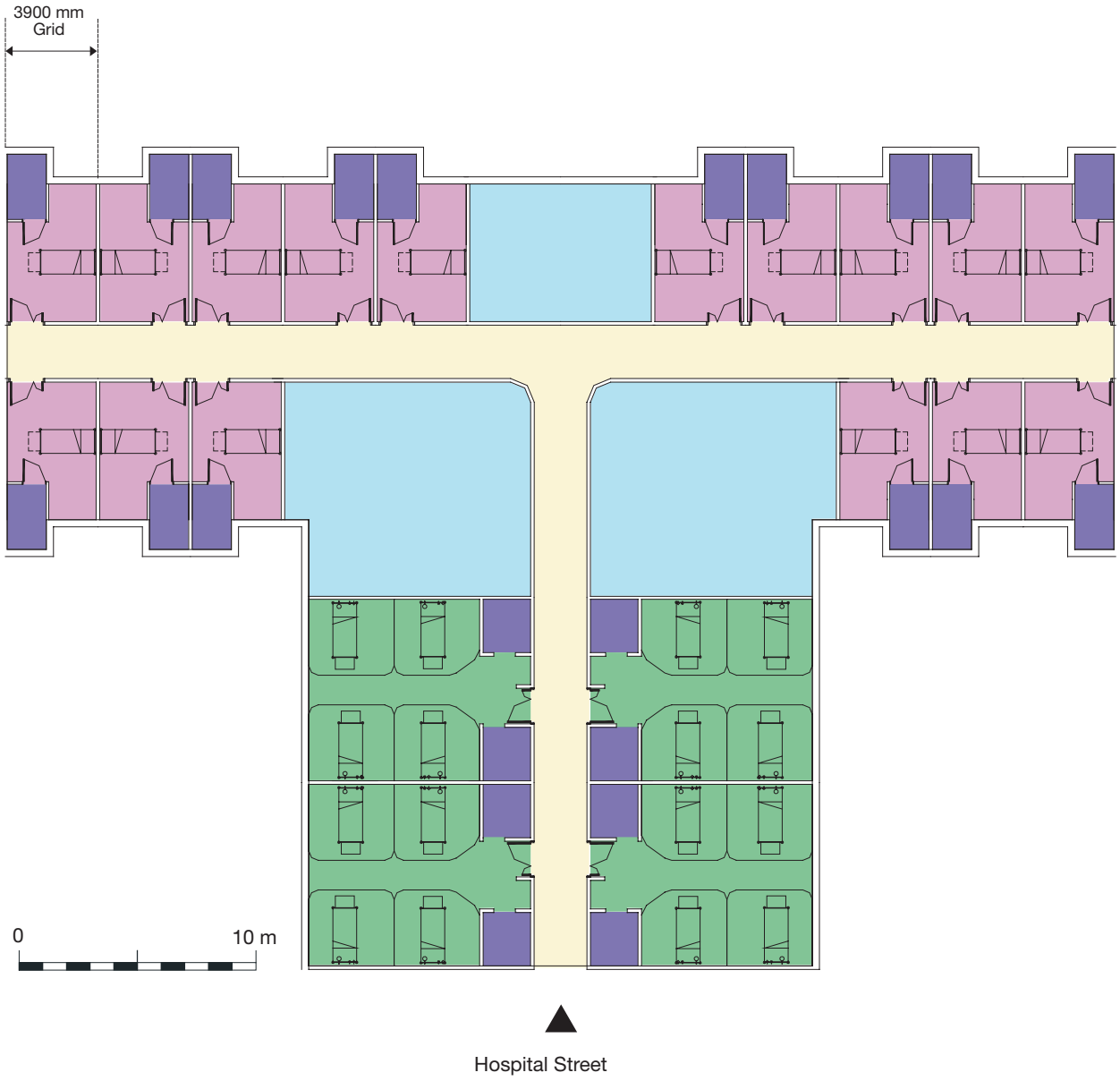
En-suite Bathrooms

Support Areas

Circulation



Type E Ward Layout NB **This is not a design solution. It is for comparative purposes only**



Gross internal floor area (GIFA) = 1,093 m²

34.16 m² per bed

50% single beds
50% 4 x 4 bed wards

213 m² circulation = 24.20%
224 m² support
656 m² beds

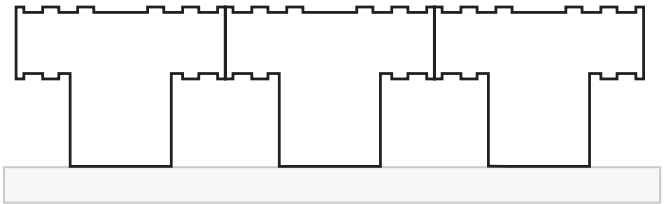
Single Bedrooms

4 Bed Ward

En-suite Bathrooms

Support Areas

Circulation



CAN 100% SINGLE ROOMS BE ACHIEVED WITHIN THE SAME SPACE ALLOWANCE AS 50% SINGLE/50% 4-BED ROOMS?

The results of this comparative study feed into a further element of research, which considers whether 100% single rooms can be achieved (with the clear space around the bed of 3600 mm x 3700 mm) within the same space allowance as 50% single/50% 4-bed rooms.

To aid the exercise the space allowance (HBN 4 V.1/04/03 32-bed unit 100% single rooms) was modified to omit 2 x quiet sitting space and 1 x consulting/examination room (a total of 35.5 m^2 + circulation). It was considered that single rooms can provide adequate privacy to cover these activities.

See ward layouts F, G, H, I, J and K. Table 4 gives the dimensions for each layout which can be compared with current space standards (HBN 4 V.1/04/03) for 100% single rooms, 100% single rooms modified to omit quiet sitting spaces and consulting/examination rooms, and 50% single/50% 4-bed rooms.

The comparative table of areas shows that the target areas can be met only where external en-suites are used in conjunction with the 100% single rooms (types G, J and K).

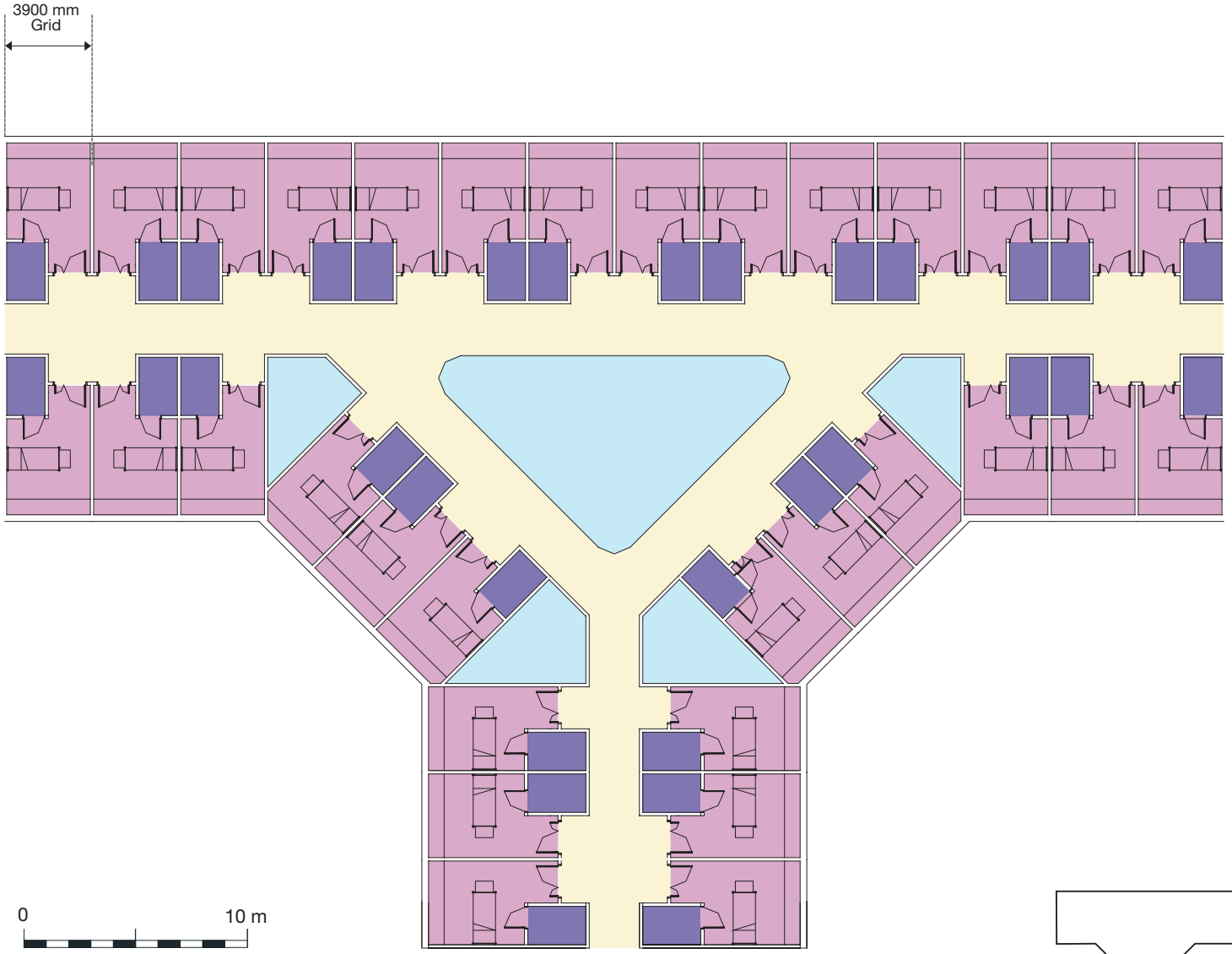
Two 100% single room layouts (types G and K) could **also** be planned within the area allowance for 50% single rooms and can be achieved within the 34.3% circulation allowance. However, the target area of 1183.5 m^2 (equal to 50% single rooms) can only be achieved by placing the en-suite bathrooms on the external wall, which produces a circulation rate significantly lower than those with internal en-suites.

Table 4 Ward layouts (100% single rooms) based on 7800 mm structural grid

Layout type	F	G	H	I	J	K	HBN 4 V.1/04/03 100% Singles	HBN 4 V.1/04/03 100% Singles (Modified)	HBN 4 V.1/04/03 50% Singles
Total number of beds	32	32	32	32	32	32	32	32	32
En-suite position	internal	external	internal	internal	external	external	–	–	–
Area analysis (m^2)									
Bed area	752	752	752	752	752	752	752	752	656
Support area	150	144	148	144	150	150	166	151	205
Dining/sitting area	–	–	–	–	–	–	20	–	20
Net area	**902**	**896**	**900**	**896**	**902**	**902**	**938**	**903**	**881**
Circulation (incl. engineering)	381	248	331	334	297	246	323	311	303
Gross area (GIFA)	**1,283**	**1,144**	**1,231**	**1,230**	**1,199**	**1,148**	**1,261**	**1,213**	**1,184**
Area per bed analysis (m^2)									
Bed area per bed	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	20.50
Support area per bed	4.69	4.50	4.63	4.50	4.69	4.69	5.19	4.70	6.41
Dining/sitting area per bed	–	–	–	–	–	–	0.63	–	0.63
Net area per bed	**28.19**	**28.00**	**28.13**	**28.00**	**28.19**	**28.19**	**29.31**	**28.20**	**27.53**
Circulation per bed	11.91	7.75	10.34	10.44	9.28	7.69	10.08	9.70	9.45
Gross area (GIFA) per bed	**40.09**	**35.75**	**38.47**	**38.44**	**37.47**	**35.88**	**39.39**	**37.91**	**36.98**
Ratio analysis									
% circulation/net area	42%	28%	37%	37%	33%	27%	34%	34%	34%
Net to Gross Ratio (x)	1.42	1.28	1.37	1.37	1.33	1.27	1.34	1.34	1.34
% Bed Area of Total	59%	66%	61%	61%	63%	66%	60%	62%	55%
% Support Area of Total	12%	13%	12%	12%	13%	13%	15%	12%	19%
% Circulation of Total	30%	22%	27%	27%	25%	21%	26%	26%	26%
% Circulation of Sub-Total	42%	28%	37%	37%	33%	27%	34%	34%	34%
Max Distance from Hosp Street (m)	**55.0**	**45.5**	**46.0**	**52.0**	**54.0**	**54.0**	**n/a**	**n/a**	**n/a**

Type F Ward Layout

NB **This is not a design solution. It is for comparative purposes only**



Gross internal floor area (GIFA) = 1,283 m²

40.09 m² per bed

100% single beds

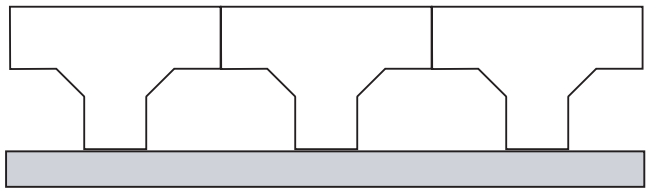
381 m² circulation = 42.24%
150 m² support
752 m² beds

Single Bedrooms

En-suite Bathrooms

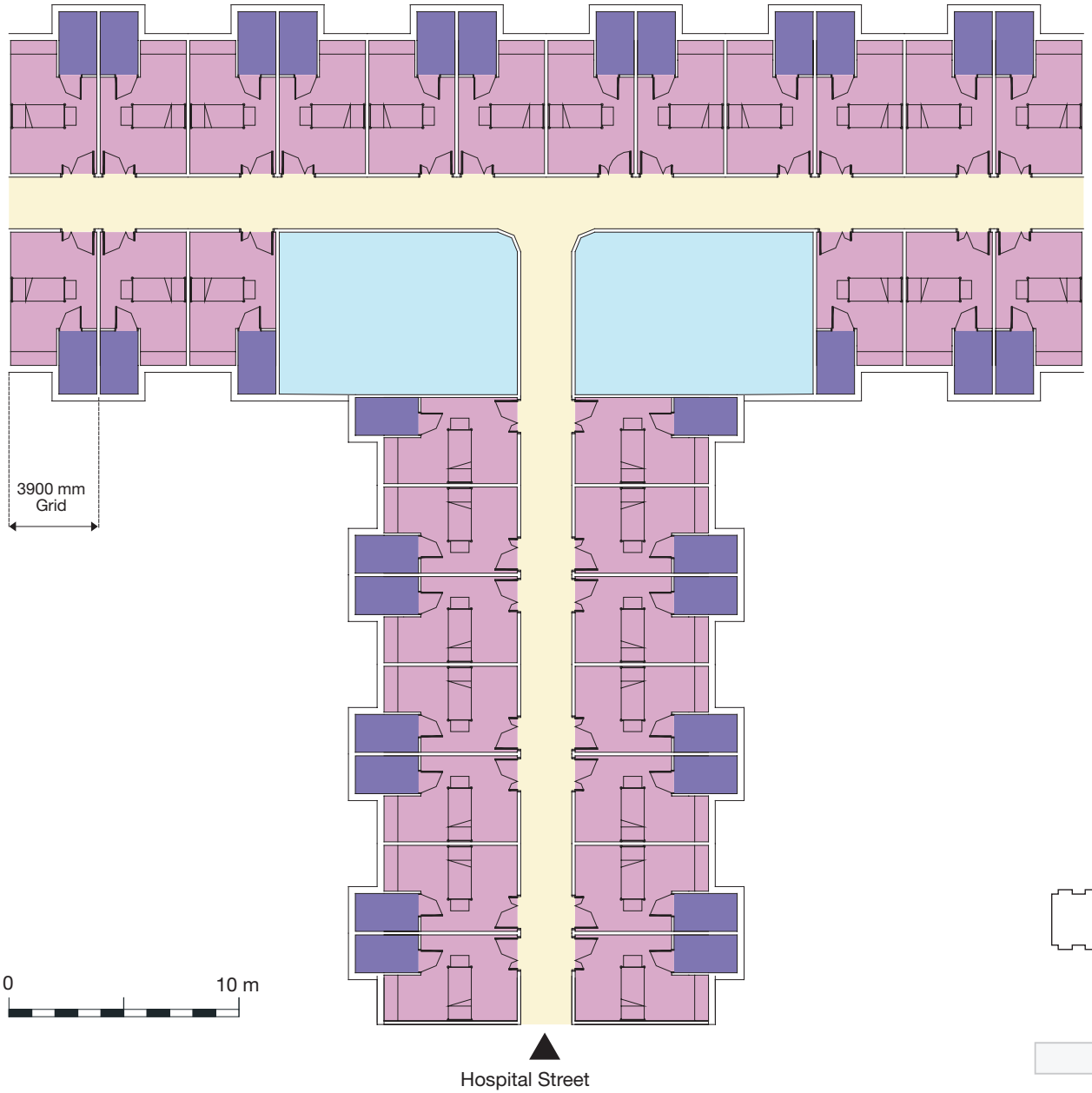
Support Areas

Circulation



Type G Ward Layout

NB **This is not a design solution. It is for comparative purposes only**



Gross internal floor area (GIFA) = 1,144 m²

35.75 m² per bed

100% single beds

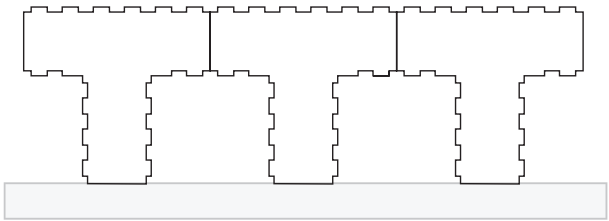
248 m² circulation = 27.68%
144 m² support
752 m² beds

Single Bedrooms

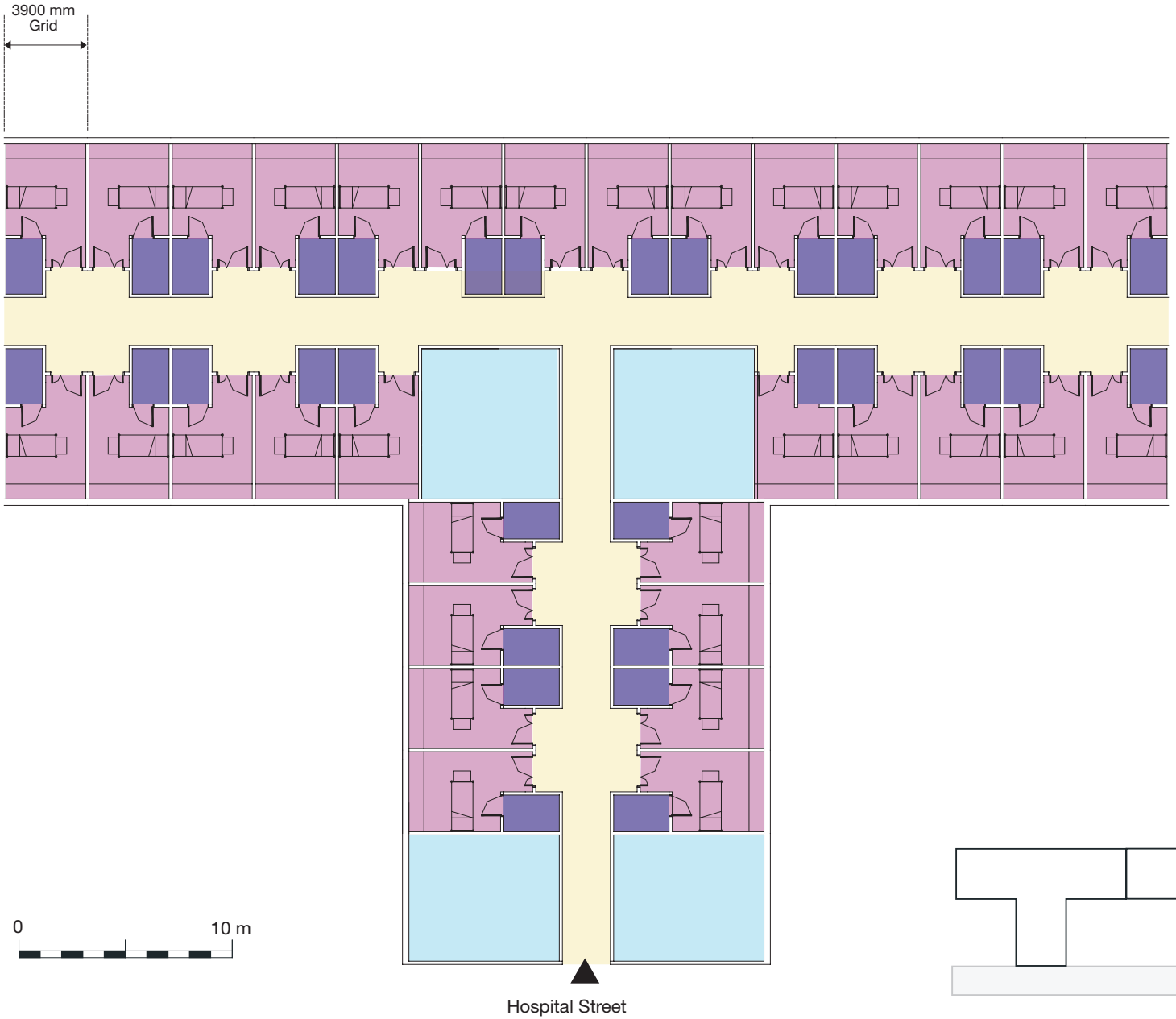
En-suite Bathrooms

Support Areas

Circulation



Type H Ward Layout NB **This is not a design solution. It is for comparative purposes only**



Gross internal floor area (GIFA) = 1,231 m²

38.47 m² per bed

100% single beds

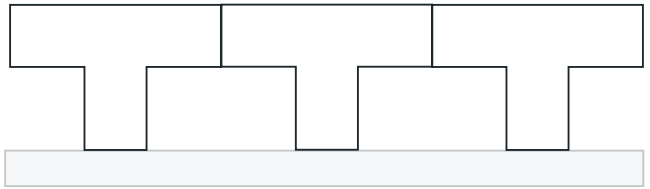
331 m² circulation = 36.78%
148 m² support
752 m² beds

Single Bedrooms

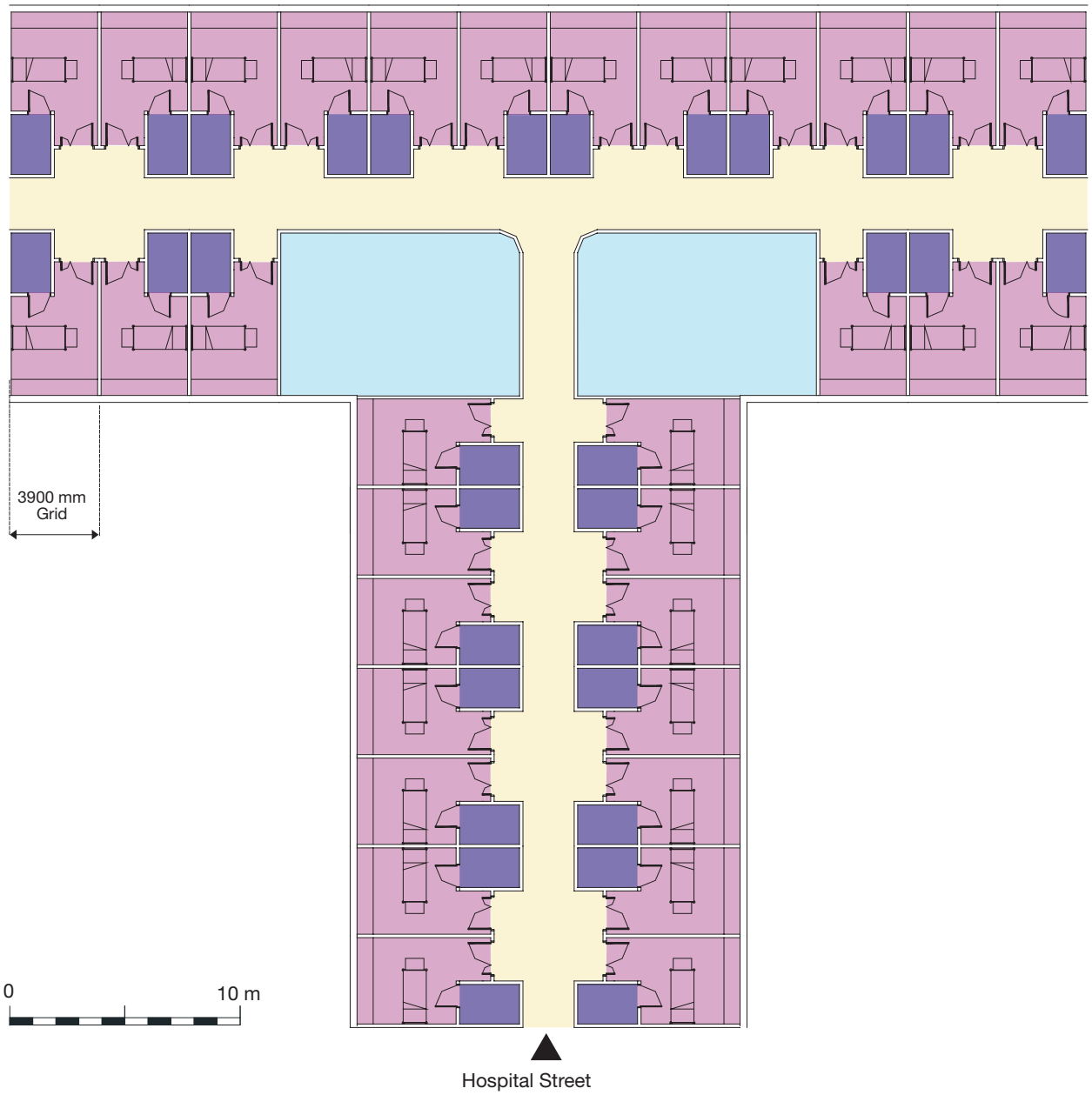
En-suite Bathrooms

Support Areas

Circulation



Type I Ward Layout NB **This is not a design solution. It is for comparative purposes only**



Gross internal floor area (GIFA) = 1,230 m²

38.44 m² per bed

100% single beds

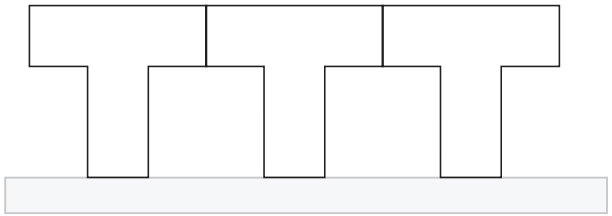
334 m² circulation = 37.28%
144 m² support
752 m² beds

Single Bedrooms

En-suite Bathrooms

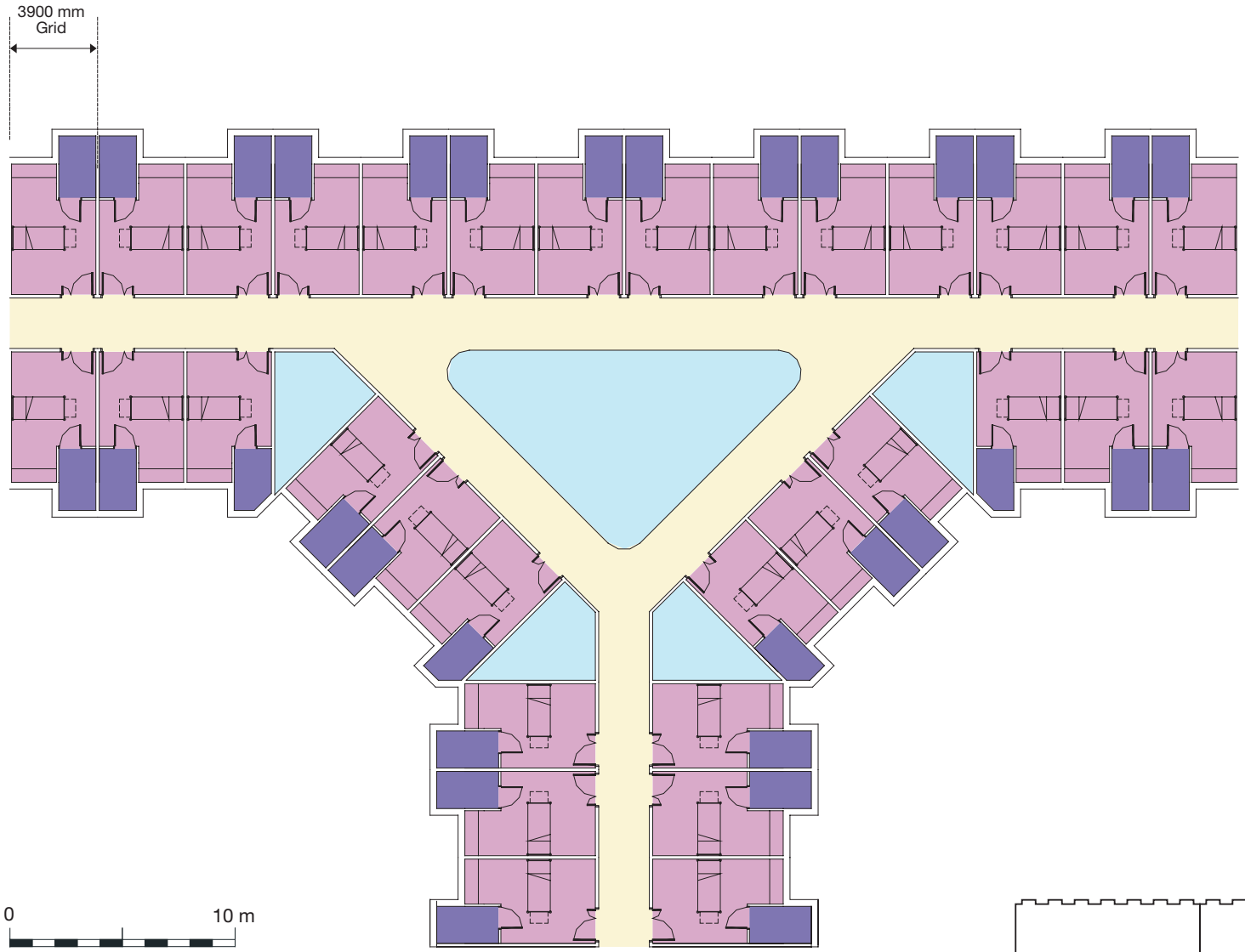
Support Areas

Circulation



Type J Ward Layout

NB **This is not a design solution. It is for comparative purposes only**



Gross internal floor area (GIFA) = 1,199 m^2

37.47 m^2 per bed

100% single beds

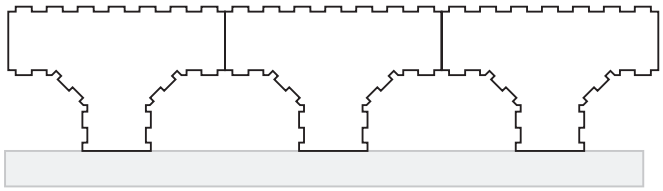
297 m^2 circulation = 32.93%
150 m^2 support
752 m^2 beds

Single Bedrooms

En-suite Bathrooms

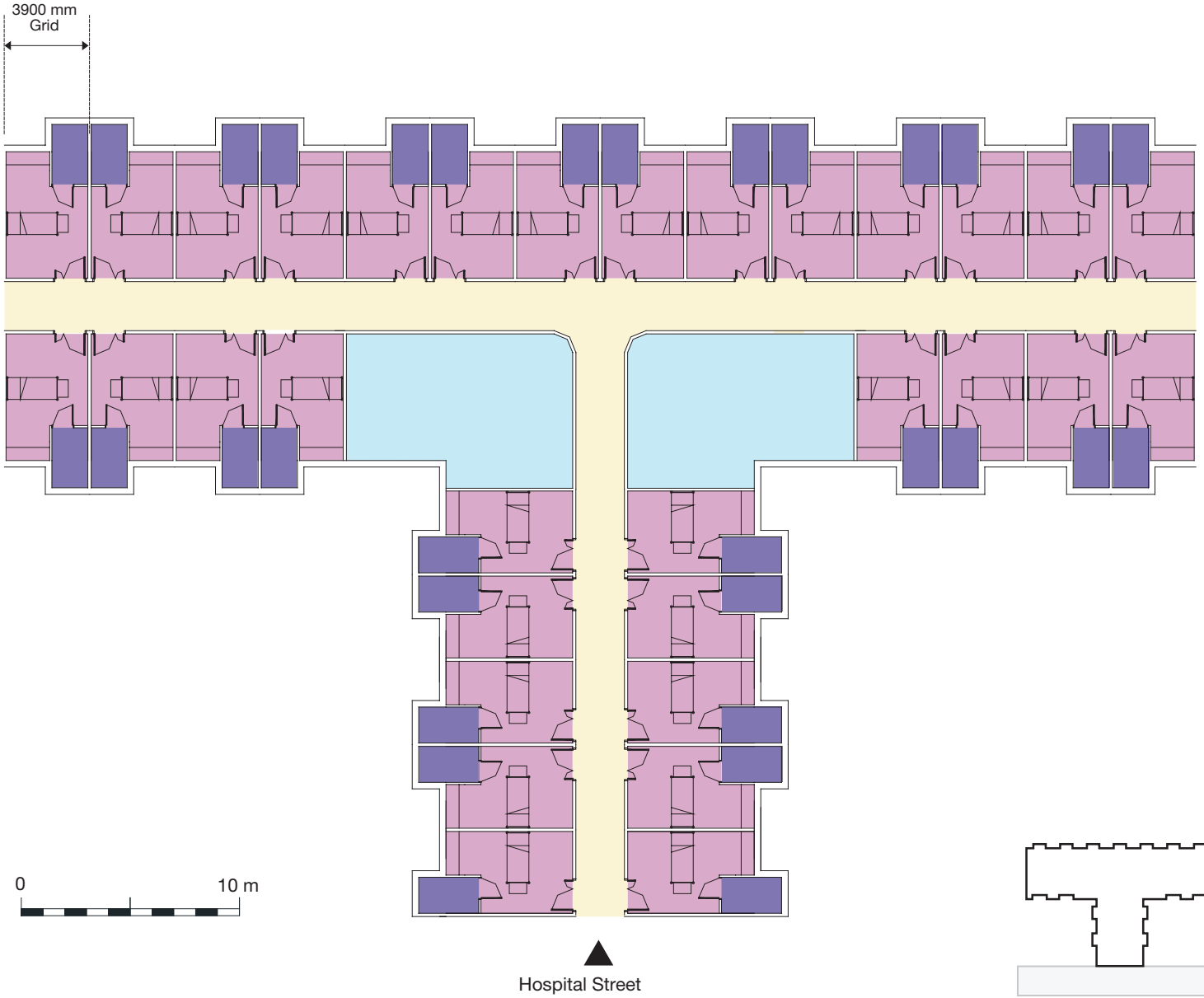
Support Areas

Circulation



Type K Ward Layout

NB **This is not a design solution. It is for comparative purposes only**



Gross internal floor area (GIFA) = 1,148 m²

35.88 m² per bed

100% single beds

246 m² circulation = 27.27%
150 m² support
752 m² beds

Single Bedrooms

En-suite Bathrooms

Support Areas

Circulation

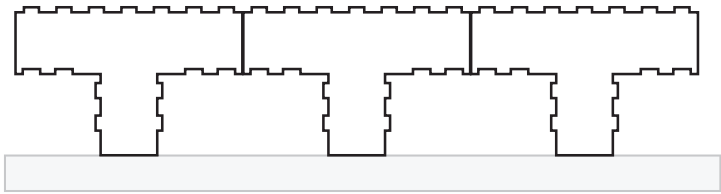


Table 5 Costs per bed for ward layouts F–K in a 32-bed unit with 100% single rooms compared to costs per bed based on the schedule of accommodation (HBN 4 V.1/04/03). Figures are based on the current MIPS index of 395

Ward type 32-bed unit 100% single rooms	F	G	H	I	J	K	HBN 4 V.1/04/03 100% single rooms	HBN 4 V.1/04/03 100% single rooms (modified)	HBN 4 V.1/04/03 50% single rooms
Total m^2	1283.00	1144.00	1231.00	1230.00	1199.00	1148.00	1260.50	1213.00	1183.50
Cost per bed £	67,517	60,203	64,781	64,728	63,097	60,413	66,333	63,834	58,324

COST IMPLICATIONS

This study shows that a minimum clear space of 3600 mm x 3700 mm around each bed can be accommodated within the current space allowance for a 32-bed unit with 50% single/50% 4-bed rooms. In addition, with some modifications, 100% single rooms can be accommodated within the same space allowance. The comparative (capital) costs per bed are shown in Table 5.

The costs per bed in Table 5 have been calculated based on current Departmental Cost Allowance Guides. In the two best cases, ward types G and K, where the total ward area is below the HBN 4 guideline for single rooms, the cost per bed is £60,203 and £60,413 respectively. This represents a difference of £1,879 and £2,089 compared with the estimate of £58,324 for the cost per bed under the HBN 4 50% single rooms case. It may be possible to offset this cost by increased capacity and taking a new approach to service planning and delivery. Appendix 1 gives the example of South Devon Healthcare NHS Trust, which has set out a case for 100% single rooms in new facilities where changes in nursing practice and the model of care are expected to lead to an overall reduction in bed numbers.

3 Providing more single rooms

The provision of in-patient accommodation has been the subject of an ongoing debate over many years, locally, nationally and internationally. International trends show a steady increase in the proportion of single bedrooms included in in-patient accommodation compared with multiple-bed rooms or bays.

The current configuration of acute accommodation in the UK comprises more than 80% of its beds in multi-bed rooms (see Appendix 2). Until recently, single-bed rooms with en-suite facilities have been considered by many healthcare planners as unachievable, undesirable, too costly and not appropriate, as it was believed that patients prefer to share a room. This assumption can be challenged on the basis of evidence provided in this chapter, which shows that single room en-suite accommodation can make sound clinical, patient-centred and financial sense.

There has been a gradual increase in the provision of single-bed rooms in the NHS. South Devon Healthcare NHS Trust, one of the sixth-wave hospital rebuilding schemes approved by the Secretary of State in 2001, has made the case for the provision of 100% single rooms. The new facilities are scheduled to open in 2010. The Trust's rationale for making this move reflects much of the evidence in this chapter. See Appendix 1 for a summary of their business case, including cost information.

To support the evidence on the contribution that a higher percentage of single rooms might make to staff and patient health outcomes, a brief study has been made on three hospitals with differing numbers of single rooms (50%, 85% and 100%). A resumé of findings is included in Appendix 3.

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EVIDENCE SUPPORTING MULTI-BED ROOMS

There is a lack of substantial evidence regarding the use of multi-bed rooms, as most studies have focused on single-room issues; however, for the sake of balance, research supporting the use of multi-bed rooms is presented here.

Many of the reservations concerning the use of single rooms focus on the difficulties that may arise for the staff (most particularly the nurses) when caring for patients in single en-suite rooms. It is perceived that more staff will be required, patients cannot be observed and, hence, they will be at greater risk.

Single rooms are perceived to be labour-intensive because anxious or lonely patients tend to make frequent calls for assistance. When patients who need monitoring are placed in single rooms without glazed partitions or windows, staff need to enter to observe or provide visual contact. It is also believed that the travel distances for staff will increase, and that space required will increase and add substantially to the capital costs.

A recent study in a rehabilitation ward for stroke patients (Sharma & Monaghan, 2003) showed that the majority of patients did not feel that privacy was an issue in communal wards. Most patients preferred a communal space to an individual one, usually citing anxiety on being alone as a reason (see Appendix 4 for further information).

In a study in the US (Spaeth & Angell, 1968), about 90% of patients admitted to an eye hospital chose to be in rooms with other patients. The survey demonstrated the overwhelming preference of ophthalmic patients for hospital rooms in which the patient shared his/her room with one or more other patients.

A further study in the US (Wood, 1977) used the concept of sensory deprivation to examine differences in patients' responses. The study compared a hospital comprising entirely small private rooms, with 2-bed rooms in a 260-bed community general hospital. The results showed that patients in single care rooms experienced significantly more sensory disturbances

than those in 2-bed rooms. Age was found to be unrelated to sensory deprivation experiences. The results indicate that single care units may require different staffing patterns from multi-bed units.

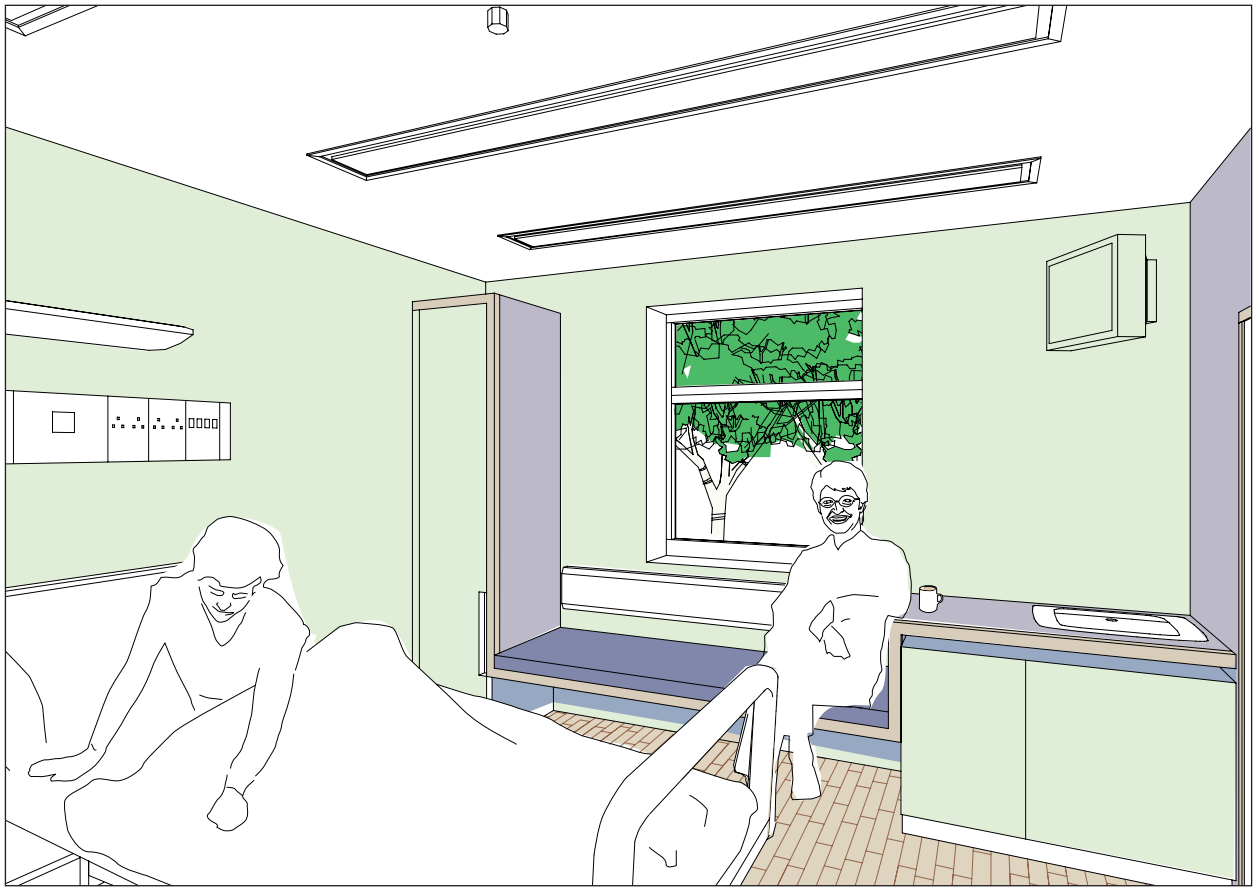
Social psychologists have long been interested in the affiliation tendencies of people who are faced with a novel, threatening situation. In a study that examined the effects of pre-operative roommate assignments on the affiliation patterns, pre-operative anxiety and post-operative recovery of male coronary-bypass patients, 94 patients were assigned to a room alone, or to a semi-private room with a roommate who was either cardiac or non-cardiac and either pre-operative or post-operative. Patients assigned to a roommate who was post-operative rather than pre-operative were less anxious, were more ambulatory post-operatively, and had shorter post-operative stays (Kulik et al, 1996).

Several studies have indicated that single rooms are no more effective than multi-bed rooms in controlling HCAI (Duckworth et al, 1988; Faogli et al, 1992; Vietri et al, 2004), but these are isolated studies, and further research is needed on this subject. There is also evidence that single rooms can help to control HCAI (see page 27).

EVIDENCE SUPPORTING SINGLE ROOMS

Patient accommodation comprising a high proportion of single-bed rooms will provide:

- flexibility of use for patients of either gender, any age, and most clinical conditions, including source isolation and critical care;
- potentially shorter turnover intervals and annual average bed occupancy rate;
- minimal patient transfers, which in turn helps to reduce cross-infection;
- 24-hour admission without disruption;
- privacy for treatment and personal activities;
- confidentiality of discussion;
- quiet for sleep and rest;
- independence to modify the environment, have visitors without disturbing others, and safe access to a bathroom in private;
- storage of supplies for a patient's daily care needs;
- higher standards of clinical governance;
- more effective infection control.



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In addition, recent research in the Netherlands on in-patient wards in hospitals (STAGG, 2002) examines the relationship between patients' behaviour and their environment and suggests the importance of patients retaining their sense of identity in order to resist the negative aspects of a hospital stay. It suggests that the sense of identity is more easily maintained in a single room rather than a multi-bed room where a significant loss of identity is maintained. It concludes that a good patient-orientated environment will ultimately save in costs.

The case for significantly increasing the number of single rooms can be made from different standpoints. The merits of single en-suite in-patient rooms are reviewed with reference to three interrelated perspectives: the patients, clinicians and the NHS trust.

From the patient's perspective (*the users*)

The patient's perspective is important for several reasons. Foremost is the adoption of patient-centred care, the concept of looking after the needs and desires of patients and visitors in NHS hospitals. For further views of patients and their families see Appendix 4.

Opportunity to control their own environment, levels of noise, lighting (natural or artificial), heating, ventilation, including safe and accessible storage of personal belongings

In order to feel comfortable, a patient should have some control over furnishings, fixtures and equipment. Lack of patient control of the environment, particularly for ventilation and lighting, seems to cause irritation and may actually increase workloads for staff (Lawson & Phiri, 2000).

Matching the patient and his/her preferences/ aspirations and meeting the level of the patient's satisfaction and comfort

Single-bed in-patient rooms enhance the potential of matching the patient and his/her preferences and meeting the level of patient's satisfaction. Findings of a study by Davis and Ward (1994) suggest that there is need for more single-bed rooms to accommodate particular patient groups.

Data obtained between 1990 and 2002 from several million US patients (across all socio-economic, ethnic and gender groups) shows that patients in the US are consistently more satisfied with the quality of their care when they are in single rooms (Ulrich, R, quoted in NHS Estates, 2003).

Absolute privacy if so desired (auditory, visual, smell etc) as well as dignity

A significant feature of single-bed rooms is the ability to provide absolute privacy (auditory, visual, odour etc). There are four types of privacy that are often violated in healthcare settings:

- lack of a space of one's own;
- lack of opportunity to be free from the distraction of others;
- an inability to converse freely without being overhead; and
- a chance of being alone (Wolfe & Laufer, 1974).

Photograph: David Whyte. Copyright MAAP Architects Ltd

Flexibility of access, length of stay and the number of family/relatives and personal visitors (an important part of a patient's recovery)

An important issue for single-bed room accommodation is flexibility of access, length of stay, and the number of personal visitors. *"A hospital patient room has many demands – a sick bay, an individual territory, a hotel room, an emergency unit, a family reunion centre"* (Putsep, 1981).

Greater potential for sleep with fewer interruptions both during the day and most particularly at night

Single-bed rooms offer a greater potential for sleep with fewer interruptions during the day and, more particularly, at night (Ogilvie 1980, Carter 1985, Closs 1988, Southwell & Wistow 1995 cited in HBN 4, 1996). Evidence shows that sounds stemming from the presence of other patients in multi-occupancy rooms are often the most important single factor negatively affecting sleep, and the patient is less likely to have control over these sources of noise, making them more stressful (Ulrich, R, quoted in NHS Estates, 2003).

Immediate access to en-suite WC and wash/shower facilities with total privacy

In a single-bed en-suite room there is immediate access to toilet and wash/shower facilities with total privacy (and therefore dignity). Space requirements for early ambulation allow patients to progress out of the invalid roles towards a more normal pattern (Kraegel, J M et al, 1974).

Opportunity to follow cultural or religious practices that may impinge on others in a multi-bed room

Another advantage of the single-bed room is the opportunity to follow cultural or religious practices that may impinge on others if in a multi-bed room (Galanti, 1997).

From the clinical perspective (*the staff*)

The following covers advantages of single-bed accommodation from the clinical perspective.

Reduction in adverse clinical incidents (notably medication errors, adverse patient occurrences etc)

The reduction in adverse clinical incidents is an important aspect of single-bed room accommodation. Evidence is growing in the US that incompatibility of patients in multi-occupancy rooms causes many transfers. At the Mayo Clinic (USA) research has shown that there is a 70% chance of medication errors when a patient is transferred. Medication errors fall if transfers decline (Ulrich, R, quoted in NHS Estates, 2003). When Clarian Hospital (USA) shifted from two-bed rooms in Coronary Intensive Care to single acuity-adjustable family-centred rooms, transfers declined 90% and medication errors dropped 67%.

In the USA limited evidence has also raised the possibility that injuries from falls can be reduced by providing single rooms designed to encourage the presence of family to help patients.

Control of healthcare associated infection

A significant outcome of providing single-bed in-patient accommodation is the reduction in cross-infection (providing staff adhere to protocols regarding hand-washing etc). Shirani et al (1986), in a study of open intensive care ward versus intensive care with separate bed enclosures with sinks in each enclosure, report that burn patients in the separate bed enclosures had fewer infections and lower mortality rates than patients in open units.

In addition, patients with infections or undiagnosed illness can in effect be separated from others.

Others (patients, staff and visitors), who may be innocent carriers without diagnosis, need to be barred from infecting patients. Rosenfield (1971) notes, "Plans based on single-bed rooms, it is self-evident, provide advantages of greater satisfaction, less possibility of cross-infection, higher occupancy and consequent greater financial return where there is a sufficiency of affluent inhabitants to keep the single-bed rooms occupied."

A study was carried out in France in a surgical intensive care unit to determine the rates and routes of infection after remodelling to provide 100% isolation rooms. It concluded that the conversion to single rooms may have contributed to lower rates of infection (Mulin, B et al, 1997).

A further study of risk factors for HCAI in a French hospital showed that internal patient transfers constituted a risk factor for acquiring infection, thus supporting the benefit of single rooms in reducing patient transfers (Eveillard, M, 2001).

A literature review carried out in the Netherlands (Behrendt, 2003) concludes that single rooms may contribute to lowering rates of HCAI for the following reasons:

- direct contact transmission from patient to patient is largely prevented;
- there is a smaller risk of personnel transmitting micro-organisms from one patient to another;
- on leaving a patient's room, staff will be reminded that they are leaving the "patient's domain" and will

be more disposed to removing gloves and apron, and disinfecting hands;

- as medical implements will mostly be "patient-bound", there will be less transmission of micro-organisms via implements;
- room separation will virtually do away with the spread of airborne micro-organisms.

Consultation interviews, the majority of clinical examinations, treatments and interventions, and discussions with a patient can take place in complete visual and auditory privacy

Hoglund (1985) identifies three kinds of privacy: privacy as an event (bathing, sleeping and other personal activities); privacy of lifestyle (doing as we please in our homes); and privacy of thought (the right to have private thought). Palastan (1978) described four senses in which "privacy" can be used:

- solitude (where a person is alone and free from observation);
- intimacy (where the privacy sought goes beyond individual surveillance);
- anonymity (where an individual is not observed or identified);
- reserve (associated with a person's need to withhold aspects of themselves).

With the single-bed accommodation, the majority of clinical examinations, treatments and interventions can take place in the patient's room. Jones (1993), a US healthcare consultant, writes that hospitals of the future will become more community-based facilities designed around the needs of the patient. In such hospitals routine diagnoses and treatments (70% of all services) are decentralised to the patient floor, suite or room.

From the organisational perspective (*the NHS trust*)

The value of single-bed in-patient accommodation from the organisation's perspective can be summarised as follows:

Flexibility of use and capacity for change

Single rooms can provide greater capacity and capability for change. As patient needs, models of care, new treatments and technologies emerge, there will be a greater opportunity for implementing new initiatives, achieving users' preferences, expectations and satisfaction.

IMPACT ON THE ORGANISATION OF IN-PATIENT CARE

A significant increase in the provision of single rooms will entail a restructuring of the environment in which care is delivered to acutely ill people. This shift towards new settings in which a more patient-centred care approach can be delivered will not only require a few organisational modifications, it may mean a complete change of culture. This is an area of discussion that is not within the remit of this document, and further research is required.

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BALANCING AFFORDABILITY

There is a widely held view that increasing the number of single rooms will significantly increase the overall area and therefore capital costs of in-patient accommodation. Choosing single rooms does not necessarily result in an increase in the total area per bed, but in an overall reduction of treatment rooms as well as spaces for teaching and consultation.

A unit comprising single rooms can admit more patients and have higher occupancy than a hospital with multi-bed rooms, especially where consideration should be given to gender, age and other non-medical factors. A high proportion (if not 100%) of single rooms will be required to support new nursing models of care (such as patient-focused care) because of the need for additional one-to-one consultation, privacy, space for equipment, for procedures at the bedside, and for the involvement of family members.

In the past, in-patient accommodation has often been configured to minimise the capital cost, without seeing it in the context of the entire building. The premium paid for the larger rooms can be offset against space savings elsewhere within the in-patient accommodation, and may actually result in reduced future capital and revenue expenditure.

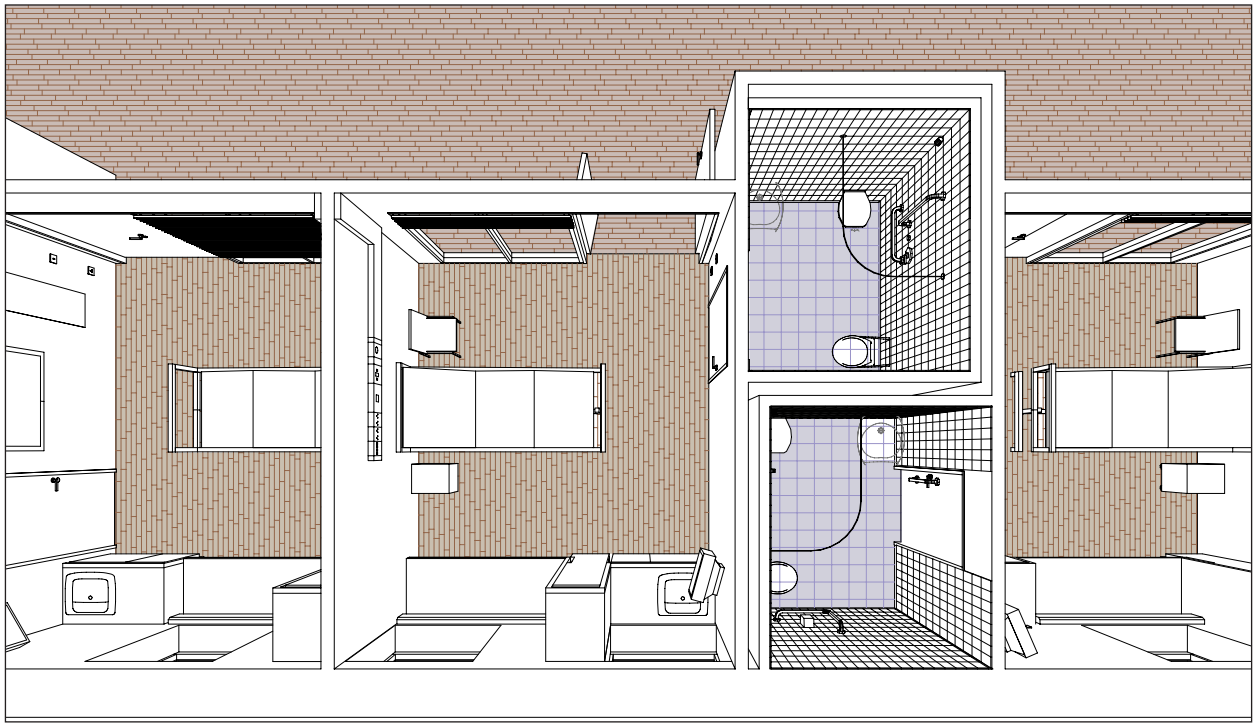
The following provides evidence that indicates some cost advantages in using single rooms.

Reduced costs from the containment of healthcare associated infection

Evidence from the Netherlands has shown that taking measures including the provision of sufficient numbers of single rooms in hospitals has reduced HCAI to a minimum (DH, 2003). In Germany a recent study has shown that total avoidable costs from MRSA in one hospital amounted to approximately 142,794 Euros per year. The most expensive single measure was blocked beds in multi-bed rooms. It was concluded that building an adequate number of single-bed rooms should help prevent spread and would greatly lower the added costs of infection (Herr et al, 2003).

Increased capacity and flexibility of bed occupancy including hospital targets of maximum occupancy. The gender, age, culture, clinical diagnosis and condition of each patient will not impact on bed availability

The moving of a patient from one space to another can be one of the most distressing aspects of a hospital stay. Anecdotal evidence suggests that the forced moving of patients in the acute general sector, particularly at night, is relatively common and highly disturbing to the patient. With single-bed rooms, *"the hospital realises some economies of patient moves. In units with multi-bed rooms the number of daily moves has averaged six to nine per day, at a significant cost (in added paperwork, housekeeping, patient transport, medication instructions, etc)"* (Kobus et al, 2000, p 145).



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Intensive space utilisation and multi-purpose use of spaces, including re-use to other activities

Yet another important aspect of single-bed room provision concerns intensive space utilisation and multi-use of space, including re-use for other functions. Single-bed in-patient rooms provide the ability to increase room utilisation – from a 75–85% average to, theoretically, 100 percent. This is due to the elimination of patient "incompatibility" factors such as differences in sex, diagnoses, and disease communicability. Furthermore, single-patient rooms enable more treatments to be administered by the bedside, thus reducing the need to transport patients to procedure rooms off the unit, and they can accommodate changing levels of care to be provided in one location, rather than transferring patients to different nursing units. Finally single-bed patient rooms give hospitals a competitive edge, providing more desirable "private" patient rooms, which can be personalised and offer "move in" space for patients' visitors and family members (Kobus et al, 2000).

Manageable building stock and spaces because of less complexity (fewer breakdowns, easier cleaning, sustainable energy consumption etc)

According to Phiri (2002), the nature of single-bed in-patient rooms and their configurations lend themselves to more manageable building stock and spaces because of less complexity (fewer breakdowns, identification of hazards (such as air pollution), triggers of ill health, easier cleaning, sustainable energy consumption etc). Single-bed occupancy may actually enhance security, for example storage of personal belongings in wardrobes within the room, and in turn this is stress-reducing to the patient and can even improve bed turnover by removing delays due to patients' belongings not being immediately available (Phiri, Worthington and Leaman 1999).

Easier compliance with health and safety measures and other statutory requirements

Single-occupancy spaces should provide easier compliance with health and safety measures, with defined environmental standards (such as ventilation rates, thermal comfort) and other statutory requirements.

Learning from management regimes of other sectors such as retail and leisure

Partridge's (1992) report on patient hotels concludes that, where a patient hotel can be justified and has the support of clinicians, it provides a quality alternative to ward care and benefits both patient and the hospital. If satisfactory levels of utilisation are achieved, it will also save up to 45% of the hotel costs incurred in conventional wards. Slavid (1999) comments on the Kingston "Hotel" at Kingston Hospital, Surrey. *"One revolutionary development is the hospital's new patient hotel, which releases surgical beds earlier than would otherwise be possible, and allows the total surgical throughput to increase the quality of the time patients spend in hospital and to save money by reducing that time."*

There are implications on the schedules of accommodation for the whole healthcare facility – the facility needs to be considered as a whole by taking a holistic approach to the allocation of space. The provision of in-patient accommodation may play a significant role in determining in-patient accommodation layouts, costs and the flexibility of nursing models. For example, the additional space required in the single-bed room is offset by an overall reduction of clinical treatment rooms and patient support spaces.

4 Providing sufficient space around the bed

INTRODUCTION

This chapter defines the space needed around the bed (the ergonomic envelope) for a range of functional activities that can be carried out in a single-bed room or a four-bed bay. It sets out the key factors and activities that influence the space, and provides detailed analysis to support the evidence-based studies (as defined in the Methodology on page 2).

It has been established that most activities carried out at the bedside can be accommodated within the dimensions 3600 mm (width) x 3700 mm (depth). This represents the clear space around the bed and does not include space for storage, preparation and worktops.

The suggested dimensions are intended for general acute accommodation and aimed at new-build schemes and major refurbishments.

KEY FACTORS INFLUENCING SPACE AROUND THE BED

The factors that have most impact on the space required around the bed in acute hospital accommodation are the medical and personal activities being undertaken, the patient's functional capacity, their dependence on caring staff, and the use of different types of furniture and equipment. The work pattern of the staff and the needs of the visitors are also important in determining the space required.

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Privacy and dignity

Preserving the privacy, dignity and confidentiality of patients is essential at all times. The NHS Plan suggests that the design of facilities should "show a focus on the dignity of patients and their relatives and respect for their needs, and a thoughtful approach to facilities which can make a hospital stay – one of the most stressful incidents in life – a more comfortable and less worrying experience". To achieve this aim, 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.

Patient acuity

Under new care models, a higher proportion of patients may require increased clinical support, leading to increased bedside activity. By having adequate space around the bed, some or all of the rooms can support increased patient acuity and clinical activity, including additional equipment and staff.

Length of stay

The average length of stay in hospital has decreased significantly over the past few years, while the number of people who are admitted to hospital for surgery has increased correspondingly. There are more sick people, classified as highly dependent, than at any previous time (NAO, 2000a). Assistance may be needed, usually with the help of mechanical aids, to move or transfer them in order to undertake clinical or therapeutic activities.

Age and functional capacity

Many of the acute in-patient population are older people with varying degrees of mobility and general functional capability and with a variety of care needs. Such factors will determine how many staff are needed to provide assistance in transfers and moving around, and the type of handling equipment that might be used. Sufficient space will therefore be required for staff to assist and to accommodate moving and handling equipment to transfer these patients to and from the bed.

Patient mobility – as therapeutic activity

Patient mobility is considered vital for aiding recovery and maintaining physical health and hygiene. This will

help to reduce length of stay and reduce physical complications in the recovery period.

The provision of sufficient space is essential for nurses and therapists to work, to accommodate wheelchairs and walking aids, and to assist the mobility of patients.

Clinical treatment

Many of the activities that previously took place in a treatment room now take place at a patient's bedside, thus additional space is required for equipment and for nursing procedures to take place.

Risks associated with lifting patients

Patient moving/handling tasks are associated with the greatest proportion of musculoskeletal disorders in the health services (HSE, 2001). One way of avoiding such injury is to move patients by use of a hoist. Sufficient space is therefore required to manoeuvre this equipment around the bed. The Manual Handling Operations Regulations 1992 state that "Each employer shall, so far as is reasonably practicable, avoid the need for his employees to undertake any manual handling operations at work which involve a risk of their being injured."

Infection control

It is estimated that 100,000 people per year develop a HCAI (NAO, 2000). People undergoing surgery and those who are already critically ill are most at risk. A safe clinical environment is known to be an important factor in minimising the spread of infection. Provision of adequate space between each bed is perceived as an important consideration to limit cross-infection, although there is currently a need for further research on this subject. See also HFN 30 – 'Infection control in the built environment'.

Family support and visiting

Visits from family and friends are important for the well-being of patients. There should be sufficient space around the bed to allow for seating without disturbing patients in other bed spaces or the flow of nursing care.

Accessibility for staff

Poor access around the bed is stressful for staff, who have to work, often under pressure, within inadequate space. There is more potential for accidents, mistakes and delays occurring. Moving and setting up equipment takes valuable time, and this is hindered by inadequate space. Gaining access to bedhead controls and monitoring equipment also requires sufficient space.

In multi-bed areas there should be sufficient space around each bed for staff to carry out procedures without disturbing patients in adjacent beds and to provide a degree of auditory privacy.

KEY ACTIVITIES AT THE BEDSIDE

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.

Appendix 5 sets out the activities within these categories. There should be adequate space to carry out these activities, and 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.

In this context "space" is defined as the clear area around the bed not including the bedhead services or wall guard, or space for storage, preparation or worktops.

Movement of patients to and from beds

The movement of patients to and from beds consumes more space than any other activity. There are several ways that patients may be brought to the bed space, including:

- on foot unaided, or using a walking aid (for example a Zimmer frame, rollator);
- in a hoist;
- in a wheelchair;
- on a trolley;
- on a bed.

At the bedside staff might move patients in the following ways:

- lifting and turning the patient in bed;
- transferring to or from a bed, hoist stretcher trolley, bedside chair or wheelchair;
- transferring to a mortuary trolley.

In addition staff may need to deal with emergency situations such as the resuscitation of a patient.

All of these activities require sufficient space to enable the safe movement of patients, staff and equipment. Transferring and transporting patients by hoists, trolleys, beds and wheelchairs will require the optimum space for the reasons set out in the following paragraphs.

Mock-up bed space at Leeds General Infirmary (Photograph: Medical Illustration Department, Leeds Teaching Hospitals)

Using a hoist

The activity of moving and transferring a patient with a hoist is the most decisive factor in determining the minimum clear space needed. There are clear Royal College of Nursing directives (RCN 1999a, 1999b, 1999c) which state that hoists must be used to prevent back injuries to staff. Most hoists used at the side of the bed are mobile. They are very large, cumbersome and difficult to handle.

In general, patients are getting taller and heavier. This is also true of the staff who manoeuvre hoists. The implication is that more space will be needed in the future.

In determining the overall bed space required for the use of a hoist, all associated activities should be taken into account. There should be space for both hoist and staff to manoeuvre the hoist to the side of the bed and into a position to put the patient on the seat or in a sling without unduly moving other furniture.

In some situations a patient will be transferred from a hoist to a wheelchair or the reverse. In other instances the transfer will be to a trolley that can be used in a bath or shower. There may be a need to move the bed sideways to facilitate these activities. It is anticipated that, when a hoist is used frequently during a patient's stay, the bed will remain in the position where there is adequate space for the hoist activities on one side, but ensuring there is sufficient space on the other side of the bed for someone to assist with the hoist transfer and to carry out nursing tasks at other times.

Using a trolley

In some situations a patient will be transferred to a trolley that can be used in a bath or shower. Recent policies have stated that a slide board should be used to transfer patients from bed to stretcher or trolley and vice versa rather than the traditional configuration of one porter and two nurses. To use a trolley for transferring a patient to a bed requires the trolley to be pushed into a position alongside the bed and parallel to the line of the bed and for transfer to be carried out by two assistants.

Space is required for the staff to safely position themselves and to be able to transfer the patient comfortably and safely using the slide board.

Using a bed for transporting patients

A significant number of patients are transported from the operating theatre or recovery unit on their beds. The rationale for this is that the patient is transferred from the operating table directly while they are still semi-conscious and their pain relief is optimal. This saves unnecessary distress for patients and reduces the risk of dislodging monitoring equipment and infusions and drains (Tope 1997, Evans 2000). Sufficient space is required when moving the bed and any attachments, and for the accompanying staff. The space required for moving patients in a bed will depend on the size of the bed and can vary greatly.

In some instances the patient is transported using a bed which is then manoeuvred into a position alongside a second bed in the bed space. Typically two assistants carry out the transfer, with one “pushing” the patient and one “pulling”. To carry out this task, there should be sufficient space for the assistants on each side of the bed.

Patients in wheelchairs

Patients may be regular users of a wheelchair, either independently or assisted, or they may require the temporary use of a wheelchair whilst in hospital due to their injury, illness or treatment. In this case they will usually need to be pushed and generally require one or two staff to give gentle support and reassurance. Space is thus required at the side of the bed to manoeuvre a wheelchair and to assist someone from sitting on the bed or in the chair, to transfer out of the wheelchair onto a bed or into a bedside chair, or the reverse.

Different considerations may apply to single room accommodation. For example, the positioning of the doorway related to the bed will have an effect on the amount of space required for manoeuvring an electric wheelchair to and from the side of the bed.

Patients using walking sticks, tripods or crutches

Many patients may use walking sticks, tripods, crutches or walking frames to assist with mobility at the bedside.

Also, many rehabilitation tasks take place at the bedside, where a nurse or therapist may assist a person with these tasks or dressing the patient. The clear area should allow them to move around easily and conveniently.

Visitors to patients

People visiting a patient at the bedside also need sufficient space to sit and comfortably relax, often for prolonged periods. In considering the space required, the space an individual may need and the likely number of such individuals should be taken into account. Visitors’ needs can vary considerably in terms of their characteristics and capabilities, and some may themselves be disabled and use assistive equipment, for example wheelchairs.

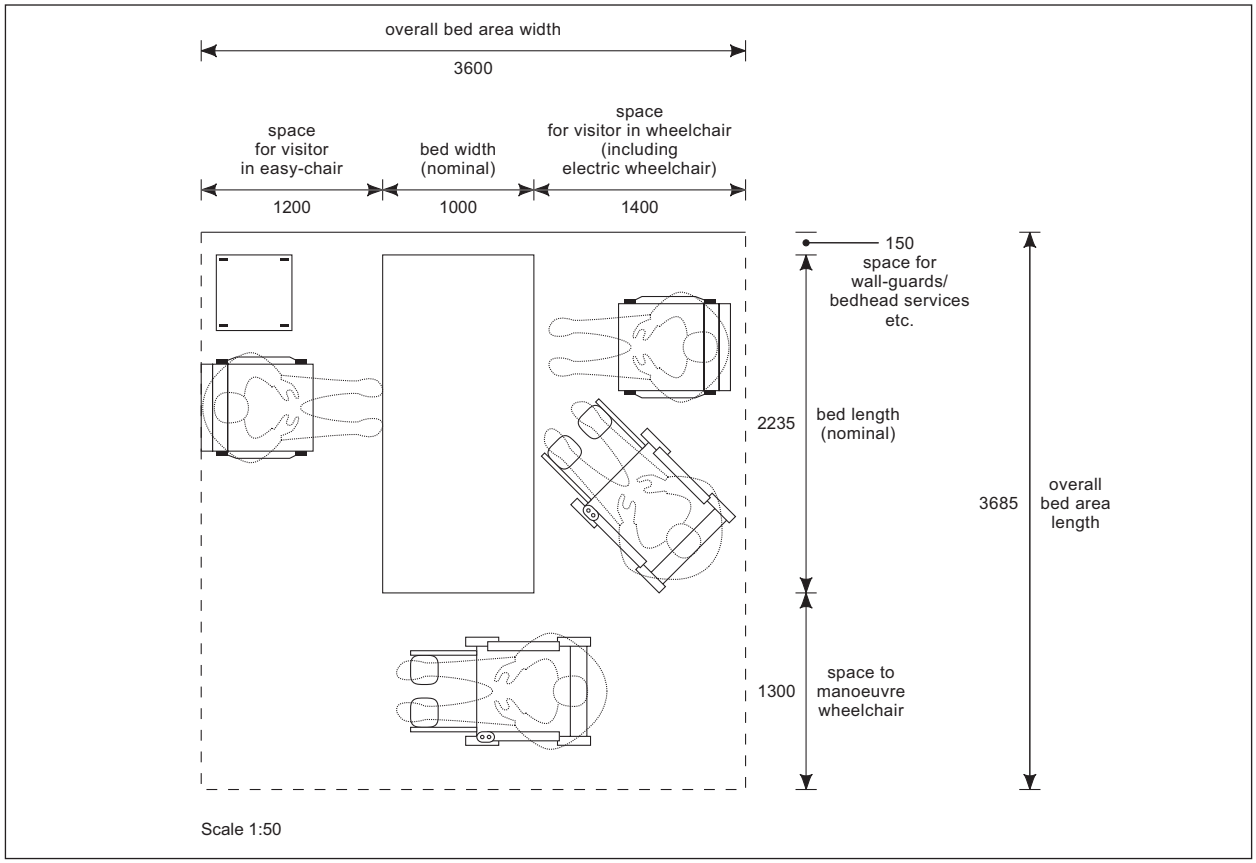
The largest space would be required by a visiting wheelchair user, who would need to manoeuvre to and from the bedside independently or with the help of an assistant. Independent use could be by a person manoeuvring a manual or an electric wheelchair.

For single room accommodation the positioning of the doorway related to the bed is important in attempting to minimise the dimensions required for manoeuvring an electric wheelchair to and from the side of the bed.

Figure 3 shows the bed area layout when patients have visitors as described above.

Mock-up bed space at Leeds General Infirmary (Photograph: Medical Illustration Department, Leeds Teaching Hospitals)

Figure 3 Bed area layout with space for visitors



Using resuscitation procedures

A patient may need to be resuscitated in their bed. This is a critical activity when every second is important.

The procedure requires a minimum of five staff, but in some situations, double that number could be present. Staff might be positioned at each side of the bed and at the head and foot of the bed. The bed has to be moved to allow access to the patient's head. It is imperative that staff should be able to bring in and set up their equipment quickly with minimum disruption and maximum safety, not having to spend precious time moving furniture and equipment in order to get to their positions.

There should be space for staff to stand at their positions, park the equipment in the most appropriate place and carry out the tasks, safely and efficiently. When the electric shock is administered to the patient, all staff should have space to allow them to take one stride back from the bed. This space should be sufficient to avoid staff injury from any furniture and equipment that may be nearby.

In multi-bed areas the staff or equipment should not encroach on other bed spaces, as this could be distressing for other patients or interfere with activities taking place in adjacent bed spaces.

MINIMUM DIMENSIONS FOR SPACE AROUND THE BED

The following paragraphs examine the main activities and procedures carried out in the bed area with a view to determining the minimum space required. The result of the analysis arrives at an overall bed space area that should accommodate all activities and procedures for a four-bed room and for single bed accommodation.

The size of the bed used in this analysis is that of the King's Fund bed, that is, 2235 mm (long) x 1000 mm (wide). Where larger beds are used, or where activities are carried out with cross-beams or rails in place, more space may be required.

Using a hoist in the bed space

Most hoists used at the side of the bed are mobile. They have a very large footprint measuring approximately 1340 mm (L) x 700 mm (W) and, when the legs are splayed out for stability, the width can increase to 1015 mm.

According to Idema (1995), where a wheelchair is used in conjunction with the hoist, involving up to two staff to move the equipment and to manage the patient, the space required at the side of the bed is 2100 mm to

allow transfer from the bed (2400 mm (L) x 1000 mm (W) to the wheelchair (or the reverse)).

This is consistent with the recommendation by RFA (1997) for a space required for manoeuvring a hoist at the side of a bed of 2100 mm (later included in BS 8300: 2001).

Further evidence from RFA (2004) trials gave similar results and found that transferring a patient from a wheelchair to a bedside easy chair by means of a hoist, or reverse, requires 2050 mm of space at the side of the bed. Transferring a patient by means of a hoist from a wheelchair to a bed or reverse, however, was found to only require a 1900 mm space.

The bed needs to be moved sideways to facilitate these manoeuvres, but there still should be space on the other side of the bed for someone to assist with the hoist transfer and to carry out nursing tasks at other times. While Idema (1995) calls for 700 mm for this space, the RFA (2004) trial demonstrated that 600 mm is sufficient.

Using the Idema (1995) dimensions with a 1000 mm-wide bed, the width required would be 3800 mm (that is, 700 mm + 1000 mm + 2100 mm). Using the RFA (2004) dimensions, the overall width required would be 3650 mm (that is, 600 mm + 1000 mm + 2050 mm). (The difference between the two figures is probably due to the fact that the Idema study was as a result of many trials which took into consideration all the variations in body size of the assistants, with different techniques and levels of skill.) The RFA (2004) trial also examined the transfer with the bed set diagonally across the bed area. The result suggests that if the bed could be arranged in such a manner, a space of 1900 mm at the side of the bed (measured from a point midway along the length of the bed) would allow a transfer to be managed comfortably. This bed position gave sufficient space to assist transfer on the non-hoist side of the bed, within an overall width of 3600 mm.

Mock-up bed space at Leeds General Infirmary (Photograph: Medical Illustration Department, Leeds Teaching Hospitals)

The space required at the end of the bed to allow a hoist to be manoeuvred into and out of the bed area, according to Idema (1995), is 1500 mm. The RFA (2004) trials suggest that using a hoist with the legs closed, that is, with an overall width of 700 mm, a space of 1300 mm would be sufficient. With a bed length of 2235 mm and an allowance for bedhead services of 150 mm, the overall length using Idema's recommendations would be 3885 mm, or 3685 mm using the results from the RFA (2004) trials. In some circumstances ceiling-mounted hoists are used. These can be much more economical in the space required to operate them. For example, in the study by the Victorian Work Cover Authority (1999) it was shown that when using a ceiling-mounted hoist at the side of a bed for transferring a patient to and from a wheelchair, a width at the side of the bed of 900 mm is required. With an allowance of 900 mm each side of the bed for hoist transfer, the bed area would be well within the 3685 mm quoted above for the mobile hoist transfer.

Figures 4A and 4B respectively show the space required when using a hoist with the Idema recommendations and those from the RFA (2004) study.

Figure 4A Space to manoeuvre a hoist and transfer a patient to and from a bed (Idema, 1995)

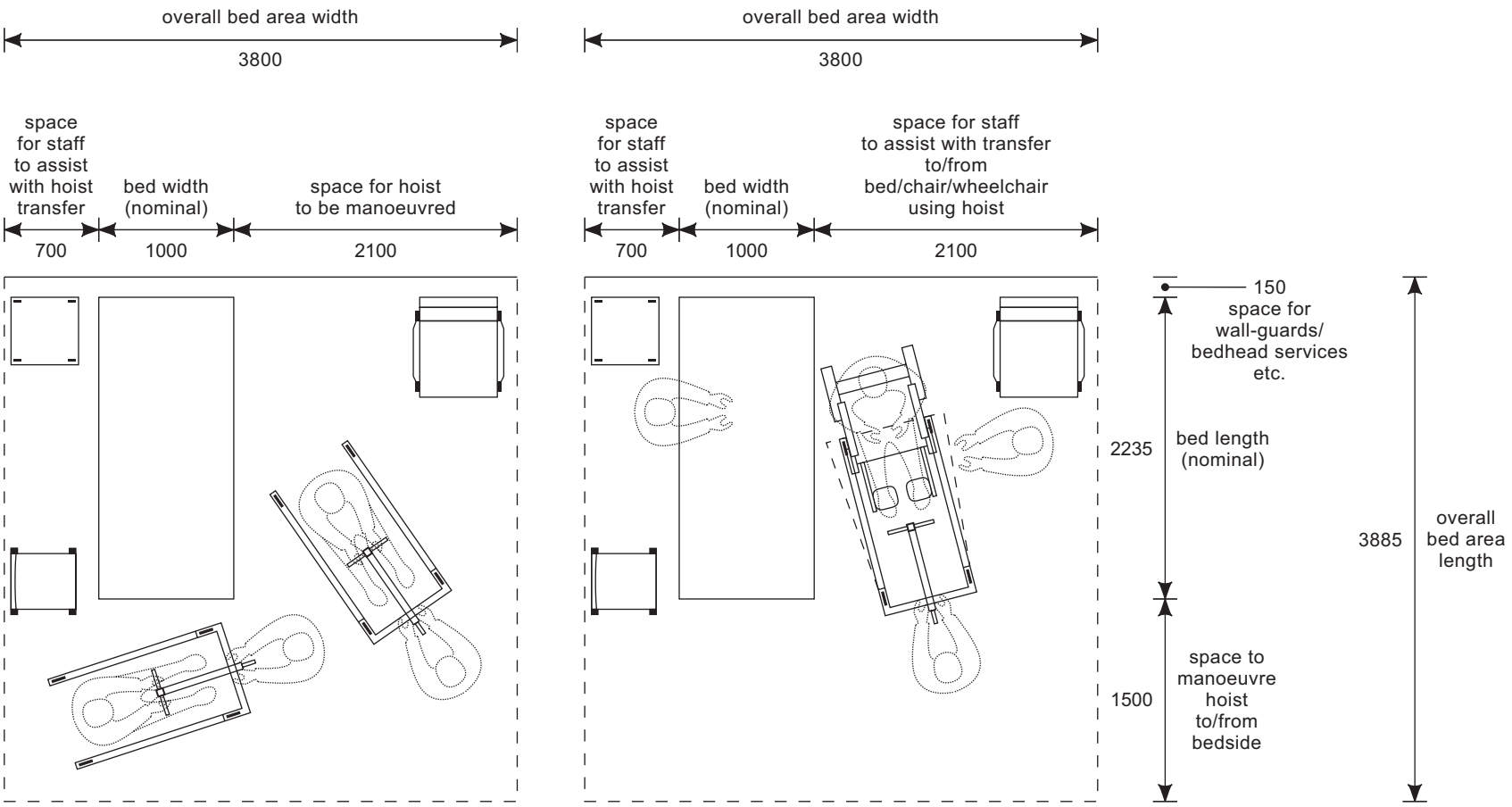
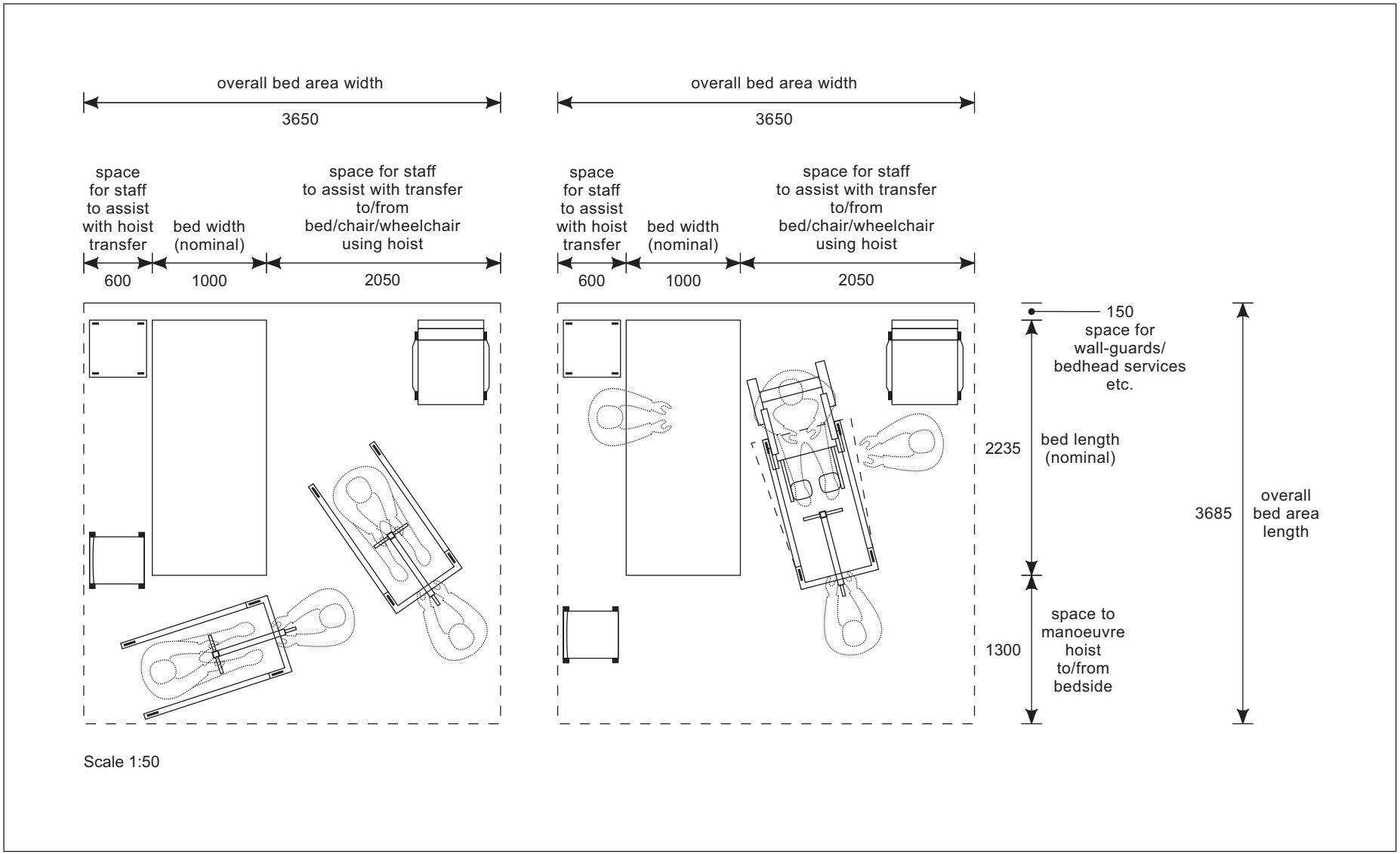


Figure 4B Space to manoeuvre a hoist and transfer a patient to and from a bed (LUT, 2004)



Using a bed for transporting and transferring patients to a second bed

According to Idema (1995), the overall width of the bed area required for manoeuvring a bed 2400 mm x 1000 mm into a position in the middle of that area is 2400 mm. The same author states that the length of the area for the same task is 3700 mm.

The RFA (2004) trials examined the space required to manoeuvre a bed into an area already occupied by a second bed, that is, to enable a patient to be transported on a bed and transferred to another bed. It was found that the space required at the side of the bed for the assistant "pushing" was 700 mm and the space for the assistant "pulling" was 900 mm. For two beds alongside each other, each 1000 mm wide, the overall required width of the bed area would be 3600 mm (that is, 900 + 1000 + 1000 + 700 mm). With a clearance of 1300 mm at the foot of the (stationary) bed it was also found possible to manoeuvre the second bed into a position for patient transfer (both beds 2235 mm long).

Figure 5 shows the bed area layout when using a bed for transporting and transferring a patient to a second bed.

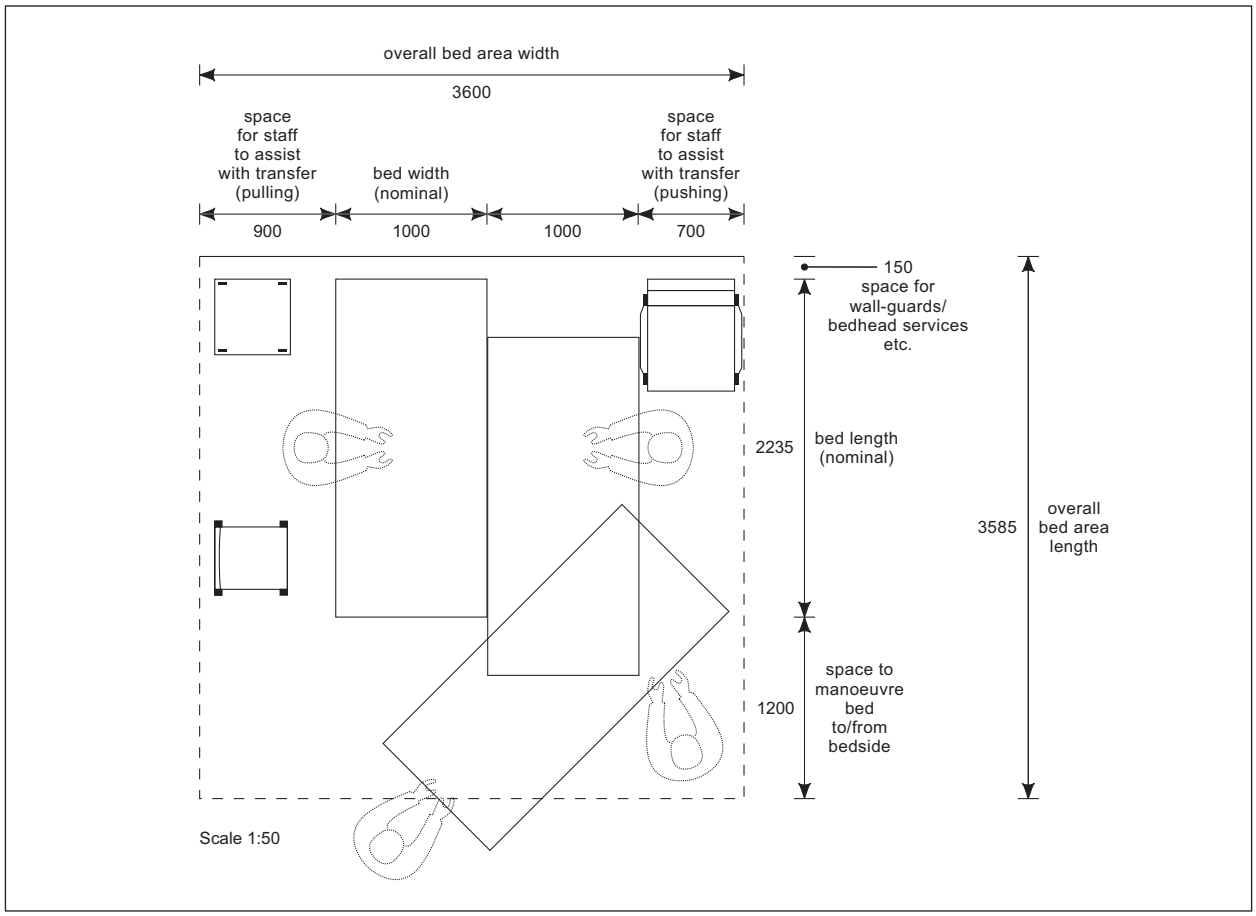
Using a shower trolley for transporting and transferring patients to a bed

The footprint of a typical trolley measures 2000 mm (L) x 600 mm (W). According to Idema (1995), the space required at the side of the bed to manoeuvre a shower trolley to a position alongside the bed and for two assistants to transfer a patient (using a slide board) to a bed (or the reverse) is 1400 mm. The space at the foot of the bed required for manoeuvring the trolley is 1100 mm. These dimensions are within those required for transporting a bed and transferring a patient to a second bed.

Using a wheelchair and other mobility devices in the bed space

Using two assistants, Idema (1995) calls for a width at the side of the bed of 1500 mm to transfer a patient from a bed to a wheelchair (or the reverse). RFA (1998) states that a space of 1450 mm is required to transfer a

Figure 5 Space to manoeuvre a bed and transfer a patient to and from a second bed



patient, and that this would accommodate the manoeuvres (that is, forward and reversing) needed for an assistant to push the wheelchair in and out of the bed area.

According to RFA (1997), for an independent wheelchair user to turn through 180º a width at the side of the bed of 1850 mm is required. This latter dimension would be the critical dimension in determining the space at the side of the bed for wheelchair activities. With a space on the far side of the bed of 700 mm and with a 1000 mm-wide bed, the overall width required is 3550 mm (that is, 700 + 1000 + 1850 mm).

Sufficient space at the end of the bed should be allowed for an occupied wheelchair with an attendant to pass through. RFA (1997) found that a width of 950 mm was sufficient, giving an overall length of the bed area of 3335 mm (that is, 150 + 2235 + 950 mm).The staff or equipment should not encroach on other bed spaces, as this could interfere with activities taking place in the adjacent bed space.

Patients using walking sticks, tripods, crutches or walking frames require space to move about easily and safely. It is estimated that their requirements will be adequately met in the space described for wheelchair users.

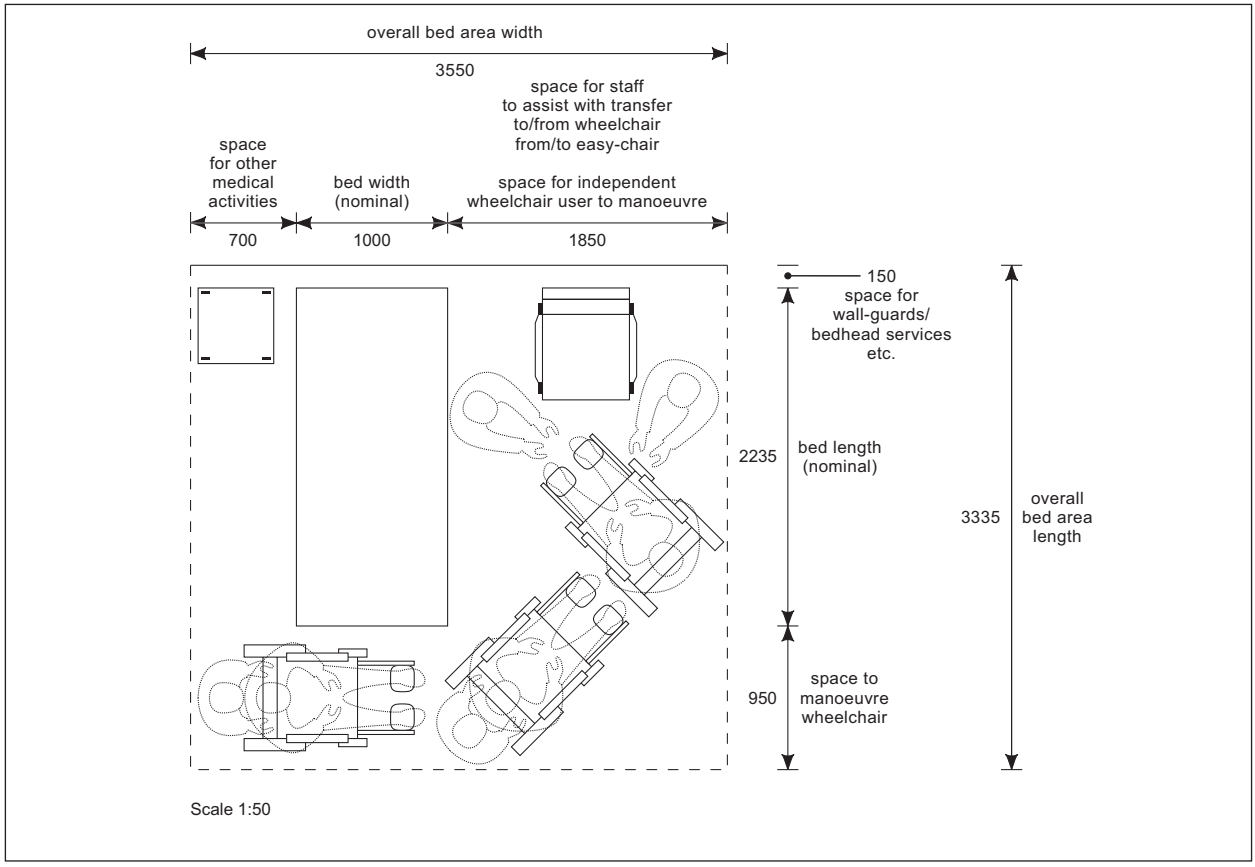
Figure 6 shows the bed area layout when patients are in a wheelchair.

Using the bed space for resuscitation procedures

The space required for an assistant (90 percentile) at the side of the bed to bend down and reach forward and apply a downwards force with the hands, should be a minimum of 1000 mm (DTI, 2000). The posture adopted would also allow the assistant to straighten up, bringing one foot backwards, after electric shock treatment. The RFA (2004) trials confirmed such dimensions to be necessary and adequate. The same trial also estimated that the equipment used for resuscitation could be accommodated if the space on one side of the bed would increase the 1000 mm to 1600 mm.

A similar space of 1000 mm (along the line of the bed) would be required to accommodate staff at the head of the bed. In addition, space would need to be allowed for an equipment trolley (measuring 600 mm x 600 mm) to be manoeuvred past the foot of the bed. The RFA study (2004) established this could be manoeuvred past

Figure 6 Space to manoeuvre a wheelchair



the foot of the bed provided there was a clearance of 800 mm. Assuming a bed length of 2235 mm and 150 mm for bedhead services, this would require an overall length of the bed area for resuscitation of 4185 mm (that is, 150 mm + 2235 mm + 1000 mm + 800 mm). For emergency procedures such as resuscitation it can be assumed that the extra space required along the length of the bed would be accommodated by using the "corridor" area between opposite beds in a four-bed room.

The preparation/storage area and hand-wash basins etc should be outside the limits set above for the critical resuscitation process so that staff are not inconvenienced, delayed or injured. This will also prevent undue stress to patients in adjacent bed spaces, although the space to use the hand-wash basin can overlap with the activity zone.

Figure 7 shows the bed area layout when resuscitation takes place as described above.

Space to allow transfer from a bedside easy chair to a wheelchair or commode

The RFA trials (2004) demonstrated that lifting a patient out from a bedside armchair, as when transferring the patient to a wheelchair, requires comfortable space at each side of the chair to enable assistants to adopt a safe lifting posture. The dimensions required were found to be 660 mm on each side. This requires an overall space at the side of the bed (assuming an easy chair width of 670 mm) of 1990 mm. Assuming a space on the non-wheelchair side of the bed of 700 mm for other medical activities or equipment, gives an overall width to the bed area of 3590 mm (that is, 600 mm + 1000 mm + 660 mm + 670 mm + 660 mm).

Figure 8 shows the bed area layout when transferring a patient from an armchair to a wheelchair or commode chair as described above.

Space to assist in controlling infection

No research evidence exists to support the minimum distance between beds to avoid cross-infection.

Space for furniture and other items

Computers are increasingly being used at the bedside. They require a surface of sufficient depth and height. For occasional use, of a few minutes at a time, it is satisfactory for staff to stand to use them at a worktop. A small computer can be placed on a 600 mm deep surface for occasional use. Increasingly, medication for the patient is kept in a locked facility at the bedside. Some supplies also may be kept at the bedside for easy access. This requires both storage and a preparation surface. This should be outside the overall space limits established for carrying out essential tasks described earlier, although the space to use it can overlap with the activity zone provided that the items can be moved easily when essential activities and procedures are being carried out.

Space for visitors

The largest space required for visitors is for those in wheelchairs. A space of 1450 mm (RFA, 1998) would easily accommodate a wheelchair user pushed by an assistant to enter or leave the bed area and to move to the side of the bed into a position facing a patient's head.

To turn an electric wheelchair through 180º, BS 8300: 2001 calls for a space of 2150 mm at the side of the bed. If, however, when entering and leaving the bedside, the wheelchair user (or someone pushing the wheelchair) uses forward and backwards manoeuvring techniques, the space required would be less than that called for in BS 8300: 2001.*

A person sitting in a bedside chair at right-angles to the line of the bed would require a space of 1200 mm (RFA, 1998). For a person sitting in an electric wheelchair at the side of the bed, a space of 1400 mm would be required (BS 8300: 2001). With a bed width of 1000 mm the overall required width of the bed area would be 3600 mm. Figure 3 shows the bed area layout with space for visitors as described above.

OVERALL SPACE REQUIREMENTS

The following paragraphs examine the minimum space required when bed areas are combined into a four-bed room or when the activities are carried out in single room accommodation. The main consideration is the space actually required. In this context the activity that requires the most space is the prime consideration.

From the analyses in the previous paragraphs it can be concluded that the most space-demanding bedside activity in terms of **width** (that is, at right-angles to the bed) is that associated with transferring a patient using a hoist from an easy chair or a wheelchair to a bed or reverse (see Figures 4A and 4B). The RFA study (2004) determined this to be 3650 mm while the Idema study showed it to be 3800 mm.

The most demanding in terms of **length** (that is, along the line of the bed) is when resuscitation takes place; for this the overall length required is 4185 mm (see Figure 7). With regard to the latter dimension, there is only sufficient space for resuscitation to be carried out if the corridor is utilised between the ends of the beds in a four-bed room. In a single room much will depend on the room layout and how the peripheral space can be utilised.

*Note: this is an unknown dimension

Figure 7 Bed area layout when resuscitation takes place

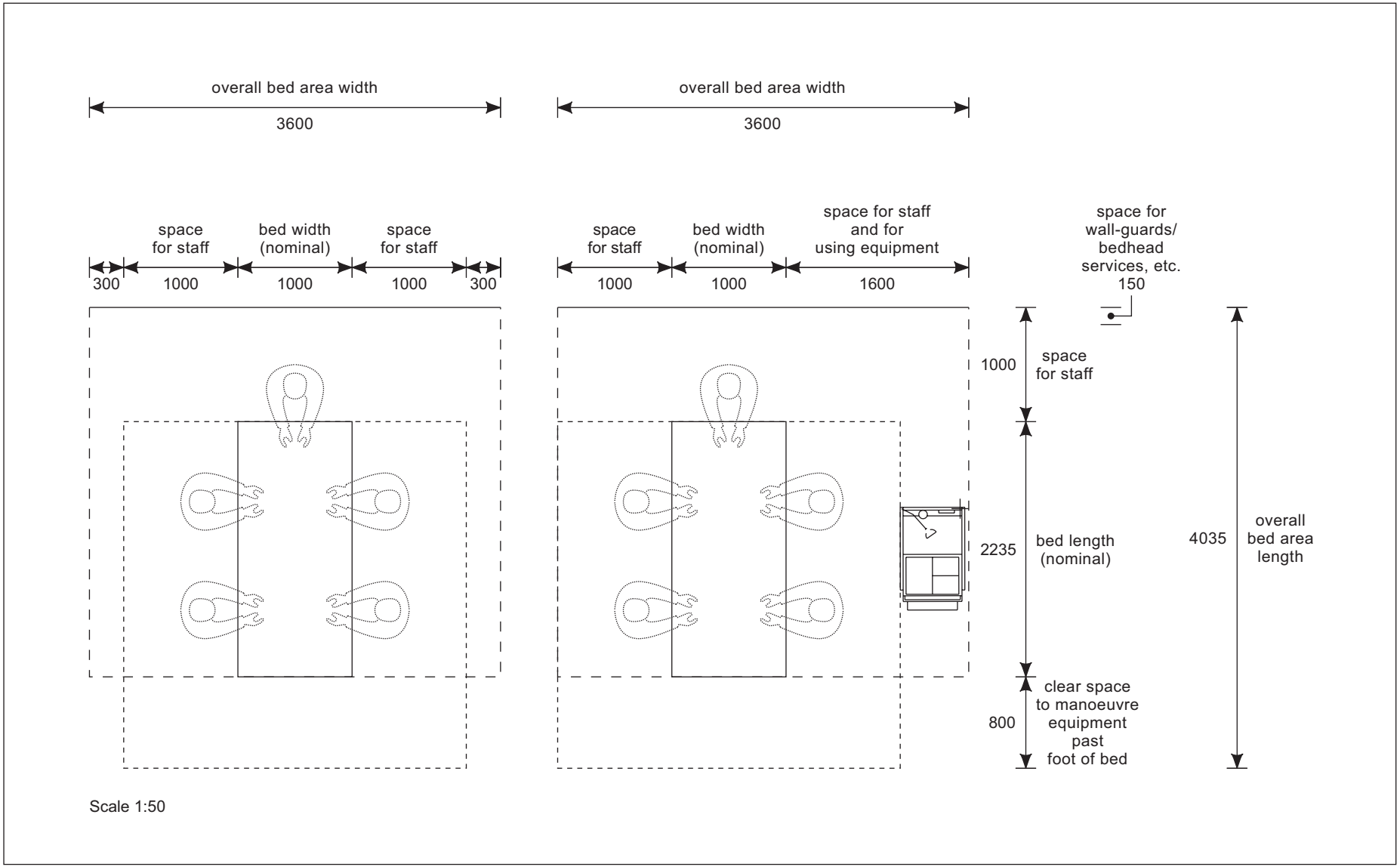


Figure 8 Bed area to allow transfer from a bedside easy chair to a wheelchair or commode chair

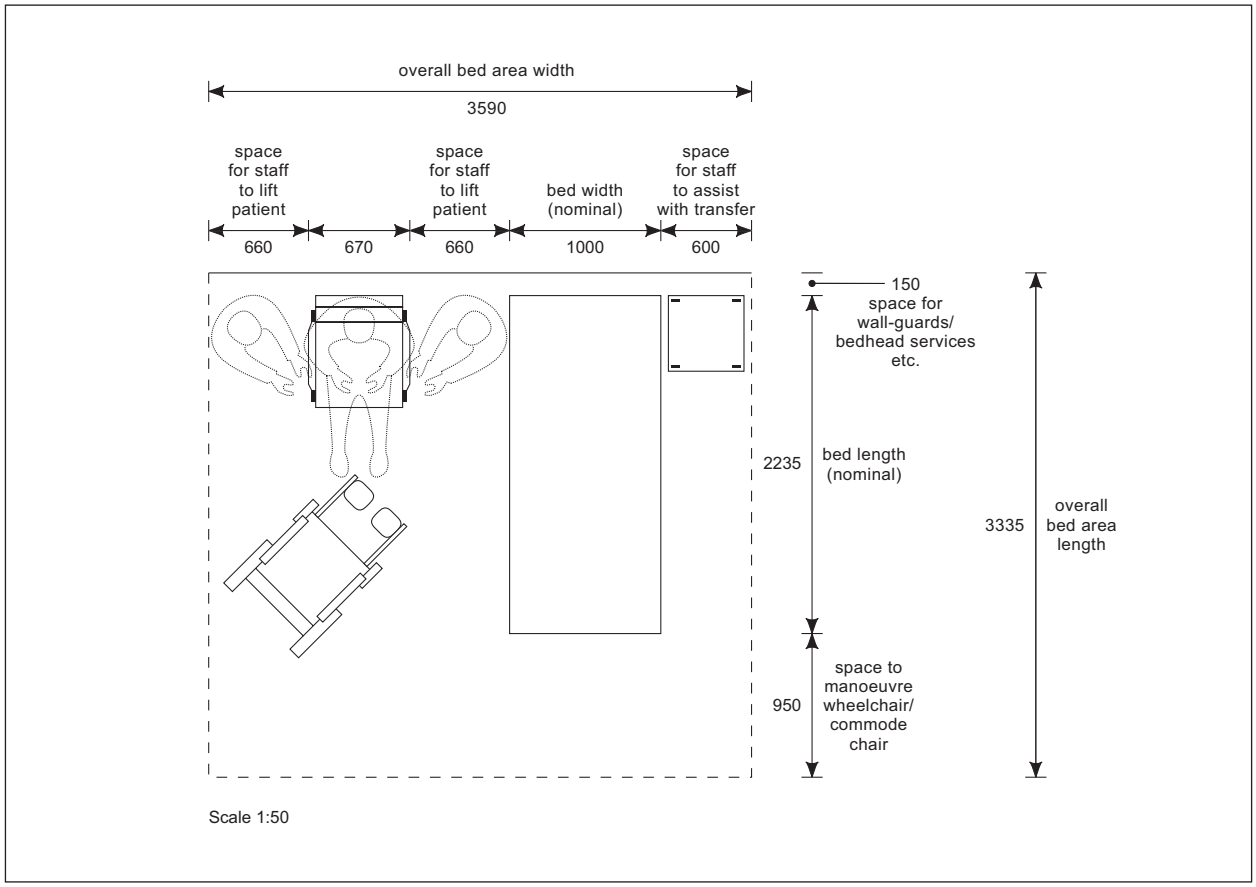


Figure 9 shows the layout of bed areas for activities demanding the most space in terms of width and length of the bed area.

FOUR-BED ROOM SHOWING ACTIVITIES IN ALL BED SPACES

Certain assumptions have been made regarding the estimated space required for bedside activities in acute hospital accommodation. One is that the following items of equipment do not exceed the given dimensions:

- a bed size of 2235 mm x 1000 mm;
- hoist – 1340 mm (L) x 700 mm (W);
- occupied wheelchair – 1190 mm (L) x 720 mm (W);
- trolley – 2000 mm (L) x 600 mm (W).

A further assumption is that bedside furniture such as lockers, chair and other items of equipment, for example computer tables, can be moved out of the way when treatment, transfer and movements take place.

It is also assumed that it is possible to move beds easily and safely into and out of the bed space, thus preserving the privacy of the person on the bed as well as those in adjacent bed spaces. It is assumed that staff or equipment will not encroach on other bed spaces, as this could be distressing for other patients or interfere with activities taking place in the adjacent bed space.

If any of the above assumptions do not apply, greater space may be required.

Figure 9 shows possible layouts of a bed area as a four-bed room with three types of activity taking place, including transporting a patient using a bed, transferring a patient from a wheelchair to a bed using a hoist, and transferring a patient from an easy chair to a wheelchair.

The curtains of all other bed spaces are closed, to provide privacy and limit distress to other patients, as the procedure would encroach into the “corridor” area.

Figure 10 shows a possible layout of a four-bed room with various activities in all bed spaces.

Figure 9 Overall space for a bed area

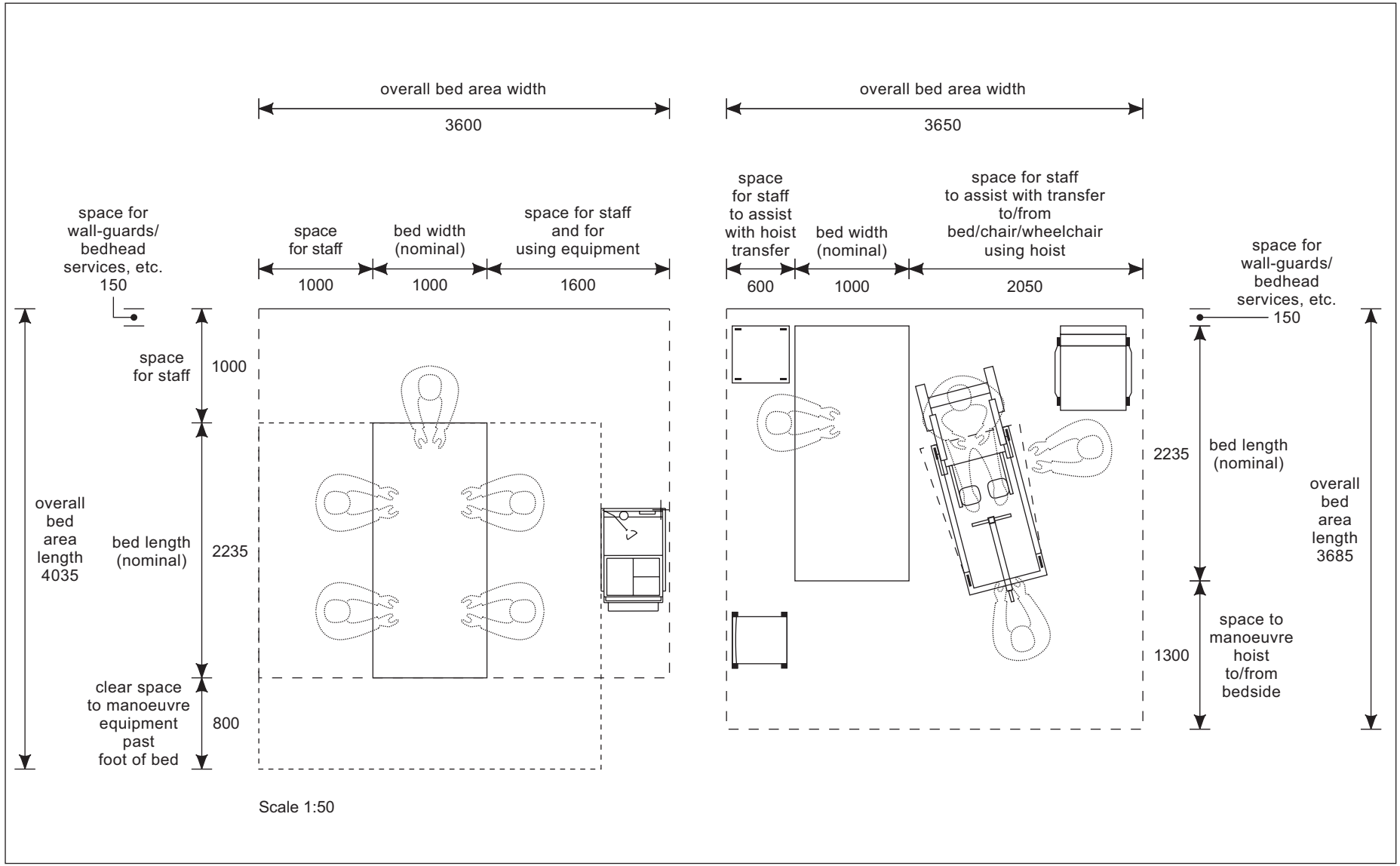
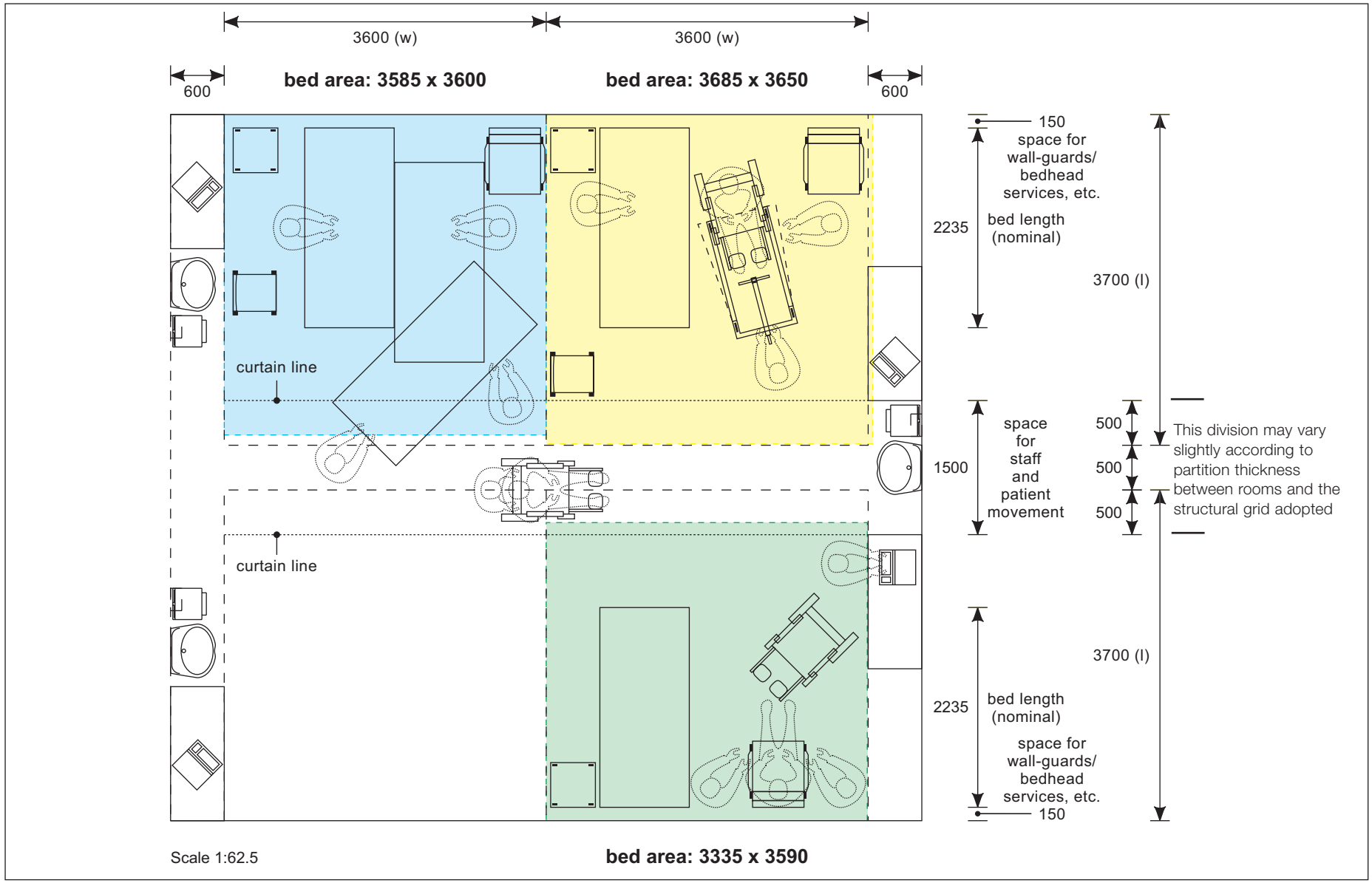


Figure 10 Possible layout of four-bed space NB **This is not a design solution. It illustrates how several activities might take place simultaneously in a multi-bed room**



Appendix 1 – The case for single rooms – a Trust perspective

SOUTH DEVON INTEGRATED CARE NETWORK
SOUTH DEVON HEALTHCARE NHS TRUST

Sasha Karakusevic, Director of Performance and Development/Project Director and Liz Childs, Director of Nursing

SUMMARY

South Devon Healthcare is one of the sixth-wave hospital rebuilding schemes approved by the Secretary of State in February 2001. The opportunity to invest in their estate has provided an additional impetus for the Trust and health community to examine how best to meet the needs of patients in the future.

From the outset, the driving philosophy has been to integrate the delivery of care between agencies and organisations to provide high-quality, seamless care for patients; hence the Integrated Care Network (ICN). This theme of integration is increasingly common, and forms the core of the World Health Report 2003. It also parallels the work of Kaiser in the USA.

For in-patients the Trust has concluded that they wish to offer single-bed rooms for adult patients within the District General Hospital, and they believe that this move will address many concerns expressed by patients. In particular:

- privacy and dignity will be improved;
- patients will be in control of their own environment; in particular, lighting, heat and noise will be better controlled;
- more treatment will be able to take place at the bedside, thus reducing directly the risks of cross-infection.

The change will also help the hospital to manage patient care better by:

- providing greater flexibility to vary case mix and the mix of men and women on a ward;
- maintaining the flow of patients through the hospital;
- better meeting the needs of patients.

Design work undertaken to support the Public Sector Comparator design has identified that to achieve this change:

- space per bed will increase by around 5 square metres per bed. This additional space has been offset by reducing the overall number of beds (supported by changes in the clinical model of care);
- there will be no increase in cleaning and hotel services costs, as these are offset by increasing the productivity of cleaning and goods distribution in public spaces;
- with supporting changes in nursing practice, the cost of nursing single rooms will be no higher than at present;
- considering the impact of "Payment by results", treating between 1 and 3 additional patients per bed per year should offset the costs.

DEVELOPING THE CASE – DRIVERS FOR CHANGE

Early work on the ICN identified that in Torbay an average patient has about 6.5 hours of nursing time per day allowed for in the budget. More detailed analysis has shown that current practice prevents hands-on care delivery rather than supporting it. The Trust's intention is that the new hospital development will reverse this trend and enable better use to be made of nurses so that better patient care can be delivered for patients.

The starting point for achieving these improvements is to change the model of care. There are several reasons for doing this:

- analysis of the local nursing workforce revealed that the number of nurses in the community is fairly constant and that more care could and should be delivered away from in-patient settings. It follows that the number of beds that can be staffed sustainably cannot increase and probably will need to reduce;
- review of a typical admission revealed long periods of low dependency. For elective patients this is typically during the pre-operative stage. For emergency patients it is at several points in the care pathway;

- emergency patients often have several transfers during their admission to accommodate the needs of other patients and to manage relative risk;
- unacceptably high numbers of patients have had their planned admissions cancelled at the last minute due to bed shortages.

The Trust has had the opportunity to tackle a number of the causes of these failures, and over the past four years:

- have reduced the average number of occupied beds in the community;
- have reduced the variation in daily demand for beds;
- have provided alternatives to admission and routes for early discharge.

This has provided the scope for improvement, as it released the funding required for building and operating the additional beds that was included in the financial model.

In total, average occupancy has reduced from 676 beds to 644 beds per day (measured at midnight). More importantly, the expected peak demand has decreased from 801 to 725 beds. Over the period, the number of available beds has reduced from 816 to around 750. By improving the management of admission and discharge, the system can cope much better with the average daily admissions and discharges of 105 per day (expected range of 90–120).

There still are problems with very high occupancy levels. This is the next target that the Trust wants to resolve, to test sustainability ahead of the new-build project.

The Trust expects to build on these changes within the new hospital by:

- increasing the size of the non-elective assessment area to provide more flexibility and enable patients to be managed in one location until a treatment plan can be agreed;
- continuing the development of the surgical admissions unit (probably as a planned admissions unit) to enable patients to be admitted without the need for their post-procedure bed to be available;
- continuing to seek alternatives to hospital admission through improved chronic disease management and care of patients with expected lengths of stay over 14 days;
- continued development of the Pre-operative Assessment Unit, whereby all patients admitted for elective surgery will have been pre-operatively assessed and discharge planned prior to admission.

As a result there will be:

- less movement of patients (both within the ward and between wards);
- more flexibility between patient groups;
- no night admissions to the wards.

To provide further flexibility and control at ward level it is expected that:

- wards will be paired to allow greater flexibility of staff, particularly at night;
- administration and clerical time will be increased to allow a greater proportion of time to be spent on direct care by nursing staff;
- bed-making teams will be provided;
- better control of infection will be achieved;
- a “hospital at night” scheme will be introduced to match patient needs and resource more closely;
- centrally prepared IV drugs will be used to minimise handling time and risk at ward level.

Some concern has been expressed about limiting opportunities for mixing with other patients. In the future it is anticipated that patients will be in hospital for even shorter periods and will be increasingly dependent, leading to reduced time or need for socialisation. However, within the proposed ward design, common space will be allowed where patients can choose to go if they wish to meet other patients.

Other concerns relate to observation by and involvement with nurses. In the Trust’s view this is not an issue about the merits of single rooms or Nightingale wards but about working practices and expectations.

Establishing a ward layout to achieve the number of single rooms has proved to be a challenge. It has been established that single rooms do not use much more space than a traditional hospital ward. In fact, the differential between 50, 65 and 100% single room layouts is too small for us not to aim for 100% single rooms.

The aim is to do this by:

- getting the mix of rooms right – not all of them need to be the same size;
- sharing ward reception areas between two groups of 24 beds;
- designing around the needs of patients;
- designing around the work of teams of nurses;

- keeping noisy supply processes out of the bed areas.

The design proposal aims to provide:

- a clear entrance and information point for the wards;
- areas for discussions with relatives and for one-to-one staff meetings;
- a sense of security;
- calm and peaceful corridors;
- a close relationship between patients and their nurses.

COSTING INFORMATION

For comparative purposes it is difficult to isolate the cost of bed provision and its revenue consequences from the costs of the rest of the episode of care; however, the figures in Table 1a summarise the main changes the Trust expects to achieve, which include:

- the cost per day of the estimated capital costs of the space required for single rooms;
- the additional hotel service costs for single rooms;
- the change in nursing costs.

Two sets of figures are presented to demonstrate the impact with and without the planned skill-mix changes and therefore demonstrate a range of possible changes required.

Table 1a

Additional costs of beds in single rooms		
	Cost per bed day – planned skill mix	Cost per day of existing skill mix
Additional space cost per bed	5.14	5.14
Additional cleaning per bed	3.07	3.07
Nursing cost	–5.35	0.00
Cost per day	2.85	8.20

Table 2a sets out the additional cost of single rooms in relation to the cost of the hospital episode. It can be seen that the marginal cost of a single room is relatively small and can easily be offset with marginal increases in activity. If the planned skill-mix changes are achieved, the Trust would need to treat only an additional one patient per bed per year to cover the additional cost. Without the skill-mix changes, this figure increases to around 2.5 patients per bed.

At present the costing model allows for 1077 m^2 for 24 beds, and this has been costed at £1,463,209 (£60,967 per bed) before on-costs, fees and equipment.

Table 2a

Additional cost of beds in single rooms		
	Cost per bed day – planned skill mix	Cost per day of existing skill mix
Average cost per FCE	1350	1350
Average length of stay of FCE (days)	3.5	3.5
Change as % of cost	0.7	2.1
Increases in FCEs required to mitigate cost	263	757
Equivalent to an increase in patients/bed year	0.82	2.37

Appendix 2 – Current status of single-bed in-patient accommodation

In existing NHS building stock, levels of single-bed in-patient accommodation are inadequate. Wanless (2001) notes that *"Much of the NHS estate is in need of modernisation . . . 29% of the NHS estate pre-dates 1948. Current information suggests around 50% of people prefer single rooms, with around 40% preferring multi-bed bays. At the moment the NHS rarely provides more than 20% single rooms in its hospitals. Over the next 20 years, the number of people preferring greater privacy while in hospital is likely to rise."*

Rawlinson, Kelly and Whittlestone's survey (1990) of the type of hospitals built in Britain in the 25 years up to 1990 is informative. The authors also reported on consumers' views about their accommodation, drawing partly on a catalogue of over 400 surveys produced by the Centre for Health Economics. A summary of problems identified by patients covered issues such as the layout of the hospital or department, location of signposting, car parking, lack of privacy and/or confidentiality in a variety of departments, lack of and inadequate provision of service, operational policies, overcrowded waiting areas, too few bathrooms and WCs, lack of play area for children (in OPD), lack of toys, need for improved refreshment facilities, smoking allowed in dayrooms, ambience/décor/environmental aspects, drabness of décor in waiting areas, lack of magazines, preference for music in waiting areas, temperature too high in bedrooms, and cleanliness of bathrooms.

Martin (1991) recommended that at least 50% of hospital beds be accommodated in single-bed rooms. He calculated that single-bed room accommodation would require more proximal nursing stations and *"state-of-the-art"* communications. He surmised that if every patient were accommodated in a single-bed room, bed occupancy would increase.

Appendix 3 – The benefits of single rooms' provision and their impact on staff and patient health outcomes within the NHS in England

The University of Sheffield School of Architecture has recently carried out research on behalf of NHS Estates looking into the contribution that higher percentages of single rooms make to staff and patient health outcomes. Three hospitals were included in the study:

- Poole General Hospital (50% single occupancy provision), in operation since around 1994. The hospital development embraces the Planetree philosophy from the USA, advocating the patient's perspective in healthcare;
- Hexham General Hospital (85% single occupancy provision) welcomed its first patients in July 2003. The hospital is a replica of one successfully built in the USA;
- Kidderminster Treatment Centre (100% single occupancy provision), in operation for six months, embraces the Wellness philosophy from the USA, combining strategies of prevention with rehabilitation. This philosophy concerns a holistic approach that entails keeping people well rather than treating them once they become sick.

As part of the research process, interviews were conducted with suitable personnel at each of the selected hospitals. Each of these interviews addressed a set of typical questions. Visits and site inspections were made to each of the selected hospitals in order to gather information to complement material obtained from interviews. The following is a summary of responses taken from an interim draft of their study.

FLEXIBILITY OF MANAGING BED AVAILABILITY AND PATIENT PLACEMENT IN APPROPRIATE BEDS

Poole General Hospital

The decision to have 50% single rooms has had a big impact with regard to bed management and patient placement, giving major benefits to the Trust.

"Singles rooms provide flexibility for use by male or female patients and the isolation of difficult or noisy patients, thereby providing a better environment for others. With more research, there is a case for a higher percentage (from 50% to 75%) to further enhance flexibility." (Director of Nursing)

Hexham General Hospital

The experience of Hexham suggests that the provision of 85% single in-patient rooms appears to have been more than justified.

"Staff who were highly critical of the decision during the planning of the hospital have been pleasantly surprised with how well the hospital seems to operate, and now acknowledge the provision of 85% single rooms is a success." (Project Manager)

Kidderminster Treatment Centre

At Kidderminster a provision of 100% single occupancy accommodation complete with en-suite showers appears justified.

"The 100% single rooms provision is crucial for success in this type of healthcare facility for elective healthcare. The whole philosophy upon which it is based is to promote a provision of hotel type of stay." (Project Manager)

OVERALL BED OCCUPANCY LEVELS AND CAPACITY

Poole General Hospital

The 50% single beds at Poole are making a major contribution towards hospital operation under the consistently high occupancy levels and the high and variable demand for emergency admissions.

"Seasonal peaks in emergency admissions would otherwise be unmanageable." (Project Manager)

Hexham General Hospital

The 85% single rooms make for easier management of healthcare accommodation under the current high occupancy levels.

"It facilitates the implementation of objectives described in the 'Essence of Care' document for nursing officers. This in turn offers a useful means of benchmarking healthcare facilities across the Trust." (Senior Nursing Officer)

Kidderminster Treatment Centre

The 100% single rooms at Kidderminster are crucial for this type of healthcare facility.

"Whereas at a general NHS hospital (such as Worcester and Redditch) operations are affected by emergencies and seasonal demands, which mean some operations are subject to cancellation or delay because emergencies take precedence, at Kidderminster elective surgery is separate and distinct healthcare. For patients, Treatment Centres provide a number of benefits:

- speed and improved communication – waiting less time for many routine operations;
- choice of operating slots – having a choice about where and when they get treated;
- high-quality treatment – being given the most advanced treatment available and being looked after by teams of specialised health professionals;
- reduced risk of cancellations – not having their operations cancelled for non-clinical reasons (Treatment Centres are protected from emergency pressures);
- enhanced patient satisfaction – being treated in comfortable, modern surroundings, where traditional departmental boundaries have been largely removed and where their well-being is paramount." (Project Manager)

INFECTION CONTROL, CROSS-INFECTION AND INFECTION RATES

Poole General Hospital

Poole reports a very positive experience from its 50% single rooms provision.

"There is no doubt that having so many single rooms has made isolation nursing for MRSA and *Clostridium difficile*-associated diarrhoea a practical and effective measure. It is our experience that being able to contain norovirus diarrhoea and vomiting outbreaks in the main hospital block is helped enormously by having single rooms.

"Of course, having single rooms is only part of effective infection control. If staff are not washing their hands appropriately, the benefits can be lost; but the converse is true – that there are many infections that would continue to spread without sufficient single rooms, no matter how well staff wash their hands." (Consultant Microbiologist)

"The Trust has been able to reduce the level and spread of infection due to its ability to isolate patients. This has been particularly helpful when you compare this to the situation at the Royal Bournemouth Hospital where they only have two single rooms per ward and have been unable to contain MRSA and norovirus outbreaks." (Estates Manager)

Hexham General Hospital

With 85% single rooms, Hexham has not experienced any outbreaks of MRSA or *Clostridium difficile* antibiotic associated diarrhoea, and therefore has not had to close off any wards.

"Looking back over all the monthly infection control reports there have been two outbreaks in the old hospital, one in September 2002 involving ten patients and nine staff on Ward 6 (Rehabilitation and Stroke unit) and one in July 2002 involving nine patients and ten staff on Ward 12 orthopaedic unit." (Consultant Microbiologist, Infection control team)

Kidderminster Treatment Centre

This facility has not been operating for long enough to be able to provide data on infection control, cross-infection and infection rates.

PATIENTS' "MOVES" AND "TRANSFERS"

Poole Hospital

The 50–50 split of single rooms versus multi-bedded rooms evident at Poole provides a greater opportunity for patients' "moves" and "transfers".

"Patients are routinely moved to isolate difficult or noisy patients, thereby providing a better environment for all other patients. They are also moved when their situation deteriorates or when the bed is needed for a much sicker patient." (Estates Manager)

Hexham General Hospital

The higher percentage of single rooms of 85% was helpful in reducing the number of patient moves and transfers.

"Irrespective of the type of accommodation, the nature of the process of admission and the high occupancy levels involve movement of patients in particular from the emergency department to the wards, then surgery, often followed by some time in the high dependency unit before returning back to the wards or 'step down' rehabilitation units. However, with a greater number of single rooms, patients are admitted into a single room and they are often unlikely to be moved. It is therefore

easier to pre-empt patient requirements." (Senior Nursing Officer)

Kidderminster Treatment Centre

"To date at Kidderminster, with 3000 procedures completed out of an annual target of 6000, there have been no instances for patient moves or transfers. Patients are admitted into the single rooms, go for surgery and are then released immediately after surgery to go home or go back to the single room for an overnight stay or longer length of stay depending on the nature of the treatment." (Project Manager)

PATIENT SATISFACTION

Poole General Hospital

Feedback from patients' experience with 50% single rooms indicates full support for the single rooms.

"The majority of patients want the privacy of the single room, which also enables them to be self-sufficient as soon as possible; that is, they are able to utilise the en-suite WC/shower rather than call a nurse for a bedpan, which would have been the case in a multi-bed ward, and this is obviously not only a benefit to the patient but also the nursing staff. It also helps the patient regain their independence as quickly as possible, which is of particular benefit with the elderly population. The downside to these efforts for independence has been noticeable in the increased number of patient falls." (Project Manager)

"There is a feeling of being in a private hospital and not an NHS establishment." The provision of single rooms even at 50% raises the status of the hospital.

Evidence at Poole with 50% single rooms also notes that moving a patient and child from a single room to a multi-bedded bay usually resulted in a complaint. No complaints were made when patients were moved to a single room.

Hexham General Hospital

The experience of both Hexham with 86% single rooms and Kidderminster with 100% single rooms suggests that young patients rather than the elderly appear to be less dissatisfied with single rooms. They utilise fully the technology within the room such as interactive TV and games.

Kidderminster Treatment Centre

The 100% single rooms provision at Kidderminster is directed at a particular category of patient.

"The category of patients tends to be young and relatively free of major complications. Also, this category of patients tends to appreciate the privacy offered by the 'patient space' concept, clearly defined with doors having no view panels but allowing for patient control and manipulation." (Project Manager)

DEALING WITH DIFFERENT SPECIALTIES

Poole Hospital

The experience of the Cancer Centre at Poole with 50% single rooms provision highlights the need for a higher percentage.

"Since the new build of the Cancer Centre we have seen a huge reduction of our single rooms. Before the move we had 18 beds on haematology ward, all of which were single rooms. The new ward, Durlston, had 16 beds, with only four of these being single rooms, the rest two-bedded rooms. The result was that within 6 months we had converted one of the two day rooms into a cubicle and closed a bed in a two-bed ward to give us 6 cubicles. We have been fighting ever since to accommodate all the patients who require single rooms. The situation on Tyneham was no better; we went from six cubicles when on B3 down to three when we moved. The lack of cubicles on Tyneham has caused immense problems with infection control, and the number of bed days we have lost because of MRSA and clostridium patients having been identified in a bay which has subsequently had to be closed to new admissions, has been huge." (Nurse on an oncology unit)

In the paediatrics unit at Poole with its 50% single rooms provision, "Most patients and parents want 100% single rooms. Many of the parents spend a considerable amount of time with their children, and it proved a major winner when we moved from multi-bed bays to single rooms some years ago."

In general, orthopaedic and trauma wards are seen as not requiring as many single rooms as medical and surgical wards.

SIZE, CRITICAL DIMENSIONS OF THE SINGLE ROOM AND DESIGN OF NURSING UNIT

Poole Hospital

Clearly, the 50% single rooms provision at Poole has also been adversely affected by the smaller sizes of the single rooms and nursing unit design.

"Some of the single rooms at Poole are very small and make bed movement difficult." (Nurse)

"Single rooms on B3 are dangerously small for staff to work in. The staff are unable to care for patients without significant environmental considerations, and any bed transfers have to be performed in the corridor! Perhaps there is a need to examine the single room provision

from an ergonomic point of view, including eliciting the opinions of staff who use them." (Nurse)

"Of the trauma wards, nearly 50% of the falls occur on A3, with 50% single rooms. This may be due to both the type of the patient and the geography of the ward." (Nurse)

Hexham General Hospital

The 85% single rooms provision at Hexham was considered to be more important than size of the single rooms.

"The sizes of the rooms, at 11–12 m^2, were largely cost-driven in terms of construction costs, and there was no clinical need for larger sizes. However, the prevalence of extended families in the population served by the hospital could benefit from increased sizes for patient visits." (Senior Nursing Staff)

Kidderminster Treatment Centre

The 100% single rooms provision has been enhanced by the large area of each of the rooms.

"In general there has been positive feedback from patients, indicating 92% satisfaction rates with size of rooms and en-suite shower facilities." (Project Manager)

Appendix 4 – The views of patients and their families and other research

Patients consulted have made it clear that they expect their care to be delivered in a warm, clean and welcoming environment. Detailed patient surveys and consultations with user groups both in the UK and abroad have elicited similar concerns.

In July 2001 NHS Estates commissioned a telephone survey of 818 people in the UK. The respondents were asked: if they were ever admitted to hospital, which type of accommodation they would prefer. More than 50% (n = 426) preferred a single room, with the majority of these wanting an en-suite bathroom and WC (n = 385). A further survey completed in August 2001, this time with 823 respondents (a random stratified sample), explored the issue further. For an overnight stay 493 people would want a single room, although fewer (n = 377) wanted this for a few days' stay. The overwhelming reason for preferring a single room was "social", with 94% citing this. The respondents were asked to list the advantages of a single room as they saw it. In rank order, their responses were:

- Privacy/more private/private person
- Quieter/less noise/peace and quiet
- Wouldn't be feeling very sociable
- Difficulty in sleeping with other people around
- More personal
- Cleaner/better hygiene
- Less likely to get germs from other people
- Like en-suite accommodation, like being in a hotel
- Could not sleep with strangers around
- Would feel more secure.

A study by the Stroke Team for Audit and Research at University Hospital Aintree, Liverpool investigated patients' feelings regarding levels of privacy and their preference for single versus communal rooms on three rehabilitation wards. In total, the three wards contain 86 beds, only four of which are in single rooms. A total of 51 patients completed a five-question survey. 73% of the patients said that they felt privacy was not a problem on the ward and 76% said they felt that they obtained enough rest on the ward. Furthermore, 88% said that they enjoyed having the company on the ward and 88% said they would prefer to have a bed on a ward than in an individual room, with 71% claiming they would feel isolated in a private room. The survey suggests that level of privacy requirements may differ for patients on rehabilitation wards, with patients actually preferring communal ward beds as opposed to private rooms under such circumstances (Sharma & Monaghan, 2003).

In 1999 the Picker Institute designed, tested and subsequently published four documents, all of which relate to 'Assessing the Built Environment from the Patient and Family Perspective'. Patient and family participants discussed what they felt were the most important factors for an acceptable healthcare building. The Picker Institute then clustered these into eight dimensions of care. Patients and their families want an environment that:

- facilitates a connection to staff;
- is conducive to a sense of well-being;
- is convenient and accessible;
- promotes confidentiality and privacy;
- is caring of the family;
- is considerate of impairments;
- facilitates a connection to the outside world;
- is safe and secure.

Although the pilot study was conducted in the US, the questions asked are relevant to the UK, and cover issues such as ability to control own room temperature; privacy and confidentiality; enough space in the room for visitors; enough space in the bathroom.

A study in 1996 by McColl et al conducted on 20 medical and surgical wards in the north of England explored patient satisfaction with nursing care. 1920 patients participated in a retrospective questionnaire. They were asked solely about nursing care, and the environment was not included. The reported findings, however, raise interesting issues and are cause for further debate. The wards were all multi-bay and similar

in size. Overall, 95.9% were more than satisfied with their care, appreciated the nurses' sense of humour, thought that nurses were knowledgeable, and had few negative things to say. One of the aspects they liked least, however, was that nurses did not check them regularly or respond when the patients called them, or they forgot their requests, or they were "not sufficiently attentive to their needs".

It can be argued that as patients were accommodated in multi-bed bays, nurses were less likely to check them, as they rely on patients to observe each other. Patients accommodated in single rooms would perhaps be more likely to be checked regularly, and certainly an immediate response to their call bell would be expected. Insufficient attention to the patients' needs could be interpreted in numerous ways, but one suggestion based on a further finding reported later in the paper was that 25% of the respondents felt that they were not told enough about their treatment.

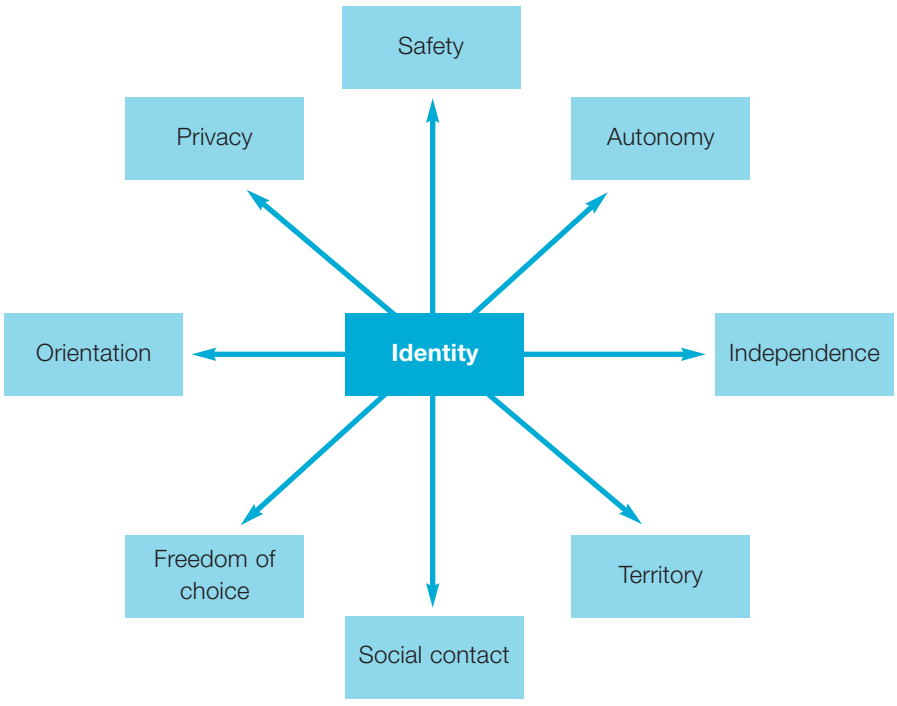
As the Picker Institute findings indicated that nurses were concerned about the lack of privacy for their patients, could it be that the nurses in McColl et al's study were reluctant to discuss confidential matters with their patients knowing full well that the conversation would be overheard by all the neighbouring patients? If true, this leads to the conclusion that nursing practice is compromised by an inability to communicate adequately with patients because of external tensions, in this case other patients' proximity.

Wanless (2001) observes that *"Patients can be expected to become increasingly demanding, for example in terms of the quality of treatment they receive, the time they are willing to receive it, and the comfort and convenience of the environment within which they receive it"* (para 4.18). This suggests that significantly improved facilities through modernising the NHS estate will be required before patients' expectations are met (para 2.43). Mixed sex wards, dirty facilities, lack of privacy, high noise levels, and lack of sleep are constant complaints (paras 7.16–7.17). This strongly suggests that traditional Nightingale wards, and "European" or "Rigs" wards sub-divided into multi-bed bays, are no longer acceptable to the majority of patients.

RESEARCH IN THE NETHERLANDS 2001

In research carried out by STAGG in the Netherlands (Hoekstra, E.K. & Liempd, H.M.J.A. (eds) (2001), 'Pruimte voor Patienten. Bouwen aan ziekenhuizen vanuit patientenperspectierf') to look at the relationship between a patient's behaviour and their physical environment, conversations with client organisations and discussions with the Dutch patient/consumer organisation show time and time again that patients are very aware of shortcomings in their environment. The report suggests that if a patient can retain their sense of identity, it enables them to resist negative aspects of a hospital stay, such as stress, and assists their ability to recover more quickly.

The concept of identity is divided by the authors into eight themes (see diagram below). These themes are born out of international literature reviews. The report explores the themes in relation to planning, designing and evaluating hospitals with the focus on the patient room.



Eight themes that interact to form the concept of "identity"

Identity is explained as "that which is owned by the person". Retaining one's own identity is difficult in an unknown environment such as a hospital. The patient is no longer in control of the elements which give him identity: time to do things of his own choice and in his own space (Goffman, 1961). In an often stressful situation of hospital admission, the loss of identity will often lead to more stress, and have a negative influence on the well-being of the patient and the healing process.

The report illustrates the way these themes interact and compete with one another. On balance, it suggests that a patient's sense of identity is more easily maintained in a single room rather than in multi-bed rooms, where a significant loss of identity is manifested. It demonstrates that if multi-bed rooms are to be included, more attention needs to be paid to the provision of additional facilities to compensate for their disadvantages. Ultimately, a good patient-orientated environment will save in costs.

OTHER RESEARCH IN THE UK

Corner (2001) adopts the perspective of the patient and observes that *"Little or no connection exists between the acts of healthcare and what is normal or what matters to us"* (p 1). She questions why the healthcare system is designed to benefit the staff and not the patients. She senses that *"the sense of me being cared for still seems absent"* (p 7). Healthcare staff, she suggests, expect patients to become infants in the current system. Harsh words indeed, but not without inducing the uncomfortable feeling that she is absolutely right.

The need so frequently expressed by the nursing staff – to be able to see every patient at all times – is totally inappropriate and encourages the vision of Bentham's "panopticon" adopted by the prison service in Victorian times, *"whereby all prisoners could be watched from a single central surveillance point"* (p 17). What is more, the "panopticon" (in this case the nursing station or office) reinforces the concept of power, discipline and correction. It is an institutional approach, with the patients as prisoners. Current hospital design, according to Corner, represents productivity not sanctuary, thus reiterating the idea that hospitals are built for the convenience of the staff who work in them rather than for the benefit of patients and their families.

Two major changes are needed, she suggests, before the patient's wider sense of self can be achieved. The first is promoting greater autonomy and choice, and the second is to create a caring environment which enables patients to retain their autonomy. In most circumstances it is not unreasonable to suggest that members of staff should knock on a patient's door and seek permission to enter.

Corner suggests that a new value system is needed in healthcare, one in which a patient's sense of self is viewed as the top priority. Treatment and care should underpin this philosophy. *"Within the more solid settings of formal healthcare, an environment more familiar to people's everyday lives might be created, where caring and 'self' care is valued equally to treatment and science, and where those providing care are less preoccupied with their career and status"* (p 62). She concludes her monograph by warning that unless the healthcare professions adapt their culture to embrace the patient's sense of self, there will be increasing dissatisfaction, criticism of the service, and a potential for defragmentation of the infrastructure. Alternatively, if the culture is changed from within, it would be a liberation for patients and staff alike.

Appendix 5 – Activities at the bedside

CLINICAL TREATMENT AND CARE

- emergency admissions;
- admission, with the intimate discussion of personal matters;
- specific medical and nursing interventions and observation;
- rehabilitation;
- teaching and training the patient and relatives;
- informing, discussing, listening and advising;
- giving a diagnosis, breaking bad news;
- using monitoring/diagnostic equipment;
- use of mobile X-ray machine;
- using computer terminal;
- oral care;
- access to oxygen and suction (both of which should be available through wall sockets);
- making beds/changing bed linen;
- patient to receive therapeutic and clinical attention from health team staff;
- washing/bed bathing;
- physical examination (at least two members of staff present);
- teaching (medical ward rounds for example);
- naso-gastric feeding equipment;
- catheterisation and catheter care;
- incontinent patients/intimate care;
- IV/parenteral/blood therapy with several stands;
- free-standing drains (chest drains for example);
- wound dressing;
- physiotherapy/occupational therapy;
- resuscitation;
- orthopaedic patients with traction, pulleys and weights;
- pressure area care.

PERSONAL CARE AND MAINTENANCE

- transfer of patients using a hoist;
- eating, drinking, washing and toileting;
- entertainment/diversion, reading, watching the television;
- socialising;
- patient to undress/dress in vicinity of bed, with/without assistance;
- patient to use commode;
- patient to read, write, listen to radio, view TV and use telephone;
- patient to take meals in bed or by the bed;
- patient to receive visitors;
- patient to have privacy as required;
- overnight stays by relatives.

SUPPORT ACTIVITIES

- preparation of clinical procedures;
- maintaining records;
- holding stores;
- communicating;
- developing staff skills;
- holding clothing and personal effects;
- preparing of clinical procedures;
- holding day's supply of linen and surgical goods/supplies;
- temporary storage of Zimmer frames/wheelchairs.

Appendix 6 – References

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