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# Health Building Note 00-10

## Part C: Sanitary assemblies

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# Preface

## About Health Building Notes

Health Building Notes give “best practice” guidance on the design and planning of new healthcare buildings and on the adaptation/extension of existing facilities.

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

## The Health Building Note suite

Healthcare delivery is constantly changing, and so too are the boundaries between primary, secondary and tertiary care. The focus now is on delivering healthcare closer to people’s homes.

The Health Building Note framework (shown below) is based on the patient’s experience across the spectrum of care from home to healthcare setting and back, using the national service frameworks (NSFs) as a model.

## Health Building Note structure

The Health Building Notes have been organised into a suite of 17 core subjects.

**Care-group-based** Health Building Notes provide information about a specific care group or pathway but cross-refer to Health Building Notes on **generic (clinical) activities** or **support systems** as appropriate.

Core subjects are subdivided into specific topics and classified by a two-digit suffix (-01, -02 etc), and may be further subdivided into Supplements A, B etc.

All Health Building Notes are supported by the overarching Health Building Note 00 in which the key areas of design and building are dealt with.

### Example

The Health Building Note on accommodation for adult in-patients is represented as follows:

“Health Building Note 04-01: Adult in-patient facilities”

The supplement to Health Building Note 04-01 on isolation facilities is represented as follows:

“Health Building Note 04-01: Supplement 1 – Isolation facilities for infectious patients in acute settings”

Health Building Note number and series title	Type of Health Building Note
Health Building Note 00 – Core elements	Support-system-based
Health Building Note 01 – Cardiac care	Care-group-based
Health Building Note 02 – Cancer care	Care-group-based
Health Building Note 03 – Mental health	Care-group-based
Health Building Note 04 – In-patient care	Generic-activity-based
Health Building Note 05 – Older people	Care-group-based
Health Building Note 06 – Diagnostics	Generic-activity-based
Health Building Note 07 – Renal care	Care-group-based
Health Building Note 08 – Long-term conditions/long-stay care	Care-group-based
Health Building Note 09 – Children, young people and maternity services	Care-group-based
Health Building Note 10 – Surgery	Generic-activity-based
Health Building Note 11 – Community care	Generic-activity-based
Health Building Note 12 – Out-patient care	Generic-activity-based
Health Building Note 13 – Decontamination	Support-system-based
Health Building Note 14 – Medicines management	Support-system-based
Health Building Note 15 – Emergency care	Care-group-based
Health Building Note 16 – Pathology	Support-system-based

## Other resources in the DH Estates and Facilities knowledge series

### Health Technical Memoranda

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

They are applicable to new and existing sites, and are for use at various stages during the inception, design, construction, refurbishment and maintenance of a building.

All Health Building Notes should be read in conjunction with the relevant parts of the Health Technical Memorandum series.

### Activity DataBase (ADB)

The Activity DataBase (ADB) data and software assists project teams with the briefing and design of the healthcare environment. Data is based on guidance given in the Health Building Notes, Health Technical Memoranda and Health Technical Memorandum Building Component series.

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

### Note

The sequence of numbering within each subject area does not necessarily indicate the order in which the Health Building Notes were or will be published/printed. However, the overall structure/number format will be maintained as described.

# Executive summary

This Health Building Note (HBN) outlines the policy and performance requirements for sanitary assemblies used in healthcare facilities. These requirements are a set of essential standards of quality and safety that sanitary assemblies must comply with.

HBN 00-10 Part C outlines the policy and performance requirements for sanitary assemblies used in healthcare facilities. These requirements are a set of essential standards of quality and safety that sanitary assemblies must comply with. It supersedes Health Technical Memorandum 64.

This HBN outlines the relevant standards that commissioning organisations will need to include in their contracts with healthcare providers.

This HBN allows choice in the materials and methods of construction – provided they satisfy the performance requirements outlined.

The sanitary assemblies used should be appropriate for the type of premises in which they are being fitted (for example, primary care facilities may have different design requirements from acute care facilities).

## Note

Mental health facilities have their own specific design requirements. These are addressed in Health Building Note 03-01 – ‘Adult acute mental health units’.



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# 1 Introduction

## Regulatory framework and policy drivers

- 1.1 One of the Government's key priorities is delivering better health outcomes for patients.
- 1.2 The quality and fitness-for-purpose of the NHS estate is vital for high quality, safe and efficient healthcare, and this Health Building Note seeks to set out the quality and standards of certain components used in the construction of the estate.
- 1.3 Quality and fitness for purpose of the estate are assessed against a set of legal requirements and standards. Adhering to the performance requirements outlined in this manual will be taken into account as evidence towards compliance with these legal requirements and standards.

## Regulator requirements: essential standards of quality and safety

- 1.4 The Care Quality Commission (CQC) regulates all providers of regulated health and adult social care activities in England. The CQC's role is to provide assurance that the care people receive meets essential requirements of quality and safety.
- 1.5 The registration requirements are set out in the Health and Social Care Act 2008 (Regulated Activities) Regulations 2010 and include a requirement relating to safety and suitability of premises.
- 1.6 The CQC is responsible for developing and consulting on its methodology for assessing whether providers are meeting the registration requirements (see the CQC's (2010) 'Guidance about compliance').
- 1.7 The CQC also uses PEAT (Patient Environment Action Teams) data to inform 37 indicators across five essential standards of quality and safety.
- 1.8 Failure to comply with the requirements is an offence, and under the 2008 Act, CQC has a wide range of enforcement powers that it can use if the provider is not compliant. These include the issue

of a warning notice that requires improvement within a specified time, prosecution, and the power to cancel a provider's registration, removing its ability to provide regulated activities.

- 1.9 Outcome 10 of the CQC's 'Guidance about compliance' focuses on the "safety and suitability of premises" and decrees that "people receive care in, work in or visit safe surroundings that promote their wellbeing".
- 1.10 Health Building Notes and Health Technical Memoranda are specifically referenced in the CQC's "schedule of applicable publications" as a means of compliance with Outcome 10.
- 1.11 Commissioning organisations, specifiers, project teams, design teams and those responsible for construction and maintenance of health buildings should therefore consider the performance requirements in this manual, as they relate to the CQC's essential standards of quality and safety.

## Infection prevention and control

- 1.12 A complex range of issues distinguishes healthcare environments from most other building types. One of the most important of these relates to the control of infection. Hospital environments in particular are subject to spillage of a range of potentially dangerous substances in areas of general use such as circulation areas and in wards. The choice of finishes is important in determining cleaning regimes.
- 1.13 Infection prevention and control teams should be consulted in design decisions and a risk analysis conducted on many issues of design (see Health Facilities Note 30 – 'Infection control in the built environment').

### *Code of Practice on infection prevention and control*

- 1.14 The guidelines outlined in this Health Technical Memorandum follow the general principles given in 'The Health and Social Care Act 2008: Code of

Practice on the prevention and control of infections and related guidance' (the healthcare-associated infection (HCAI) Code of Practice). This code of practice sets out criteria by which healthcare organisations are to ensure that patients are cared for in a clean environment and where the risk of HCAs is kept as low as possible.

- 1.15 The CQC assesses healthcare organisations against aspects of the code of practice, to monitor whether they are complying with the registration requirements related to cleanliness and infection control.
- 1.16 The HCAI Code of Practice also contains a comprehensive list of the Department of Health's guidance on the prevention of HCAs.

### *Hygiene and cleaning*

- 1.17 The control and prevention of healthcare-associated infection (HCAI) is a priority issue in terms of not only the safety and well-being of patients and staff, but also the resources consumed by potentially avoidable infections. It is important that the design of the building facilitates good infection prevention and control practices, and has the quality and design of finishes and fittings that enable thorough access, cleaning, disinfection and maintenance to take place.
- 1.18 All finishes in healthcare facilities should be chosen with cleaning in mind, especially where contamination with blood or body fluid is a possibility (that is, smooth, non-porous and water-resistant). Early and sustained involvement of the infection prevention and control (IPC) team is essential and will lead to the minimisation of infection risks.
- 1.19 Requirements for frequency of cleaning may impact on the use of rooms, circulation and waiting areas at various times of the day. Cleaning regimes including frequency of cleaning should be addressed in line with current national guidance together with any additional local management requirements.
- 1.20 Relevant provisions of current guidance are embodied in the following documents:
- 'The national specifications for cleanliness in the NHS: a framework for setting and measuring performance outcomes'.
  - The 'Revised healthcare cleaning manual'.

- Health Facilities Note 30 – 'Infection control in the built environment'.

### **Note on antimicrobial-impregnated products**

Whilst antimicrobial-impregnated products (such as surface coatings, paints and curtains) and antimicrobial materials are available, there are, at present, no definitive data to support their efficacy in reducing healthcare-associated infection.

### **Quality, innovation, productivity and prevention (QIPP)**

- 1.21 This Health Building Note is underpinned by the requirement to improve quality whilst achieving value for money. Key drivers are:
- standardisation and pre-assembly of components;
  - infection prevention and control issues;
  - patient safety;
  - durability, life-cycle and maintenance costs;
  - flexibility and adaptability;
  - sustainability including low energy design, waste minimisation and water conservation;
  - security.
- 1.22 Patient-safety-focused design can reduce costs through:
- reducing hospital stay durations;
  - reducing the costs associated with patient safety incidents.
- 1.23 By following the performance requirements outlined in this manual, commissioning organisations, specifiers and healthcare providers will be able to demonstrate evidence of alignment to the challenges of quality and productivity required in QIPP.

### **Life-cycle and maintenance**

- 1.24 Early consideration of maintenance and replacement of building elements will help to achieve compliance with all the policy drivers.
- 1.25 Materials and finishes are to be selected to minimise maintenance and be compatible with their intended function and lifespan/duration of use.

- 1.26 Some spaces require more maintenance than others due to usage and traffic, and recognition of this is required during the design stage so that, for example, more robust flooring can be specified in potential problem areas. Maintenance is critically important in the prevention and control of infection, avoiding cracks and tears in finishes where dirt etc can build up. Good maintenance can also aid the ease of cleaning, ensuring that cleanliness is maintained. The life-cycle cost of materials is affected by these criteria.
- 1.27 Organisations responsible for building and engineering maintenance should have access to original copies of all building and engineering commissioning data, including as-fitted drawings and records of any changes implemented since the building was originally built and commissioned. Maintenance personnel should have access to operation and maintenance manuals (including BIM systems) containing building and engineering information such as the suppliers of the materials, fittings and equipment installed during construction, including instructions on cleaning and maintenance.
- 1.28 A useful whole life-cycle document that will aid designers and NHS organisations in both design and choice of materials when designing new schemes or refurbishments is the British Standards Institute's (BSI) 'Standardized method of life cycle costing for construction procurement: a supplement to BS ISO 15686-5 Buildings & constructed assets – Service life planning – Part 5: Life cycle costing'.

## Sustainability

- 1.29 Health Technical Memorandum 07-07 – 'Sustainable health and social care buildings' provides relevant advice on how to embrace sustainability protocols throughout the design and build process and should be read in conjunction with undertaking the BREEAM Healthcare assessment.
- 1.30 The Building Research Establishment Environmental Assessment Method for healthcare facilities (BREEAM Healthcare) is the standard tool for assessing the environmental impact of a healthcare facility.
- 1.31 All new healthcare development projects and refurbishments are required to use BREEAM Healthcare to demonstrate that facilities are built with sustainability in mind. The Department of Health requires that all new builds achieve an "excellent" rating and all refurbishments achieve a "very good" rating under BREEAM Healthcare.

## NHS Premises Assurance Model (PAM)

- 1.32 The NHS Premises Assurance Model (PAM) has been designed to deliver public assurance that NHS services are commissioned and provided from physical environments that comply with national standards and requirements to support high quality outcomes.
- 1.33 It further aims to provide evidence that the NHS Constitution pledge is being delivered by providers and to ensure that the NHS Constitution is at the heart of commissioning strategies in respect of healthcare premises.
- 1.34 Using PAM, healthcare organisations carry out evidence-backed self-assessments to show that they have met the required statutory and nationally agreed standards on patient safety, effectiveness and patient experience.
- 1.35 Complying with the performance requirements in this manual will serve as supporting evidence in these self-assessments.

## NHS Constitution

- 1.36 The NHS Constitution sets out the rights to which patients, public and staff are entitled. It also outlines the pledges that the NHS is committed to achieve, together with responsibilities that the public, patients and staff owe to one another to ensure that the NHS operates fairly and effectively. All healthcare organisations will be required by law to take account of this Constitution in their decisions and actions.
- 1.37 Healthcare organisations need to "ensure that services are provided in a clean and safe environment that is fit for purpose, based on national best practice (pledge)".

## Relationship to other data

- 1.38 The main sources of data used in the preparation of this manual are listed in the [References](#) section.
- 1.39 Readers should ensure that they use this manual in conjunction with all current building legislation, British and European Standards etc.
- 1.40 All products should conform to the relevant provisions of an appropriate British or European Standard. Suppliers offering products other than to

these standards should provide evidence to show that their products are at least equal to such standards.

1.41 This Health Building Note's content does not diminish:

- a specifier's responsibility for selection and application of appropriate products to meet project requirements;
- a supply chain's responsibility for fitness for purpose of products;
- a contractor's responsibility for correct product/system installation;
- the need to comply with statutory requirements, including the Building Regulations.

### **A note on the Equality Act 2010, Approved Document M of the Building Regulations and BS 8300**

Where the guidance outlined in this manual proposes requirements that differ from those in Approved Document M or BS 8300:2009, these special requirements should apply as they take into account specific healthcare building issues. The occupier of the healthcare premises should prepare an access statement in support of their argument that the premises comply with the requirements of the Equality Act.

## 2 Sanitary assemblies

- 2.1 This Health Building Note contains the performance requirements for sanitaryware and pre-plumbed assemblies in healthcare buildings. It excludes macerators, dishwashers, bedpan-washers, autoclaves and other similar service supplies.
- 2.2 It is strongly advised that this section should be read in conjunction with the following topics:
- Health Technical Memorandum 00-02 – ‘Sanitary spaces’;
  - Health Technical Memorandum 07-04 – ‘Water management and water efficiency’; and
  - Health Technical Memorandum 04-01 – ‘The control of Legionella, hygiene, “safe” hot water, cold water and drinking water systems’.
- 2.5 The supply temperature regime outlined in Health Technical Memorandum 04-01 should be followed.
- 2.6 All installations must comply with the Water Fittings (Water Supply) Regulations.
- 2.7 All supplies to fittings should be concealed.
- 2.8 Exposed surfaces should be smooth and easily cleaned, with no sharp edges.
- 2.9 Sensor-controlled taps are ideally suited to control the flow of water and can offer the additional benefits of controlled run times and automatic purging to avoid stagnation.
- 2.10 Shower fixings should be in accordance with the guidance given in Health Technical Memorandum 00-02 – ‘Sanitary spaces’.

### Note

There may be a requirement to consider different design applications where there is an identified local need, e.g. provision of multi-faith ablution rooms, main public WCs, squatting WC pans, variable-height baths, autopsy tables, birthing pools and drinking fountains or specific requirements for religious or ethnic groups. In such circumstances, advice and guidance should be sought from specialists or specialist manufacturers. Consideration will need to be given to the suitability functionality and sustainability, as well as addressing infection prevention and control, and local policies and procedures.

- 2.3 **The diagrams used in this chapter are indicative and should be used for guidance only. Actual installations may vary from those shown but the key principles should be followed.**

### Performance requirements

#### General

- 2.4 Pipework should be planned to avoid dead-legs (see Health Technical Memorandum 04-01 for guidance on design and installation of hot and cold water systems).
- 2.11 Supply fittings on baths, basins and sinks with fixed outlets should be arranged so that the discharge point creates an AUK3 air gap of twice the inlet diameter and never less than 20 mm above the spill-over level of the appliance.
- 2.12 Taps should not be aligned to run directly into the drain aperture.
- 2.13 Plugs are only allowed in bathroom basins, where personal washing etc takes place. All other basins should not take a plug as washing takes place under running water (see the ‘Basins’ section).
- 2.14 Overflows to sinks, basins, baths and bidets are not recommended, as they constitute a constant infection control risk much more significant than the possible risk of damage due to water overflowing.
- 2.15 Where flexible hoses are used (for example on essential equipment such as variable height baths), they must be lined with a suitable alternative to ethylene propylene diene monomer (EPDM), as well as being WRAS-approved. Care should be taken to avoid kinking or distorting them during installation.
- 2.16 The water temperature at point of delivery should be controlled either by:

- manual control (separate hot and cold water taps or blending valves controlled manually by the user);

### Note

Assemblies that use manual control should be subject to a “duty of care” risk assessment. When temperatures are in excess of 46°C, “scald risk” warning notices should be displayed.

- individual thermostatic control (thermostatic mixing of hot and cold water is by valve at the fitting).

See Health Technical Memorandum 04-01 for further guidance on safe water temperatures and delivery devices.

- 2.17 Noise from WC cisterns and waste outlets should be considered (see ‘Acoustics’ for guidance).

## Sanitaryware

### Disposal units and clinical sinks

#### Disposal units

The relationship between soil appliances and fittings that make up the complete assembly is critical. Therefore, disposal units should be treated as assemblies for the purposes of design, specification, procurement and installation.

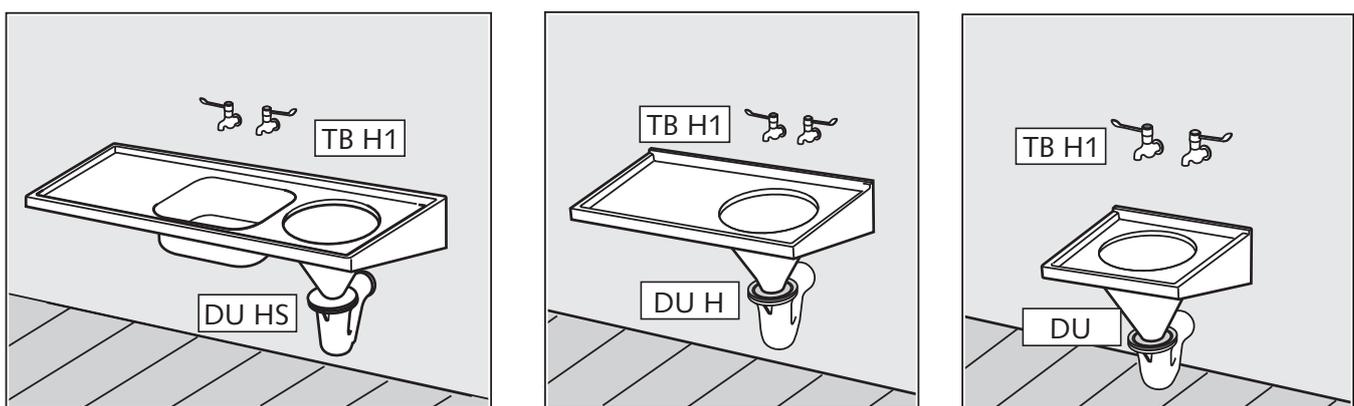
- 2.18 A disposal unit should be provided in clinical areas for the disposal of solid and liquid waste, and the contents of vomit bowls, drainage bags and urine bottles. Examples of disposal units are shown in the diagram below.

- 2.19 Typical assembly requirements are:

- lever action taps to avoid cross-contamination;
- separate manual control of hot and cold water;
- open nozzle and flow straighteners with minimal restriction.

- 2.20 The space requirements for a disposal unit are given in the ergonomic drawings for a dirty utility room. See ‘Ergonomic drawings (dirty utility room for bedpan processing)’ and ‘Ergonomic drawings (dirty utility room)’ in Health Technical Memorandum 00-03 – ‘Clinical and clinical support spaces’.

Figure 1 Examples of disposal units



**Clinical sinks**

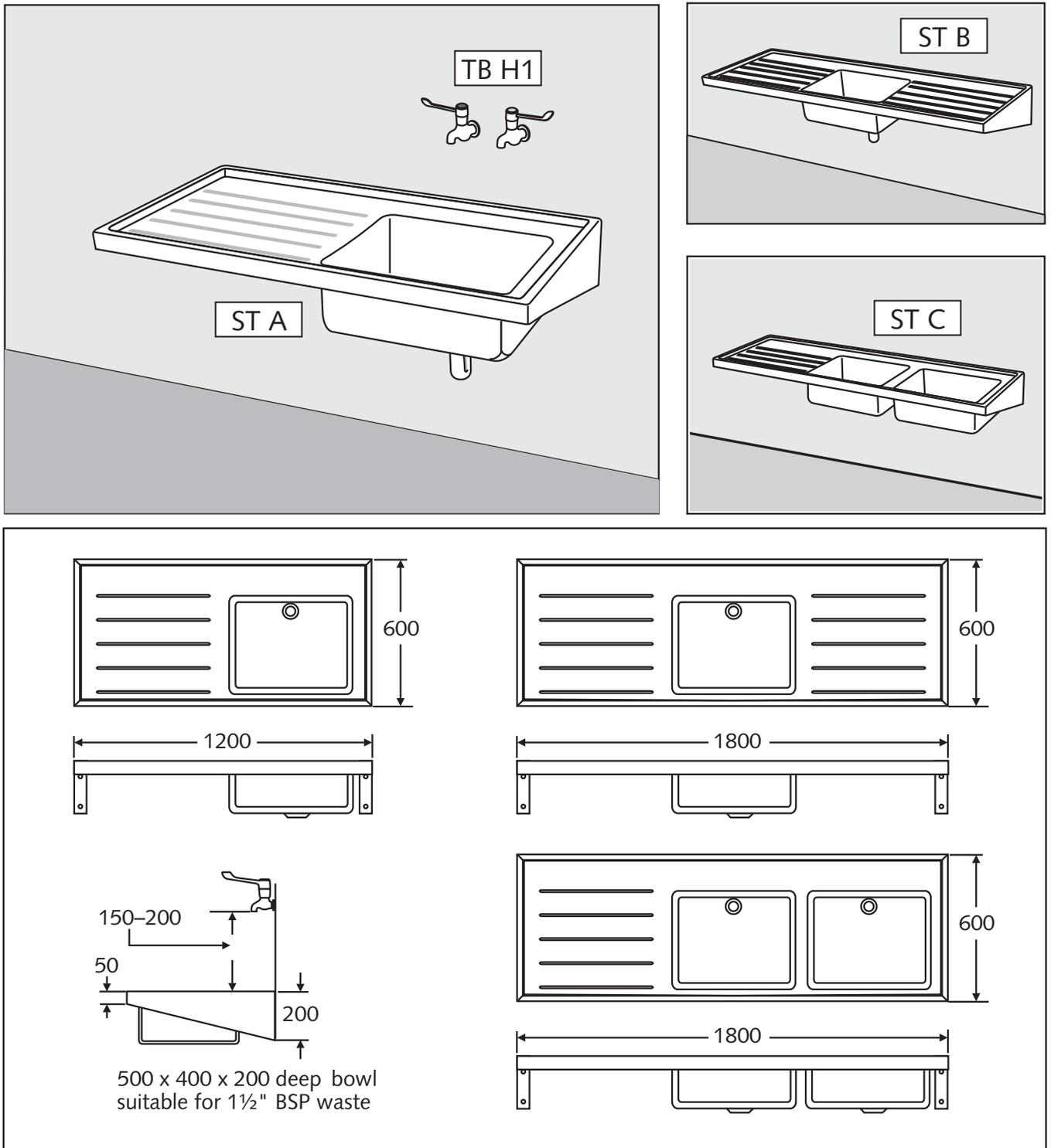
2.21 Sinks used in clinical areas (such as dirty utilities) should not have tap holes (that is, wall-mounted taps should be used). The option to use a sink with tap-holes should only be considered when it is impractical to conceal pipework; in this case, the supply pipework should be surface-mounted below sink.

2.22 Services should be concealed/ducted. Typical requirements are:

- Long lever action taps
- Separate manual control of hot and cold water
- Flush-grated waste with no plug.

2.23 An illustration of typical clinical sink/sinktop assemblies is shown below.

Figure 2 Typical clinical sink/sinktop assemblies



*Non-clinical sinks*

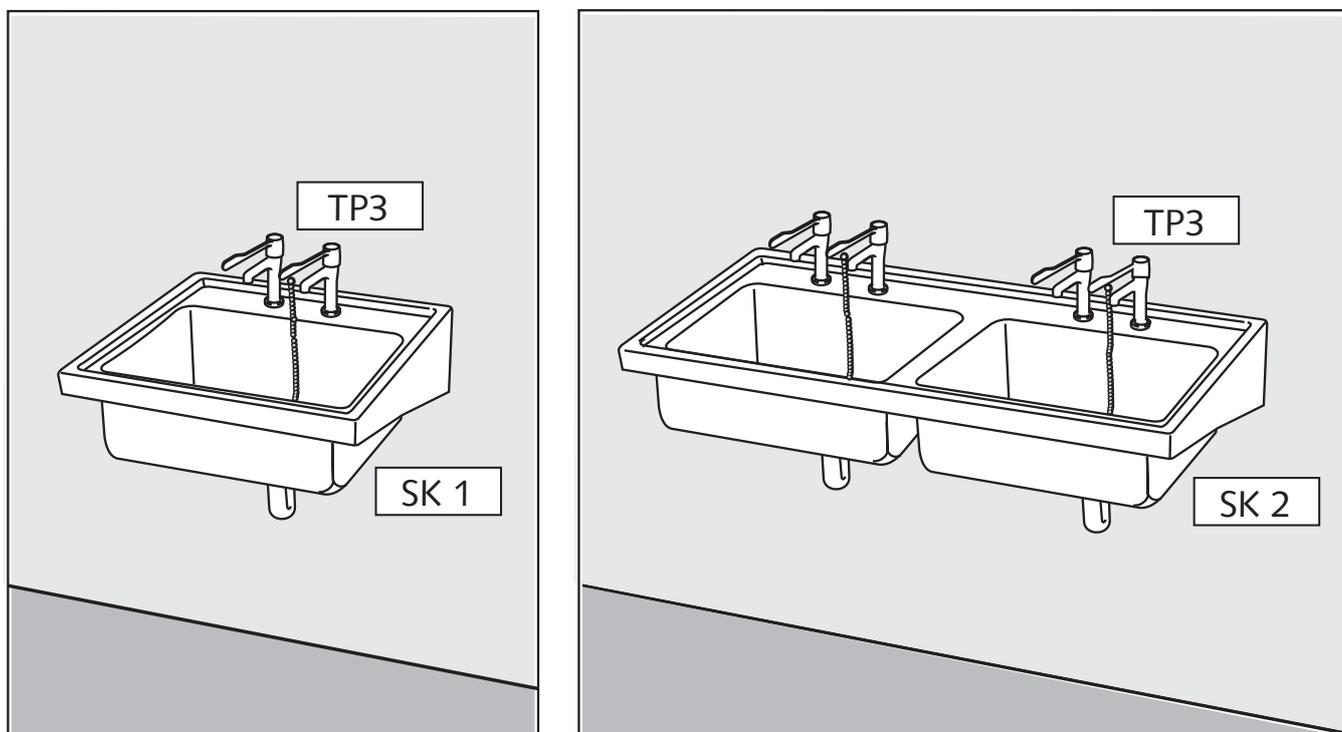
2.24 Sinks used in general use/domestic services (for example, in cleaners’ rooms and kitchens) should have tap-holes for use with pillar taps. These sinks should take a plug (with screw-stay to the panel). Typical requirements are:

- long lever action taps;
- separate manual control of hot and cold water;
- recessed grated waste with plug;
- open nozzle and flow straightener with minimal restriction.

2.25 An illustration of typical non-clinical sink/sinktop assemblies is shown below (sinks with drainers are optional).

2.26 Space requirements for non-clinical sinks are given in the ergonomic diagrams. See ‘Ergonomic drawings (mini kitchen)’ and ‘Ergonomic drawings (cleaners’ room)’ in Health Technical Memorandum 00-03 – ‘Clinical and clinical support spaces’.

Figure 3 Typical non-clinical sink/sinktop assemblies



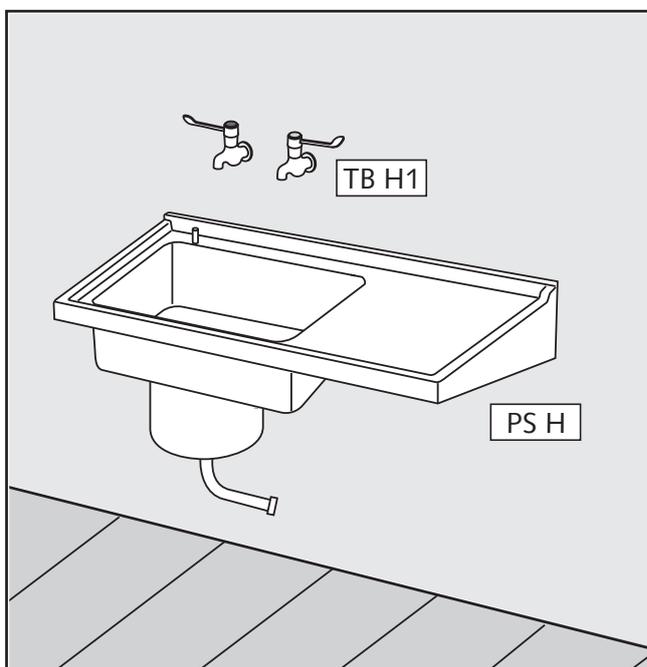
*Plaster sinks*

2.27 Plaster sinks in clinical areas should have a lift-out strainer basket and wall-mounted taps. Typical requirements are:

- long lever-action taps to avoid contamination;
- separate manual control of hot and cold water;
- open nozzle and flow straightener with minimal restriction;
- connection to concealed services.

2.28 An illustration of a typical plaster sink is shown aside.

2.29 Space requirements for a plaster sink are given in the ergonomic diagrams for a plaster room. See ‘Ergonomic drawings (plaster room)’ in Health



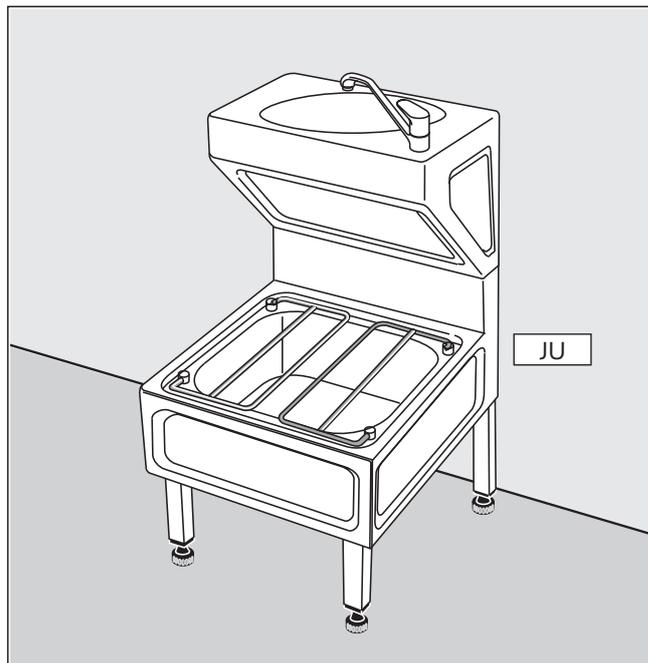
Technical Memorandum 00-03 – ‘Clinical and clinical support spaces’.

*Janitorial units*

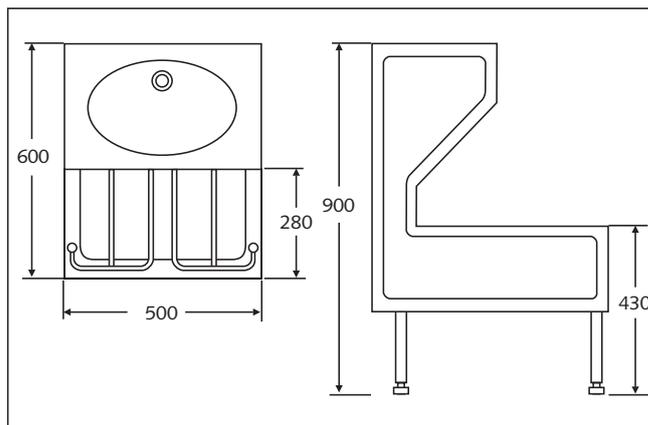
2.30 Janitorial units are a combination of bucket sink and wash-hand basin used by domestic services staff for the disposal of liquid waste. These units are beneficial where space restricts the installation of a separate sink and wash-hand basin.

2.31 An illustration of a typical janitorial unit is shown aside.

Figure 4 Typical janitorial unit



Janitorial unit



Scrub-up troughs

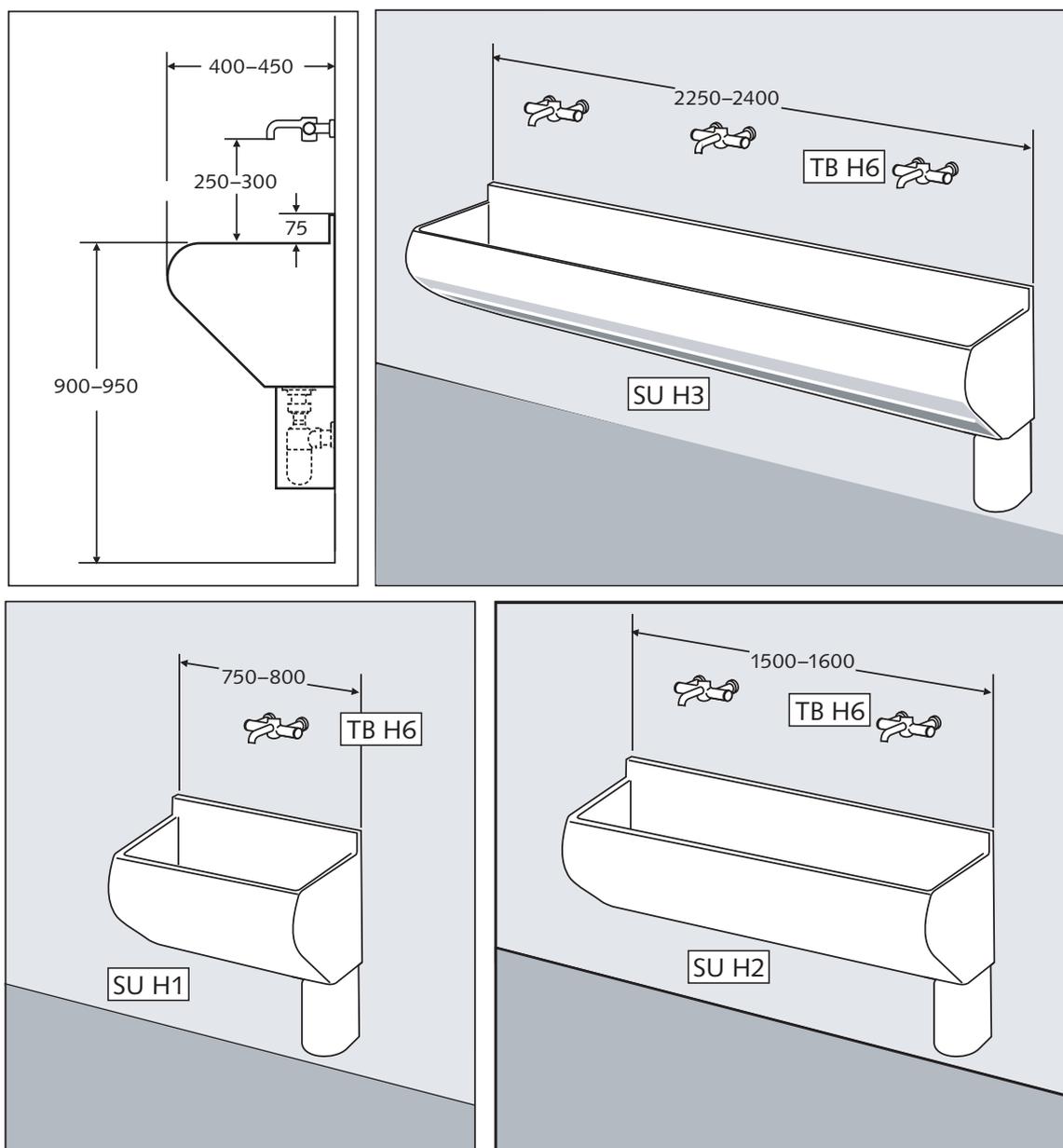
2.32 Scrub-up troughs should be provided to enable one or more surgeons and nurses to scrub their hands and forearms.

- Troughs should not take a plug, as washing takes place under running water.
- Troughs should be wall-hung and fitted with a single waste outlet.
- Water temperature should be controlled according to the requirements of Health Technical Memorandum 04-01.
- Taps should be wall-mounted and should have open nozzles and flow straighteners with minimal restriction.

- The point of discharge relative to front rim of trough is critical to ensure:
  - (i) that there is no water discharge/spillage outside trough;
  - (ii) that water falls onto inclined surface of trough;
  - (iii) that users are able to operate lever/s;
  - (iv) that there is sufficient activity space for users to wash their hands and forearms under falling water.

2.33 Illustrations of typical single-, double- and triple-person scrub-up trough assemblies are shown below.

Figure 5 Typical single- double- and triple-person scrub-up trough assemblies



## Basins

### General

2.34 Basins should have a smooth form and easily-cleaned surfaces. Overflows should not be provided for infection control reasons.

### Wash-hand basins

2.35 The room layouts on this website illustrate a wash-hand basin 400 mm deep × 500 mm wide for ambulant/semi-ambulant use and 500 mm deep × 600 mm wide for wheelchair/ seated use.

2.36 Wheelchair-accessible wash-hand basins should have a size and profile that maximises access and reduces obstructions. They should:

- be as shallow as possible, that is, tapered from the rim to a depth not exceeding 250 mm at the outlet, which in turn should be positioned as near the supporting wall as possible;
- preferably project 500 mm in order to provide adequate leg room underneath the basin.

2.37 Basin taps used in clinical areas and food-preparation and laboratory areas are required to be operated without the use of hands.

2.38 Fittings actuated by a proximity sensor are an alternative to lever-action taps.

### Clinical wash-hand basin

2.39 Clinical wash-hand basins should be installed in all clinical areas. Washing is carried out under running water, and therefore a medium or large integral back-outlet basin with no plug is recommended. Typical requirements are:

- integral back outlet;
- washing under running water (therefore no plug);
- wall-mounted single-lever-action or sensor tap (with single self-draining spout);
- TMV3-approved thermostatic mixing valve (either fitted directly to tap or integral within it, in accordance with Health Technical Memorandum 04-01);
- connection to concealed services.

2.40 A illustration of a typical clinical wash-hand basin is shown below (with lever tap and with sensor tap).

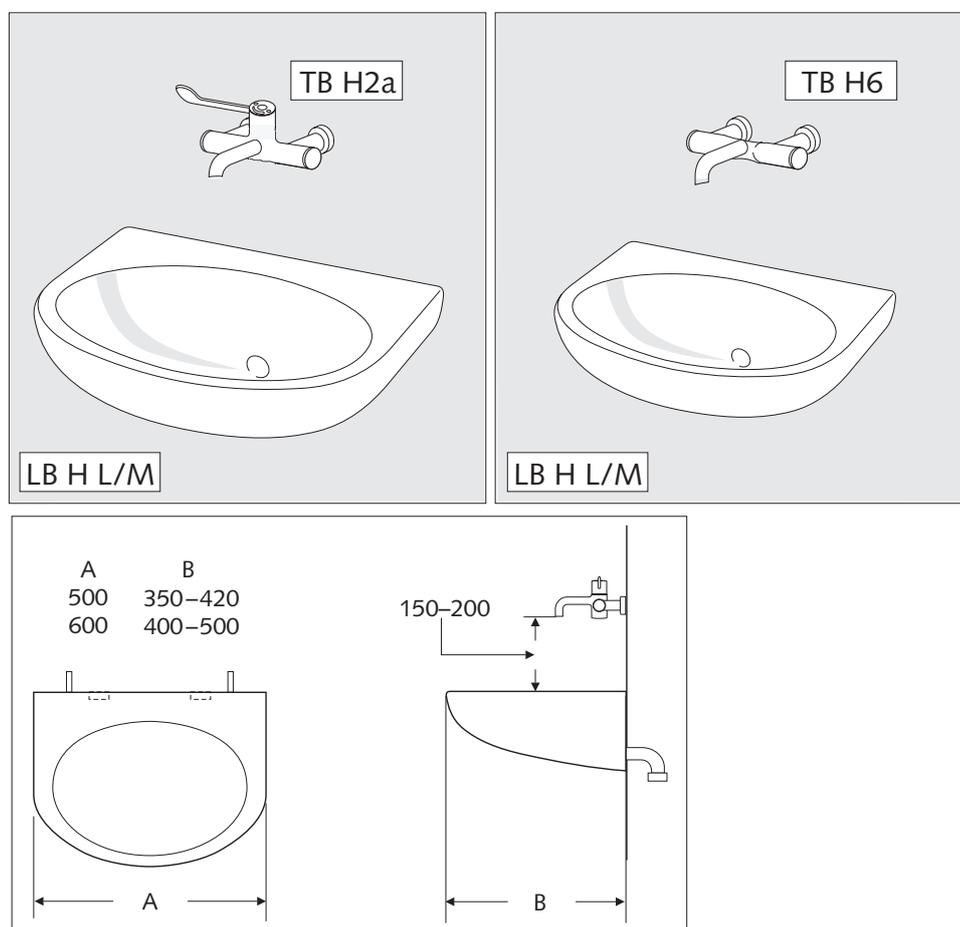


Figure 6 Typical clinical wash-hand basin, lever tap and sensor tap

**Non-clinical wash-hand basin**

2.41 Non-clinical wash-hand basins with tap-holes should be used for general areas/ domestic services with TMV3-approved thermostatic mixing valve and concealed/ ducted services.

2.42 Washing is carried out in a reservoir of water; therefore a bowl with plug is recommended. Plugs should be attached to an open-link chain, which should be panel-mounted. Typical requirements are:

- washing in reservoir of water (therefore a basin with plug and chain with screw stay);

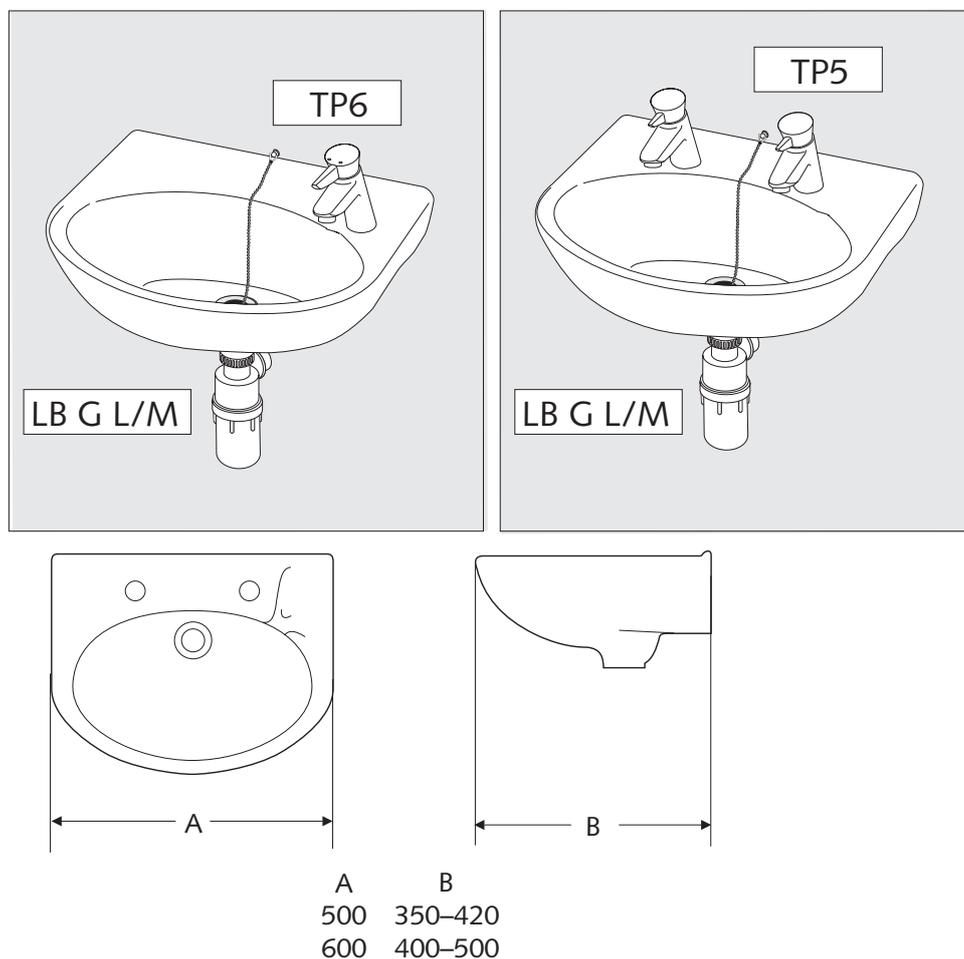
- combined or separate nozzle with flow straightener;
- lever-action taps.

2.43 An illustration of a typical non-clinical wash-hand basin is shown below.

2.44 Example layouts for a clinical wash-hand basin are shown under ‘Consulting room’ in Health Technical Memorandum 00-03 – ‘Clinical and clinical support spaces’.

2.45 Room layouts for other wash-hand basins are shown in Health Technical Memorandum 00-02 – ‘Sanitary spaces’.

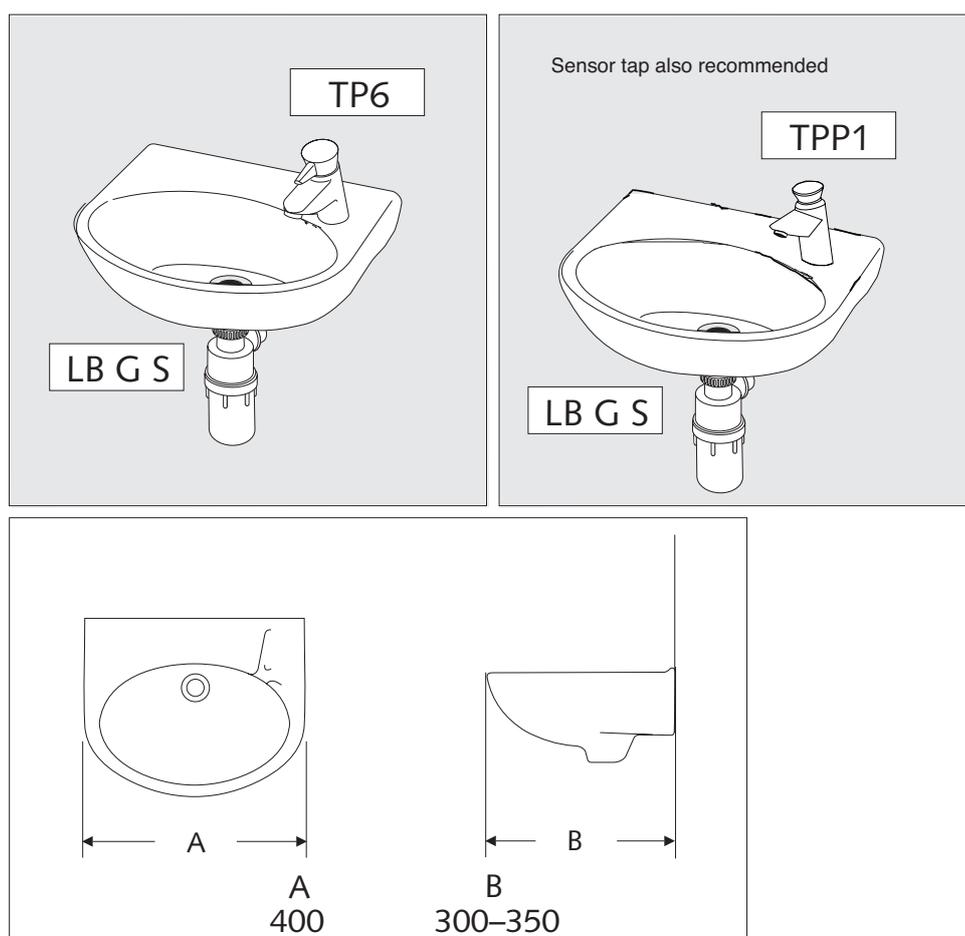
Figure 7 Typical non-clinical wash-hand basin



### Hand-rinse basins

- 2.46 Hand-rinse basins are approximately 300–350 mm deep and 400 mm wide. They are generally only suitable for rinsing hands under running water. The room layouts on this website assume a hand-rinse basin of 300 mm deep. Where a larger hand-rinse basin (up to 350 mm deep) is used, the minimum internal room dimensions may need to increase to maintain the required activity space.
- 2.47 Typical assembly requirements include the following:
- washing takes place under running water; therefore the basin should not take a plug;
  - combined manual control of flow and temperature of water or automatic control of thermostatically mixed water. Single flow spout;
- lever-action tap, press tap or sensor tap;
  - TMV3-approved thermostatic mixer on hot supply.
- 2.48 Recessed hand-rinse basins are not recommended for wheelchair users as they may restrict access to the basin.
- 2.49 An illustration of a typical hand-rinse basin is shown below.
- 2.50 Example room layouts with hand-rinse basins are given under ‘Ergonomic drawings (WC: independent wheelchair/semi-ambulant)’ in Health Technical Memorandum 00-02 – ‘Sanitary spaces’.

Figure 8 Typical hand-rinse basin

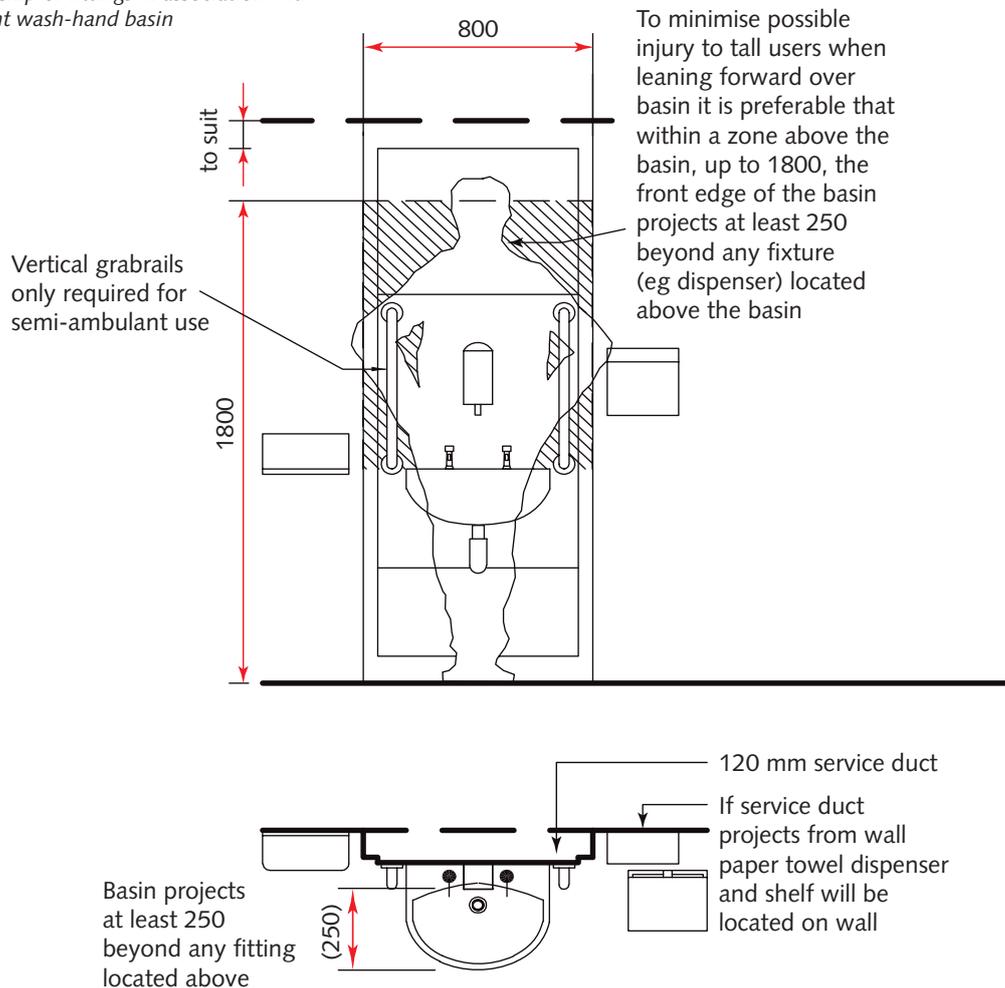


**Fixing height of basins and associated fittings**

- 2.51 Both Approved Document M (Diagram 20) and BS 8300 (Figure 58) recommend a basin fixing height suitable for both wheelchair and standing users.
- 2.52 BS 8300 (Figure 55 note 1) states: “The washbasin within a [independent wheelchair] WC compartment should be set with the rim height at 720 mm to 740 mm above the floor (see Figure 57) to allow use for hand washing by people standing as well as seated.”
- 2.53 This guidance is based on the principle that there is not a suitable fixing height for both wheelchair and standing users.
- 2.54 Two heights are therefore recommended:
  - 780–800 mm for ambulant and semi-ambulant users (referred to as “ambulant” basins elsewhere on this website);
  - 680–700 mm for wheelchair and seated users (referred to as “wheelchair” basins elsewhere).

- 2.55 Wheelchair or adjustable-height basins should be used in assisted spaces.
- 2.56 For user safety, ambulant basins should project at least 250 mm beyond any fitting located above the basin to minimise the risk of tall users (over 1800 mm) hitting overhead fittings.
- 2.57 For comfortable reach, fixtures and fittings associated with ambulant basins should be located within a 750 mm zone (horizontally and symmetrically from the centreline of the basin).
- 2.58 The diagram below illustrates the relationship of fittings in association with an ambulant wash-hand basin for:
  - the safety of tall users when bending to use the basin;
  - the use of either flush or projecting accessible panel systems.
- 2.59 Tall users, for basin safety, are defined as over 1800 mm because 5% of the male population is taller than 1869 mm and the corresponding figure for females is 1726 mm.

Figure 9 Relationship of fittings in association with ambulant wash-hand basin



**Adjustable-height (two-height) wash-hand basins**

- 2.60 In areas where wheelchair and semi-ambulant/ ambulant users may require access to a wash-hand basin, an adjustable-height (two-height) basin may be used.
- 2.61 Adjustable-height wash-hand basins should be limited to two heights:
- 780–800 mm for ambulant and semi-ambulant users;
  - 680–700 mm for wheelchair and seated users.
- 2.62 In individual patient spaces (for example en-suite shower rooms), the basin height should be adjusted (as necessary) for each patient on admission. Within public/ multi-user environments, the adjustment mechanism should be very easy to operate by the patient/user.

**WCs**

- 2.63 Two toilet pan lengths are recommended: 520–550 mm for ambulant and semi-ambulant use and 700 mm for wheelchair and assisted use. Approved Document M and BS 8300 recommend a 750 mm long toilet pan for independent wheelchair transfer. However, Robert Feeney Associates research indicated that a 700 mm long toilet pan allows for independent wheelchair transfer and so is recommended.
- 2.64 A single toilet height of 475–480 mm is recommended for adult users.
- 2.65 Typical assembly requirements include the following:
- Hospital pattern WCs should be rimless, wash-down pans and be of the “back to wall” or wall-hung type with concealed cistern and services. (Wall-hung pans are required to be tested to 63 stone or 400 kg or a force of 4 KN for an hour (BS EN 997).)
  - The pan fixing should be strong, and effective seat stabilisers should be provided.
  - The use of sensor-operated flush should be considered and the location of these should be carefully assessed so as not to cause unintentional flushing.
  - WCs should have fully enclosed seat holes.
  - The WC suite must fully comply with the WC Suite Performance specifications of the Water Supply (Water Fittings) Regulations 1999

- The cistern, where used, should include a flushing arrangement (siphon) adjusted to deliver no more than 6 litres full flush and, if dual flush, smaller volume not to exceed two-thirds of full-flush volume.
- Flush systems may be pneumatic push or sensor operated rather than lever handle as illustrated on the drawings on this website.
- Independent wheelchair and assisted toilets require a backrest for comfort and to aid transfer. The padded backrest should not project more than 50 mm behind the toilet seat hinge to allow the seat to be raised when required.
- WC seats should not have a cover. If covers are to be considered, consultation should take place with the control of infection team at the planning stage, although it must be noted that they are not recommended for independent wheelchair and assisted toilets, as they prevent the use of the backrest.
- Exposed surfaces should be smooth, easy to clean and maintain, and durable.
- The toilet seat should contrast visually with the background wall and floor finishes against which it is being viewed. See Approved Document M and BS 8300 for details.

- 2.66 The diagram below shows an appropriate WC for ambulant and semi-ambulant users.

Figure 10 WC for ambulant and semi-ambulant users



2.67 The diagram below shows a WC appropriate for assisted ambulant disabled/wheelchair users.

Figure 11 WC appropriate for assisted ambulant disabled/wheelchair users



2.68 Example room layouts with WCs are shown in Health Technical Memorandum 00-02 – ‘Sanitary spaces’.

### Baths

#### Unassisted baths

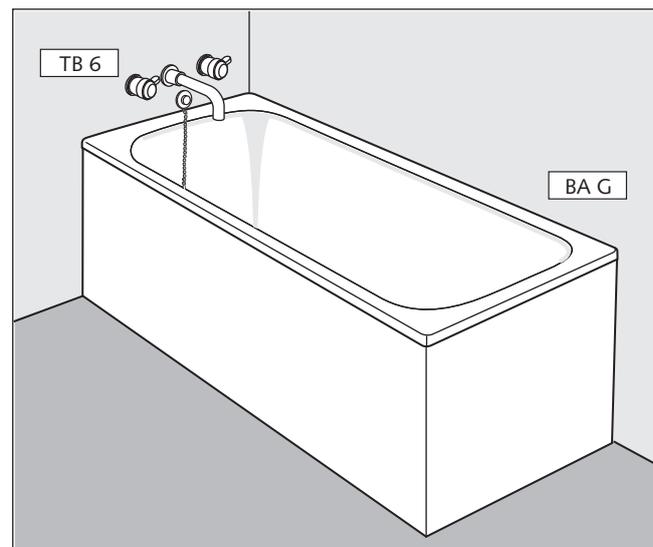
2.69 Baths for unassisted personal bathing (that is, baths suitable for independent wheelchair users and ambulant disabled people) have no tap-holes and should be used with wall-mounted mixer taps controlled by a TMV3-approved thermostatic mixing valve. (Wall-mounted taps – rather than the corner deck-mounted taps advocated in BS 8300 – should be provided for reasons of infection control.)

2.70 These baths are not recommended in clinical areas except where the patient group dictates (for example, in facilities for older people, and in maternity and dermatology departments). Typical requirements are:

- Taps should have open nozzles and flow straighteners with minimal restriction.
- The supply fitting should have a TMV3-approved thermostatic mixing valve on the hot supply or be integral to the fitting.

2.71 An illustration of a typical general bath is shown below.

Figure 12 Typical general bath



#### Sizes

- 2.72 A 700–800 mm wide and 1700 mm long bath is suitable for all unassisted use.
- 2.73 Narrow baths may be restrictive for larger adults. The minimum internal width of the bath should be 600 mm and this should be clear to within 100 mm of the bottom of the bath to allow for someone lying down.
- 2.74 The recommended minimum internal width of a bath of 600 mm relates to the widest part of the human body (the hips and shoulders) to enable users to comfortably fit within the bath. This is based upon an analysis of the following ergonomic data (source: RFA).
- 2.75 Hip size:
- 95th percentile male – 381 mm, female – 397 mm
  - 99th percentile male – 396 mm, female – 415 mm
- 2.76 Shoulder size:
- 95th percentile male – 486 mm, female – 478 mm
  - 99th percentile male – 500 mm, female – 445 mm
  - The bottom of the bath should be slip-resistant even when wet.
- 2.77 Semi-ambulant people and independent wheelchair users prefer baths next to walls as this offers a means of support (see diagram above). The example layouts of bathrooms on this website take account of this fact.

### Assisted baths

- 2.78 Assisted variable-height baths are available in a large variety of sizes. The layouts of sanitary spaces on this website assume a variable height bath 800 mm wide and 2400 mm long.
- 2.79 See 'Bathrooms' in Health Technical Memorandum 00-02 – 'Sanitary spaces'.

### Showers

- 2.80 A concealed, wall-mounted TMV3-approved thermostatic mixing valve should be installed in all showers.
- 2.81 Temperature and volume control should lever-operated.
- 2.82 The showerhead should be height-adjustable and detachable from its bracket.
- 2.83 For Legionella risks, see Health Technical Memorandum 04-01.

Approved Document M and BS 8300 recommend a height range of 1200–1400 mm for the adjustable showerhead. During user trials for en-suite shower facilities associated with adult in-patient accommodation it became apparent that some users may want to sit on the floor to shower, and others struggle to reach shower controls at 1200 mm when seated on the shower seat. A range of 900–1900 mm is recommended. This height accommodates standing users, seated users and those who may wish to sit on the floor.

An additional fixed showerhead for standing users may be provided above 1900 mm.

- 2.84 Example room layouts with showers are given in Health Technical Memorandum 00-02 – 'Sanitary spaces'.

### Note on shower curtains and shower controls

The location of shower curtains and shower controls on the room layouts (and associated ergonomic drawings) on this website conflict with the recommendations in Approved Document M and BS 8300, and were informed by ergonomic studies and the mock-up trials for en-suite shower rooms.

Shower curtains may be used provided appropriate cleaning regimes are in place. Where used, they should reach the floor but not trail on it.

Low-level shower screens, rather than shower curtains, may be used in assisted shower rooms. However, they are not considered appropriate for independent wheelchair use.

### Bidets

- 2.85 Bidets are generally used by patients in clinical areas (most commonly in maternity departments; but note that bidets are not considered appropriate for independent wheelchair users because of the difficulty in transferring between the wheelchair, toilets and bidet).
- 2.86 The appliance should be rimless with an over-rim supply, preferably with sensor operation. The water supply should be controlled by a TMV3-approved thermostatic mixing valve to prevent scalding. The waste should be flush-grated so that it cannot take a plug. All services should be concealed.
- 2.87 An illustration of a typical bidet is shown below.

Figure 13 Typical bidet

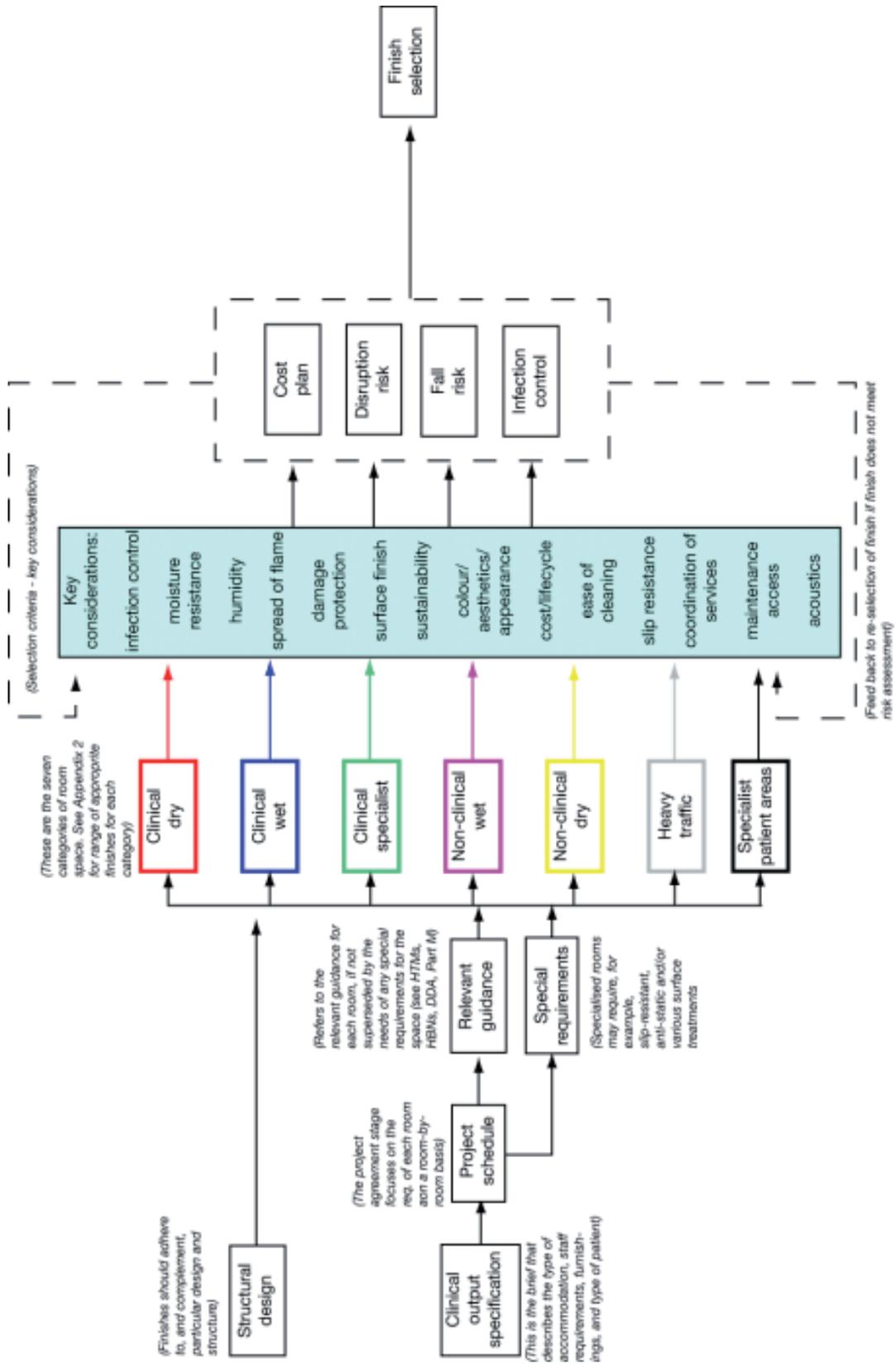


- 2.88 Example room layouts with bidets are shown in Health Technical Memorandum 00-02 – 'Sanitary spaces' – see 'Bathroom with bidet: semi-ambulant'.

### Pre-plumbed assemblies

- 2.89 Panels should be easy to clean, durable and impervious.
- 2.90 Access panels should be hinged wherever possible for ease of maintenance access. These panels should have a simple lock device to prevent unauthorised opening.
- 2.91 Wherever possible, assemblies should not be installed on fire-walls. Where this is unavoidable, fire integrity should ideally be provided within the wall or partition itself with no reliance on the panel assembly. This is because of the difficulty of maintaining fire integrity where panels are removed for maintenance. Therefore, a boxed-out unit in front of the fire-wall is recommended in order to maintain its integrity.
- 2.92 All products used should comply with the requirements of the Water Fittings (Water Supply) Regulations.
- 2.93 TMV3-approved thermostatic mixing valves should be used as an integral part of the fitting or as a separate component.
- 2.94 All units should be tested for leakage.
- 2.95 Room layouts and ergonomic drawings for various sanitary spaces are given in Health Technical Memorandum 00-02 – ‘Sanitary spaces’.

### 3 Selection process for finishes



# 4 Types of finish by room space

Category of room space (see 'Selection process for finishes' section)	Floor finish	Wall/partition finish	Ceiling finish <sup>1</sup>	Sanitaryware	Protection (potential risk of damage)
<b>Clinical – dry</b> For example: <ul style="list-style-type: none"> <li>Single-bed room</li> <li>Multi-bed room</li> <li>Consulting room</li> <li>Clean utility</li> </ul>	Sheet systems or Seamless finish systems	Emulsion or heavy duty emulsion	<ul style="list-style-type: none"> <li><b>High clinical:</b> jointless/smooth imperforate finish</li> <li><b>Moderate clinical:</b> jointless or concealed grid/smooth imperforate finish or jointed/concealed grid/smooth imperforate finish</li> <li><b>Light clinical:</b> jointed/exposed grid/textured perforated finish.</li> </ul>	Clinical	Low risk Medium risk
<b>Clinical wet</b> For example: <ul style="list-style-type: none"> <li>Dirty utility</li> <li>Assisted bathroom</li> <li>Assisted shower</li> </ul>	Sheet systems or Seamless finish systems Slip-resistant sheet systems	Heavy duty emulsion/PVC sheet	Moderate clinical: jointless or concealed grid/smooth imperforate finish or jointed/concealed grid/smooth imperforate finish Both resistant to high humidity levels	Clinical	Medium to low risk
<b>Clinical specialist</b> For example: <ul style="list-style-type: none"> <li><b>Theatre suite</b></li> </ul>	Sheet systems or Seamless finish systems	Thick film paint system (150–300 microns)	Jointless/smooth imperforate finish	Clinical	Medium to no risk
<b>X-ray room</b>	Anti static sheet system	Heavy duty emulsion	Square-edged tile to suit unistrut ceiling	Clinical	Medium to no risk
<b>Post-mortem room</b>	Slip resistant Sheet systems or Slip-resistant seamless finish systems	Thick film paint system (150–300 microns)	Concealed grid/smooth finish (power washable)	Clinical	Medium to no risk
<b>Aseptic suite</b>	Sheet systems	Sheet vinyl	Sheet vinyl on jointless/smooth imperforate finish	N/A	Medium to no risk
<b>Non-clinical wet</b> For example: <ul style="list-style-type: none"> <li>WC/shower room (en-suite)</li> <li>Cleaner's room</li> </ul>	Slip resistant Sheet systems or Slip-resistant seamless finish systems	Humidity-resistant paint/PVC sheet	Jointless concealed grid/smooth finish/resistant to humidity or jointed/exposed grid/ smooth finish Both resistant to high humidity levels	Non-clinical	Low to no risk
<b>Non-clinical dry</b> For example: <ul style="list-style-type: none"> <li>Offices</li> <li>Stores</li> </ul>	Sheet systems or Seamless finish systems Textile flooring	Paint	jointed/exposed grid/textured finish	Non-clinical	Low to no risk
<b>Heavy traffic</b> For example: <ul style="list-style-type: none"> <li>Corridors</li> <li>Entrances</li> <li>Lift lobbies</li> <li>Stairs</li> <li>Plantrooms</li> </ul>	Sheet systems or Seamless finish systems	Heavy duty emulsion or specialist floor paint	jointed/exposed grid/textured finish jointed/exposed grid/textured perforated finish	-	Medium to high risk
<b>Specialist patient areas</b> (areas where patients are at risk of self-harm)	Sheet systems or Seamless finish systems	Selection is dependent on an assessment of level of Clinical requirement	Jointless/smooth imperforate finish without potential ligature points Concealed grid/smooth imperforate finish	Selection is dependent on an assessment of level of clinical requirement	High risk

If a room from one category falls within a different category of room space, the higher criterion should be adopted

**Note:**

1. Selection is dependent on an assessment of level of clinical requirement, i.e. in-patient accommodation is considered "light clinical"; a treatment room would be considered "moderate clinical"; and a theatre suite considered "high clinical".

## 5 Glossary

**Accessories:** Associated items related to the total component assembly, such as mirrors, soap holders etc

**Assembly:** Combination of component, panel, support system and appropriate accessories and services combined to form a practical product

**Clinical (of sanitary assemblies):** For use by clinical staff undertaking clinical procedures

**Component:** Prime constituent supported by the panel assembly

**Duct:** Space formed or used to contain services and related fittings

**Handrail:** A rail required to enable unassisted walking by patients

**Impervious:** Able to resist the penetration of liquids likely to be encountered in healthcare buildings

**Jointless:** A surface that presents a continuous unbroken surface

**Non-clinical (of sanitary assemblies):** For use by hospital staff, patients and the public in general

**Panel:** Fixed or removable section supporting mounted components

**Pre-plumbed assembly:** Framed duct panel unit with sanitaryware factory-fitted and tested before delivery

**Sanitary assembly:** An assembly comprising a soil or waste appliance and appropriate supply and waste fittings

**Services:** Hot and cold water, drainage, medical gases, electrical and communication services, supply fittings etc

**Smooth, textured and perforated:** Range of ceiling surfaces and tiles for use in appropriate types of space (for example, administrative, non-clinical, clinical support and clinical)

**Smooth:** No coarser than brush-applied matt emulsion paint on a flat plastered surface without projections, indents or holes part-way through the material

**Soil appliance:** An appliance for the reception and discharge of excretory matter

**Supply fitting:** A fitting to control or regulate the supply of water, commonly used with an appliance

**Suspension system:** Ceiling comprising hangers, primary and secondary support grids and tiles or boards suspended from structural soffits.

**Thermostatic mixing valve:** a valve, with one or more outlets, which mixes hot and cold water and automatically controls the mixed water to a user-selected or pre-set temperature (see also Health Technical Memorandum 04-01)

**Waste appliance:** An appliance for the reception of water for ablutionary, cleansing, or culinary purposes and its discharge after use

**Waste fitting:** A fitting to conduct the discharge from an appliance and to connect to pipework

## 6 References and evidence base

BS 1010-2:1973 Specification for draw-off taps and stopvalves for water services (screw-down pattern). Draw-off taps and above-ground stopvalves.

BS 1125:1987 Specification for WC flushing cisterns (including dual flush cisterns and flush pipes).

BS 1189:1986 Specification for baths made from porcelain enamelled cast iron.

BS 1212-3:1990 Float operated valves. Specification for diaphragm type float operated valves (plastics bodied) for cold water services only (excluding floats).

BS 1212-4:1991 Float operated valves. Specification for compact type float operated valves for WC flushing cisterns (including floats).

BS 1254:1981 Specification for WC seats (plastics).

BS 1344-1:1994 Methods of testing vitreous enamel finishes. Determination of resistance to thermal shock of coatings on articles other than cooking utensils and fabricated sheet steel components.

BS 1390:1990 Specification for baths made from vitreous enamelled sheet steel.

BS 1876:1990 Specification for automatic flushing cisterns for urinals.

BS 2456:1990 Specification for floats (plastics) for float operated valves for cold water services.

BS 3402:1969 Specification for quality of vitreous china sanitary appliances.

BS 4305-1:1989, EN 198:1987 Baths for domestic purposes made of acrylic material. Specification for finished baths.

BS 4751:2005 Mobile sanitary chairs.

BS 5412:1996 Specification for low-resistance single taps and combination tap assemblies (nominal size 1/2 and 1/4) suitable for operation at PN 10 max. and a minimum flow pressure of 0.01 MPa (0.1 bar).

BS 5627:1984 Specification for plastics connectors for use with horizontal outlet vitreous china WC pans.

BS 6340-1:1983 Shower units. Guide on choice of shower units and their components for use in private dwellings.

BS 6340-2:1983 Shower units. Specification for the installation of shower units.

BS 7181:1989 Specification for storage cisterns up to 500 L actual capacity for water supply for domestic purposes.

BS 7942:2011. Thermostatic mixing valves for use in care establishments. Requirements and test methods.

BS 8300:2001 Design of buildings and their approaches to meet the needs of disabled people. Code of practice.

BS EN 37:1999 Pedestal WC pans with independent water supply. Connecting dimensions.

BS EN 200:1992 Sanitary tapware. General technical specifications for single taps and mixer taps (nominal size 1/2) PN 10. Minimum flow pressure of 0.05 MPa (0.5 bar).

BS EN 232:2003 Baths. Connecting dimensions.

BS EN 263:2002 Crosslinked cast acrylic sheets for baths and shower trays for domestic purposes.

BS EN 274-1:2002 Waste fittings for sanitary appliances. Requirements.

BS EN 274-2:2002 Waste fittings for sanitary appliances. Test methods.

BS EN 274-3:2002 Waste fittings for sanitary appliances. Quality control.

BS EN 816:1997 Sanitary tapware. Automatic shut-off valves PN 10.

BS EN 997:2003 WC pans and WC suites with integral trap.

BS EN 1057:1996 Copper and copper alloys. Seamless, round copper tubes for water and gas in sanitary and heating applications.

BS EN 10088-1:2005 Stainless steels. List of stainless steels.

- BS EN 10088-2:2005 Stainless steels. Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes.
- BS EN 10088-3:1995 Stainless steels. Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes.
- BS EN 10217-7:2005 Welded steel tubes for pressure purposes. Technical delivery conditions. Stainless steel tubes.
- BS EN 13310:2003 Kitchen sinks. Functional requirements and test methods.
- BS EN 13835:2002 Founding. Austenitic cast irons.
- BS EN 13904:2003 Low resistance shower outlets for sanitary tapware.
- BS EN 13905:2003 Low resistance shower hoses for sanitary tapware.
- BS EN 14483-1:2004 Vitreous and porcelain enamels. Determination of resistance to chemical corrosion. Determination of resistance to chemical corrosion by acids at room temperature.
- BS EN ISO 1461:1999 Hot dip galvanized coatings on fabricated iron and steel articles. Specifications and test methods.
- BS EN ISO 9000:2005 Quality management systems. Fundamentals and vocabulary. British Standards Institution, 2005.
- Health Technical Memorandum 07-04 – ‘Water management and water efficiency’.
- Health Technical Memorandum 08-01 – ‘Acoustics’.
- Water Supply (Water Fittings) Regulations.**
- Health Technical Memorandum 00-03 – ‘Clinical and clinical support spaces’.
- Health Building Note 03-01 – ‘Adult acute mental health units’.
- Health and Social Care Act 2008 (Regulated Activities) Regulations 2010.
- CQC’s ‘Guidance about compliance’.
- Patient Environment Action Teams (PEAT).
- Health Facilities Note 30 – ‘Infection control in the built environment’.
- HCAI Code of Practice.
- The national specifications for cleanliness in the NHS: a framework for setting and measuring performance outcomes.
- The Revised healthcare cleaning manual.
- Standardized method of life cycle costing for construction procurement: a supplement to BS ISO 15686-5 Buildings & constructed assets – Service life planning – Part 5: Life cycle costing’.
- Health Technical Memorandum 07-07 – ‘Sustainable health and social care buildings’.
- BREEAM Healthcare.
- NHS Premises Assurances Model (PAM).
- NHS Constitution.
- The Equality Act.
- Approved Document M.
- Health Technical Memorandum 05-03: Part C – ‘Textiles and furnishings’.
- Health Building Note 00-02 – ‘Sanitary spaces’.
- Health Technical Memorandum 04-01 – ‘The control of Legionella, hygiene, “safe” hot water, cold water and drinking water systems’, Part A: Design, installation and testing. Part B: Operational management.