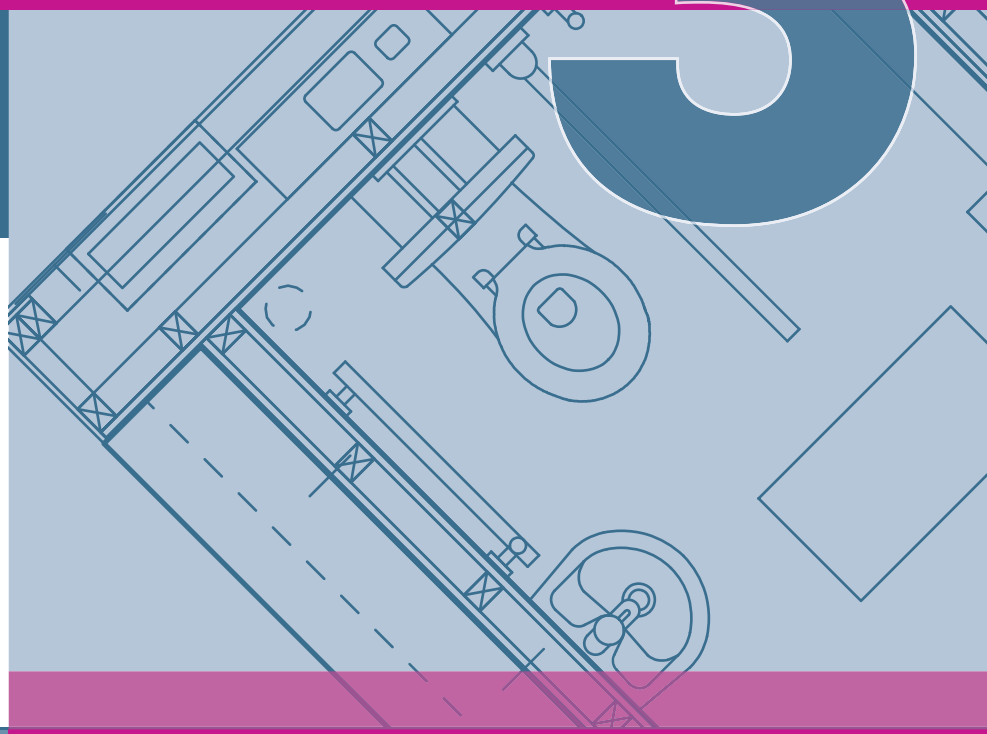
Standard specifications, layouts and dimensions

3 THREE



Toilets in schools

department for
education and skills

Creating Opportunity
Releasing Potential
Achieving Excellence

Acknowledgements

We are grateful to the following individuals and organisations that have contributed to the production of this guidance:

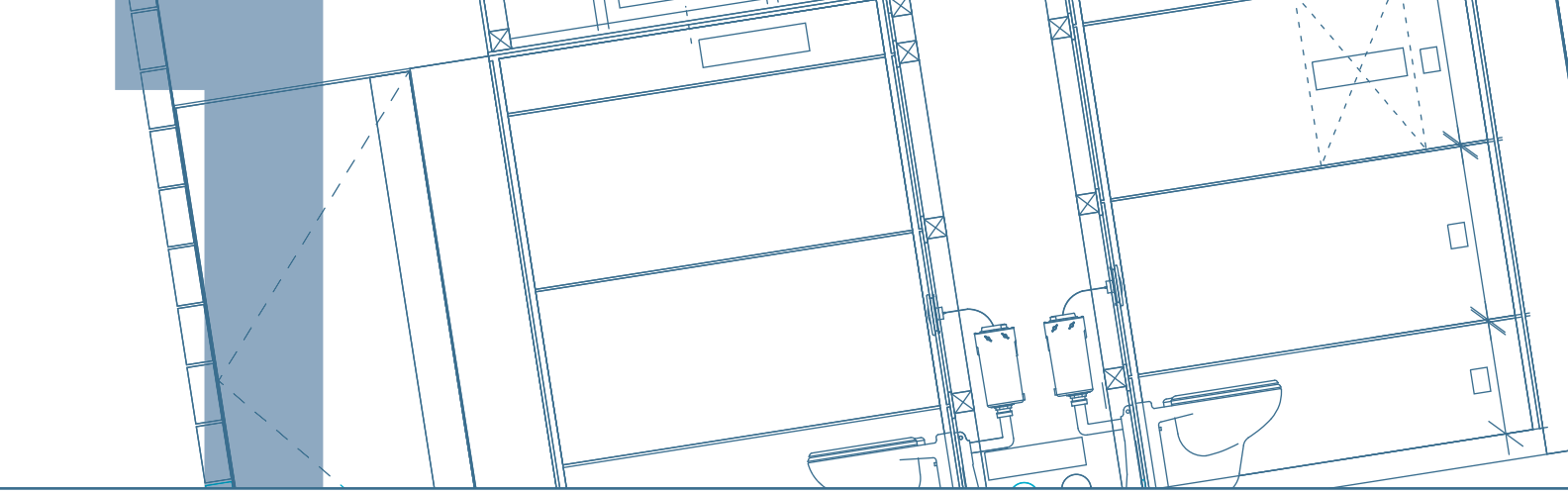
Michál Cohen and Karen Rogers, **Walters and Cohen, Architects**
Nickie Brander, **Bog Standard Campaign and ERIC**
Mark Cleverly, **EC Harris, Cost Consultants**
Tim Robinson and Philip Hitchell, **EC Harris**
Mark Skelly and Anthony Chilton, **Max Fordham LLP**
Mary Webster, **Key Educational Associates**

A number of other organisations kindly donated their time to assist in the production of this guidance. A full list can be found on page 48.

We are also grateful to the following members of the Standard Specifications, Layouts and Dimensions (SSLD) Forum who have helped shape the broad approach to standardisation in this and other guidance documents in this series:

Mukund Patel, **DfES (SSLD Forum Chair)**
Alan Jones, **DfES (SSLD Policy Lead)**
Ian Morris, **Atkins (SSLD Project Manager)**
Beech Williamson, **Partnerships for Schools**
Stephen Reffitt, **Atkins**
Mark Cleverly, **EC Harris**
Paul Foster, **EC Harris**
Michál Cohen, **Walters and Cohen, Architects**
Karen Rogers, **Walters and Cohen, Architects**
Christian Held, **Penoyre and Prasad Architects**
Sunand Prasad, **Penoyre and Prasad Architects**
Linton Ross, **Feilden Clegg Bradley Architects**
Peter Clegg, **Feilden Clegg Bradley Architects**
Paul Hetherington, **Alumasc Interiors Ltd**
Richard Parker, **AMEC Design and project services**
Andrew Williams, **BRE**
Bill Healy, **Build Offsite**
Richard Ogden, **Build Offsite**
Mike Entwisle, **Buro Happold**
Rita Singh, **Construction Products Association**
Michael Ankers, **Construction Products Association**
Bea Etayo, **Fulcrum Consulting**
Peter Blunt, **Mtech Group**
Martin Goss, **Mtech Group**
David Mackness, **SCAPE System Build Ltd**
Martin Lipson, **4Ps**
Mairi Johnson, **CABE**
Richard Saxon, **CBE**
Peter Woolliscroft, **OGC**
Richard Brindley, **RIBA**
Vic Ebdon, **Devon County Council**
Don Bryson, **DBS Consultancy**
Kevin Kendall, **Nottinghamshire County Council**
Sui Te Wu, **Southwark Borough Council**

Contents



Introduction

This guidance is one of a series of Standard Specifications, Layouts and Dimensions (SSLD) guidance notes produced to inform the Building Schools for the Future (BSF) programme.

Who this guidance is for

- Teachers and governors acting as clients for school capital projects
- Local authority officers responsible for procuring school capital projects
- Diocesan building officers
- Local authority and private sector school designers and specifiers
- Manufacturers and suppliers
- Contractors

How the guidance should be used

This guidance sets out the standards of performance for school toilets in the Building Schools for the Future (BSF) programme and shows how they might be delivered through some design examples (see page 30). The aim is to disseminate best practice and avoid 'reinventing the wheel' every time a school building is designed, so that school toilets can be consistently high quality environments, offering best whole-life value for money.

School building clients, their professional advisers, contractors and their supply chains should use the guidance to inform their decisions on toilet layouts and specification standards at the early stages of a project's development – whether that be new build, extension or refurbishment – at RIBA Stages A-F.

To help encourage the take up of these performance specifications, this guidance will become the standard in BSF programme documentation and the Government will expect it to be adopted in the majority of situations where it is reasonable and appropriate to do so. While we would expect projects to comply with the standards, other solutions – possibly based on new products or technologies, or reflecting local factors – may equally comply with the performance specification and could be used. We do not want to stifle innovation by being too prescriptive.

It is for users to exercise their own skill and expertise in deciding whether a solution shown in this publication is reasonable and appropriate for their circumstances. The guidance here does not affect obligations and liabilities under the law relating to construction and building.

▲ **Above** unisex cubicles with central wash trough

▲ **Above** male and female toilets arranged around a unisex handwash area

Though principally aimed at secondary school building projects delivered through the BSF programme, the specifications and solutions may also apply to other educational buildings. It should be noted however that regulations regarding quantities and dimensions of toilets vary for other types of schools.

We will keep this guidance under review and update it as necessary to reflect the development of new products, processes and regulations. A web-based version is available at: www.teachernet.gov.uk/management/resourcesfinanceandbuilding/schoolbuildings/

▲ **Above** trough urinals should be avoided

Background to Standard Specifications, Layouts and Dimensions (SSLD)

The BSF programme offers a unique opportunity over the next 10-15 years to transform our secondary schools, providing innovative learning environments that will inspire pupils to achieve more. High quality, modern school buildings will help to raise standards and play a crucial part in the Government's programme of educational reform.

With the huge increases in funding associated with this programme, there is considerable scope for using standardised specifications, layouts and dimensions to speed up design and construction, reduce whole-life costs and deliver consistently high quality and better value school buildings. Standardisation will support the use of more off-site fabrication and modern methods of construction, which should help to improve health and safety performance, reduce waste and deliver more sustainable solutions. For the supply industry, being involved in standardisation will help to demonstrate market leadership – and help firms reduce risk and increase sales, profitability, and market size.

The solutions presented in this publication and the others in the SSLD series have been developed based on extensive consultation under the auspices of the SSLD Forum. Set up by the Department for Education and Skills (DfES), this forum represents key stakeholders in the building design, research, contracting, and supply communities, as well as local authority construction clients.

Aims and scope of this guidance

This publication provides a standard performance specification and some design examples for blocks of secondary school toilets. It shows how design can be improved to address a number of common failings in current toilet provision and standardised to secure economies of scale. It also includes strategies for effective maintenance and operation of toilets.

The issues

There is considerable evidence highlighting the current issues with school toilets and the effects these have on pupils. An effective layout, high quality fittings and finishes, efficient cleaning and maintenance, together with good access policies, are all essential to ensure that school facilities are valued. Overcoming common problems – such as the negative effects on short and long-term health caused by pupils avoiding drinking enough water or visiting the toilet – can have a positive influence on pupils' welfare, willingness and ability to learn, their behaviour, morale and attendance levels.

"If you get the toilets right, you get the teaching right."

David Miliband MP, *Schools Minister*
[The Guardian, 6 July 2004]

▲ **Above** CCTV should be avoided

▲ **Above** transparency promotes passive supervision

The Bog Standard campaign for better toilets for pupils was officially launched in England in 2004 and is organised by ERIC (Education and Resources for Improving Childhood Continence). It was developed in partnership with School Councils UK, the Community Practitioners' and Health Visitors' Association (CPHVA) and the British Toilet Association. See www.bog-standard.org

The Bog Standard campaign has been widespread and through extensive research they have developed the 'School Toilet Charter', which they believe should be implemented in all schools:

- Pupils must be allowed to use the toilet whenever they need to.
- There must be enough toilet cubicles for girls and boys.
- Toilet cubicles must be private and have doors that lock.
- Pupils with special educational needs and disabilities must have suitable toilets, which they can get to and use easily.
- Toilets must be looked after properly and not smell.
- Warm water and soap must be provided, plus towels or hand dryers.
- There must be enough toilet paper in all cubicles.
- Sanitary products and sanitary disposal units must be provided in toilets for girls aged eight and over.
- Toilets must be free from bullies and smokers.
- Schools must have a policy to keep pupils' toilets clean and in good condition.
- Pupils must be involved in managing and improving their toilets.
- All complaints about toilets must be taken seriously.

Addressing the issues

To address the issues outlined in the Charter – and on the basis of extensive research – the following conclusions and design principles have been established:

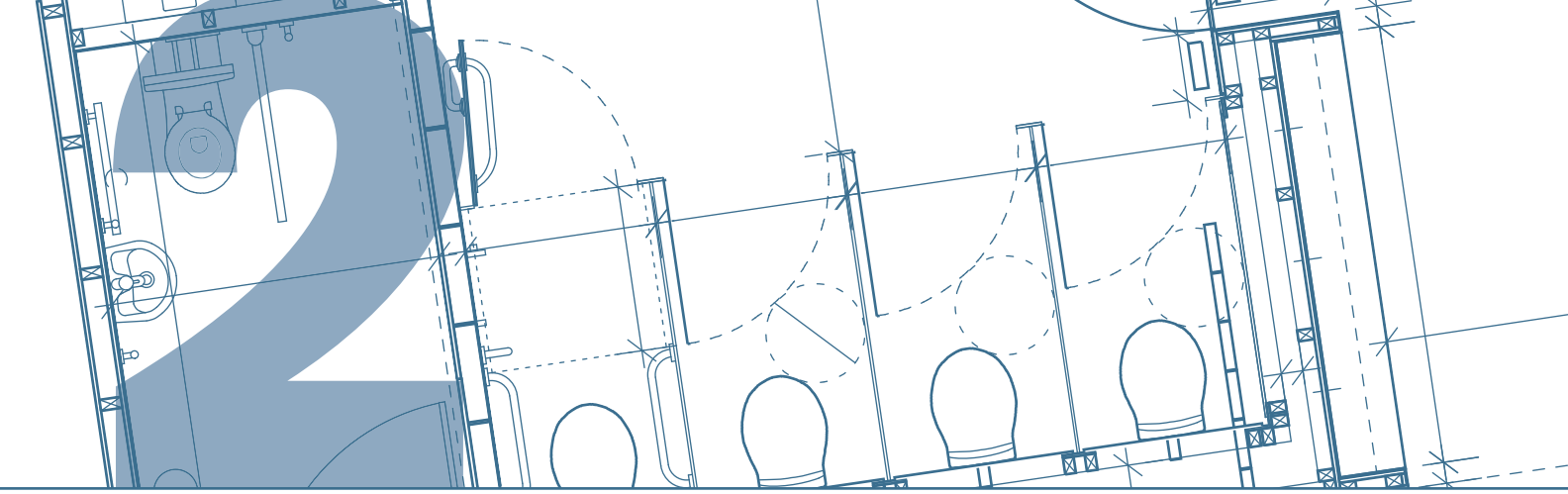
- To encourage pupils to drink enough water, it is essential that toilets are clean, in good working order and accessible.
- Good cleaning and maintenance of the facilities is crucial.
- To avoid health problems, it is essential that pupils be allowed to use the toilet at any time throughout the school day.
- For hygiene reasons the source of drinking water should be located away from the toilet facilities.
- The toilets should be designed and fitted out to a high standard of quality and aesthetic to encourage pupil respect and pride in toilets, hopefully discouraging vandalism.

- Most anti-social behaviour occurs when pupils socialise and hang around in the toilets. To discourage this, along with provision elsewhere in the school for indoor social areas, the space within the toilet facility needs to be kept to a minimum, and hand-washing facilities should be made visible and potentially unisex by being moved out of the cubicle area as a direct extension to the circulation space. This also allows for passive supervision of the common areas from the circulation space, so that pupils can feel safe when using the toilets.
- Wash troughs are preferable to individual wash basins – they are easier to clean, aesthetically more pleasing, and reduce the potential for pupils to flood the toilets.
- Although passive supervision of common areas is important, there should not be views directly into the cubicles that would compromise pupil privacy.
- The toilet blocks should be positioned opposite offices, staff work rooms, or preparation rooms so that passive supervision can work well throughout the school day. At least one of the toilet blocks should be positioned to allow easy access from outdoor spaces used during lunch and break times.
- It is better if the use of urinals is avoided in school environments, since research has shown that at puberty, boys' use of urinals is problematic. The trough type in particular can contribute to a medical condition know as 'shy bladder syndrome'.

▲ **Above** high quality fittings promote respect

- Aural privacy is also important. The proposal is to increase the background noise within the toilet facility to a level of 55dB (A).
- To meet the requirements of accessibility legislation, it is proposed that every cluster of toilets will include a wheelchair accessible cubicle and where appropriate ambulant accessible cubicles for disabled users who are able to walk. These should be designed and constructed to the same quality and aesthetic as the rest of the toilet facility.

The design examples shown in Section 3 have been designed around a number of standardised components: a standardised cubicle with an integral plumbing system (IPS), a wash trough, and a wheelchair accessible toilet. These components can be arranged in a variety of ways to suit different overall school designs, approaches and pupil numbers.



Key performance requirements

The following key performance requirements set the minimum standards that DfES would expect to be adopted in BSF schools wherever it is reasonable and appropriate. Within this section there are a number of options that can be added to these requirements to improve the design. Section 3 suggests some design examples that address these requirements.

Planning and operations

Toilets should be arranged in small blocks, not in a large central block. Small blocks increase the opportunity for passive supervision, discourage anti-social behaviour, reduce disruption caused by cleaning and maintenance, and cut down curriculum time lost through pupils visiting toilets during lessons.

In line with the Education (School Premises) Regulations 1999[1] (SPRs), wheelchair accessible toilets should be distributed across the whole school for use by staff and visitors as well as by disabled pupils. There should be a small number of additional staff and visitor toilets near the administration facility and staff room.

Toilets should be positioned so that the communal areas can be seen from the circulation space without jeopardising privacy – cubicle doors should be at 90 degrees or greater from the circulation route.

Hand washing areas should be an extension of the circulation space and may be unisex, as experience has shown this to reduce the opportunity for anti-social behaviour.

1 www.opsi.gov.uk/si/si1999/19990002.htm

Drinking water should be provided away from the toilet facilities. See BREEAM Schools' Manual HW16 and Building Bulletin 87.

All toilets should be accessible for use throughout the school's opening hours, including when extra-curricular activities make use of the school building.

The toilet facility can be single storey or stacked to be multi-storey. Toilet cores in multi-storey buildings often need to accommodate service risers for vertical service distribution.

The service voids shown on the designs in Section 3 represent the zones required for a two-storey toilet core without any additional riser space. The diagrams (on page 13) show how the types could be adapted to accommodate additional ductwork and riser space if necessary. The designs allow for the shape of the perimeter wall to be altered if required – but any changes should avoid introducing nooks and crannies not clearly visible from the circulation space, which might encourage anti-social behaviour.

For general information on the design of sanitary facilities and scales of provision of sanitary and associated appliances, see BS 6465-1:2006.

▲ **Above** allow enough space for sanitary disposal bins, unlike shown here

▲ **Above** drinking water should be located away from toilets

Accessibility

Toilet and changing facilities need to be designed to be suitable for all pupils, staff and visitors, including those with special educational needs and disabilities. To meet the diverse needs of people with SEN and disabilities, provision may need to be well in excess of minimum requirements or non-statutory guidance, so careful briefing and specification are essential. Health professionals such as occupational therapists or physiotherapists can advise on particular needs.

Each toilet block should have accessible toilets, to the same quality and aesthetic as the other facilities. They should be provided at convenient locations around the school.

Section 5.7d of Approved Document Part M: 2004 suggests where there are four or more toilet cubicles in separate-sex toilet accommodation, one of these is to be enlarged. Given that the design examples include a fully accessible toilet in each group of toilets and that these are specifically for school use, it is reasonable to assume that the examples will meet building regulations.

The dimensions shown on the drawings in Section 3 are the minimum requirements of Approved Document Part M: 2004 (ADM)[2] and cannot be reduced. ADM: 2004 states that in each toilet facility there should be a wheelchair accessible toilet and where four or more toilet cubicles are provided there should be an ambulant accessible cubicle. These should have outward opening doors and, positioned at the end of the block, avoids the risk of users being squashed between the cubicle partition and the door.

To make the toilet facilities accessible for people with visual impairments, there needs to be visual contrast in the design. There should be 30 points' difference in Light Reflectance Value (LRV) between components that need to contrast visually. It is also important that the floor and wall finish contrast visually so that a visually impaired user can identify the location of the walls in relation to the floor. Other components of the design will also need to be considered in terms of visual contrast. For more information see ADM: 2004 and BS 8300:2001.

Acoustics

The toilets should provide aural privacy for the user. This must be considered carefully and could be achieved , for example, by designing the ventilation system to generate a background noise level up to but not exceeding 55dB (A).

The acoustic reverberation time within the toilets must be below the upper limit of 1.5s as stated by DfES Building Bulletin 93[3] (BB 93). Provided the room is less than 8m x 5m in size with a plain plasterboard suspended ceiling, a reverberation time of one second should be achievable.

The sound separation between the male and female toilets should be at least R_w 45dB. This may mean that all access panels and integrated plumbing systems in sound separating walls will need to be sealed with closed cell neoprene/EPDM gaskets.

2 www.planningportal.gov.uk/uploads/br/BR_PDF_ADM_2004.pdf

3 www.teachernet.gov.uk/management/resourcesfinanceandbuilding/schoolbuildings/designguidance/sbenvironmentalhs/acoustics/

Durability

All the components of the overall design should meet the standards set out in BS 7543 and BS ISO 15686.

Fire prevention

The fire rating and surface spread of flame class required depend on the design of the overall school and must meet the requirements set out by Approved Document B (Fire Safety) 2006[4] (ADB).

Sustainability

The toilet design can address a number of sustainability issues:

- Construction materials should be sourced locally wherever practicable to minimise transport impact.
- A rainwater harvesting system may be used both to save water and reduce the school's revenue expenditure. Harvesting rainwater can reduce the mains water requirement by as much as 50% and minimise the run off from the site, decreasing the risk of local flash flooding. It is also a useful educational resource for raising awareness of conservation issues.
- Low flush cisterns and sensor operated taps may be used to conserve water. For more information, see CIRIA W012 2006 Sustainable Water Management in Schools[5].
- Energy saving light fittings should be used and a presence detection system may be installed to save electricity further. See also technical detail section and SSLD guidance, *Lighting in schools*.
- Wherever possible, recycled and recyclable materials should be used, and products and materials that have to go to landfill at the end of their life should be avoided.

For more information about sustainability, please refer to BREEAM[6] and Building Bulletin 87, Guidelines for Environmental Design in Schools[7] (BB 87).

▲ **Above** pupils' designs incorporated in toilets

4 www.planningportal.gov.uk/england/professionals/en/1115314683691.html
5 www.ciria.org/downloads.htm
6 www.breeam.org/
7 www.teachernet.gov.uk/management/resourcesfinanceandbuilding/schoolbuildings/designguidance/sbenvironmentalhs/energy/

Pupil involvement

Involving pupils in the design process has been found to increase their sense of pride and ownership of their school buildings, helping to reduce vandalism and bad behaviour.

Pupils should be involved in aspects of the design – such as choosing colours and finishes for the toilet facilities – wherever possible.

Another option is to incorporate pupil artwork into the laminate finish of the cubicles and associated panels.

Pupils may be involved in the management of the toilet blocks. For example, after peak periods of use school council representatives could check the toilets and report back any issues that need sorting out. It is essential if this is implemented that the problems highlighted by the pupils are dealt with.

Further ideas on involving pupils in design are available from the Sorrell Foundation's, Joinedupdesignforschools publication[8].

Off-site fabrication

The standardised approach to toilet design in this publication offers opportunities for off-site construction, including the use of volumetric methods, where the entire construction is built off site and craned into place, and also panelised solutions. Off-site construction can be cost effective because of economies of scale, provide greater cost and delivery predictability and higher standards of assembly and finish, lower the risk of site accidents, and be more sustainable in terms of reduced waste compared with site fabrication.

The design examples in Section 3 use various methods to facilitate off-site construction techniques. For example, the service zone between the back-to-back toilets has been sized to accommodate two horizontal drainage runs. This allows:

- Individual rooms and plumbing sets to be separated if a volumetric solution is required, with only the soil and vent down-pipe being installed on site
- All the toilets configurations within the options to have similar drainage runs, cisterns and plumbing details, thus providing an opportunity to pre-plumb and prefabricate the major components off site within a steel framed cage (red zones in diagrams opposite)

The wash troughs are also identical in each option, representing an opportunity for prefabrication of plumbing and sanitary components, with thermostatic mixing valves, traps and taps being installed within a frame supporting the trough and walls (blue zones in diagrams opposite).

8 www.thesorrellfoundation.com/thebook.html

The main toilet options can simply be viewed as different ways of configuring these prefabricated components. If a fully volumetric solution is chosen, the architect/designer will need to carefully detail the junction between the toilet facility and the overall school design.

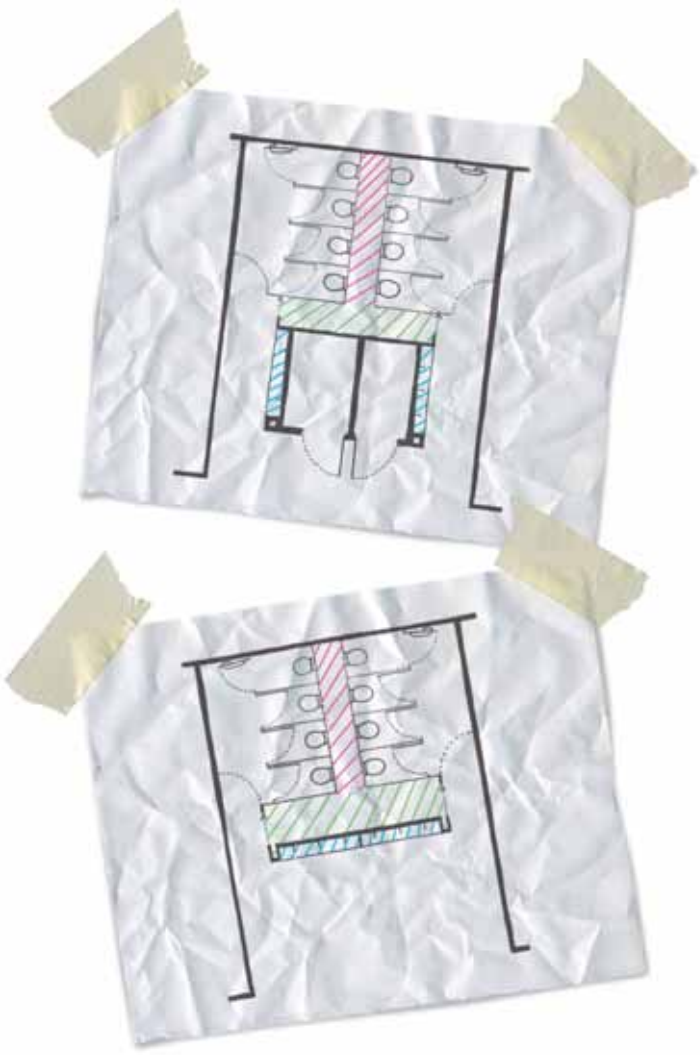


Diagram key

- Prefabricated toilet wall components
- Adaptable service zone for additional risers
- Prefabricated washing trough components

Technical details

Quantity and dimensions

There should be one toilet for every 20 pupils and two thirds as many basins as toilets as set out in BS 6465-1:2006 and the SPRs. If the toilets are self-contained (i.e. both toilet and basin are within the same room), then BS 6465-1:2006 recommends that toilet provision is increased by 25% to counteract increased waiting times. It should be noted that different regulations apply for different types of school.

The optimum dimensions, shown on the drawings in Section 3, are based on the activity spaces recommended in BS 6465-2:1996 and should not be reduced.

Suspended ceilings and bulkheads

Options for materials: heavy-duty moisture resistant plasterboard, or a material that performs equally well.

The material chosen should constitute a durable continuous surface and meet the requirements of BS 1230 and BS EN 520:2004. Ceiling tiles are not recommended as they have been shown to encourage anti-social behaviour and vandalism, with damage not only to the ceiling but also to the toilet pans from pupils standing on them to reach the ceiling.

Cut-outs and supports for services fittings need to be accommodated. The various services fittings need to be inserted into the ceiling/bulkhead neatly, without unsightly joints or gaps that may encourage dirt and germs.

The finish should be easy to wipe clean, patch and repaint, without reducing its visual appearance and technical performance.

It should be able to be hung from the structural soffit, taking into account deflection, tolerances and movement/expansion joints. These requirements will vary depending on the structure of the building and overall design of the individual school. If the building structure's deflection is significant, the ceiling should not be edge fixed.

A surface spread of flame rating may be required, depending on the overall school design. Within circulation areas and fire escape routes, the finish should meet Class 0 (B-s3, d2) surface spread of flame in accordance with ADB: 2006. See also BS 476: Part 7 and BS EN 1350-1:2002.

The requirement for access panels will depend on the overall school design. Where they are needed, access panels must be minimised and have tamper-proof fixings. They should be located so that they are not directly above a toilet pan, as this may encourage bad behaviour and vandalism.

Floor finish

Options for materials: resin flooring, ceramic tile, vinyl, rubber or a material that performs equally well.

The material should be slip resistant and meet the requirements of BS 7976:2002 Parts 1, 2 and 3. The slip resistance should be designed into the full depth of the material in order to remain constant throughout the life of the product. Therefore it should not be a surface-applied finish that wears out before the floor itself.

Where sheet materials are used, these should be specified and set out to minimise the number of joints.

It should be easy to clean with readily available environmentally friendly products, and as smooth as possible while still meeting the required slip resistance.

The material should be impervious to water, with watertight joints to enable it to be thoroughly washed down without water passing through to the sub floor.

The floor finish should have an integral 100mm high coved skirting in matching material and finish so that the floor can be washed without risk of damage to the wall finish. (The height of 100mm was chosen based on manufacturers' current standards and alignment with the gap under the cubicle system partitions and doors.)

Where the construction of the school building allows, the floor within the toilet area should be laid to fall and incorporate integral gullies to allow for the entire toilet area to be sluiced regularly. Where integral gullies are included they need to be effectively sealed to the floor finish. Any gratings should be fixed with tamper proof fixings to discourage pupil interference. See also SSLD guidance, *Floor finishes in schools*.

Perimeter wall

Options for materials: blockwork, plywood, fibreboard or plasterboard stud partition, or a construction that performs equally well.

The acoustic separation requirement for this wall will vary, depending on the use of the adjacent rooms. The guidelines and recommendations set out in Approved Document E:2003, *Resistance to the passage of sound*[9] and BB 93 should be used to determine this requirement specific to the overall school design.

Both the structural and the fire rating requirement of this wall will depend on the overall design of the school. It will need to comply with ADB: 2006 and Approved Document A: 2004[10] (ADA). See also SSLD guidance, *Partitions in schools*.

▲ **Above** example of IPS system

Internal walls (excluding IPS or cubicle system)

Options for materials: blockwork, plywood, fibreboard or plasterboard stud partition, or a construction that performs equally well.

The acoustic separation requirements for these walls will vary, depending on location. The standards ADE: 2003 and BB 93 should be referred to for more information.
Where possible, there should be an acoustic separation of R_w 45dB between separate sex toilets, and 40dB between the accessible toilet and the hand washing area.

Acoustic sealing is important where the services penetrate the walls and floors, to achieve the separation requirements. Gaps and hole sizes through internal walls should be minimised. Where services need to penetrate walls, care should be taken to minimise any gaps around them. If there are any gaps, these need to be filled with tightly packed mineral wool and then sealed with soft-setting mastic.

9 www.planningportal.gov.uk/uploads/br/BR_PDF_ADE_2003.pdf
10 www.planningportal.gov.uk/uploads/br/BR_PDF_AD_A_2004.pdf

Wall finishes (excluding IPS or cubicle system)

Options for materials: extruded vinyl wall finish, polypropylene, epoxy coatings, acrylic coatings, compact grade laminate, or a material that performs equally well.

The chosen material should be a continuous surface with a minimum of sealed joints. Where possible, materials available in larger sheets should be chosen to minimise the number of joints within the toilet facility.

The surface of the material should be as smooth as possible and easily cleaned with readily available environmentally friendly products.

The material should be impervious to water, with watertight joints, and able to be thoroughly washed down without allowing water to pass through to the wall/partition behind. The joint between the wall finish and the integral coved skirting should be sealed against water and dirt.

The material should be able to be applied directly to blockwork or plywood internal walls, to avoid the additional cost of extra background finishes. Walls could be lined in moisture resistant plasterboard first, ready to receive a final wall finish.

The wall material should be applied with a concealed fixing method. This could be with adhesive or a similar method to avoid places for dirt and germ build up and to discourage pupil interference.

Integrated plumbing system (IPS)

Options for materials: compact grade laminate, recycled plastic, or a material that performs equally well.

The material chosen should be a water impervious sheet and studwork, able to be thoroughly washed without water passing through to the wall/partition behind.

The joint between the IPS system and the integral coved skirting should be sealed against water and dirt.

All removable access panels should be lockable with a master key (ie in a suite of keys) and tamper-proof fittings. Only qualified authorised personnel should have access to the equipment behind these panels for operational and health and safety reasons. This will help to avoid tampering and misbehaviour.

Cubicle system

Options for materials: compact grade laminate, recycled plastic, or a material that performs equally well.

- **Option (i) Structural soffit/ceiling hung system** This is the preferred option where easy cleaning is a priority. Its selection may depend partly on cost, as these products generally cost more than floor-mounted systems, and partly on the design of the soffit above, as the system would be fixed back to the structural slab or to the steelwork above the suspended ceiling. There should be nothing at floor level, since that would hinder efficient cleaning.

- **Option (ii) Wall and floor mounted system** This option should only have the front pilasters extending to the floor for support, with the rest of the support taken from the walls. This is to maintain as much available access as possible for cleaning and to minimise junctions between the floor and cubicle system that lead to dirt and germs building up and hinder effective cleaning of the space.
- **Option (iii) Where a school feels that increased pupil privacy outweighs easy cleaning** It is recommended that the cubicle partitions and doors are extended to finish at floor level.

In options (i) and (ii) the intermediate partitions and doors of the cubicle system should be spaced 100mm off the floor finish level to allow access for cleaning and to minimise junctions between the floor and cubicle system. The spacing distance should not be greater than 100mm as this may jeopardise users' privacy.

The cubicle system should extend to the underside of the suspended ceiling. The gap between the cubicle system and the suspended ceiling should be minimised, preferably omitted, to help avoid anti-social behaviour.

When the cubicles are in use there should not be any gaps between the partitions and the doors. This is to maintain user privacy and to discourage misbehaviour that can result from pupils' privacy being jeopardised.

The sheet material should be water impervious, allowing it to be thoroughly washed down without having a detrimental effect on either the finish or performance of the sheet material.

Items such as jointing strips, extrusions and visible fixings are to be avoided as they provide places for dirt and germs and hinder cleaning.

All cubicle doors should be able to open outwards or have a lift-off facility. This is a requirement of ADM: 2004 to allow for providing emergency assistance to someone who has fallen against the door inside the cubicle (blocking the door from opening). This facility should not compromise the privacy of the user under general circumstances.

The cubicle locking devices should be suitable for use by people with impaired manual dexterity (i.e. a simple single action). They should be designed so that they are the weaker element – if force is applied to the lock it breaks rather than damaging the cubicle system. This is because it is cheaper to replace a lock than part of the cubicle system. Spare locks should be held by the school to help reduce the time that cubicles are out of action because of lock damage.

The 'cubicle occupied' indicator should be clearly visible from outside. This should be suitable for people with visual impairments and colour blindness – a red/green indicator by itself is not suitable.

Each cubicle door should have a cook hook on the inside, which is securely fixed through the door to avoid damage to the panel face when weight is applied.

For further information on relevant standards see ADM: 2004 and BS 8300:2001.

Separation doors between cubicle and hand wash areas

Options for materials: glass door with glass side panel, or no door or side panel, or a material that performs equally well.

The operating force of the door should not exceed a 20N force as set out in ADM: 2004. This applies to all doors in circulation routes. For further information on relevant standards, see ADM: 2004 and BS EN 12217:2003.

From the hand wash area there should be a clear view of the area directly outside the toilet cubicles to help deter bad behaviour and vandalism. The door should provide an acoustic separation and a barrier against drifting smells. If, however, the cleaning is adequate, the ventilation systems are properly maintained and a sound system is installed, there may be no need for a door here. This will need to take into consideration the functioning of adjacent spaces within the overall school.

The door may be installed with an automatic opening facility to avoid germs being transferred onto its ironmongery. This will have a cost implication and additional maintenance requirements.

The surface of the door should be as smooth as possible and be able to be cleaned with readily available environmentally friendly products. Recessed panels, joints and trims should be minimised to avoid places where dirt and germs can build up.

Installation and maintenance of sanitary ware

Appliances need to be assembled, installed and fixed so that services will drain as intended and as recommended by the manufacturer.

All components should be jointed and bedded using compounds and methods recommended by the manufacturer. BS 6465-3:2006 and the Water Regulations 1999[11] have further information.

▲ **Above** pupil involvement in mural design and painting

11 www.defra.gov.uk/environment/water/industry/wsregs99/index.htm

Drainage and waste design

The risk of blockages and leaks should be minimised and foul air prevented from entering the building as foul water travels from the toilet blocks to the below ground drainage system.

Access needs to be provided so that blockages can be cleared and the system can be adequately tested, cleaned and maintained.

Pressure fluctuations in the pipe work should not vary by more than plus or minus 38mm water gauge.

Traps should retain a water seal of not less than 25mm. This will need to comply with Approved Document H: 2002[12] (ADH) and BS EN 12056-1:2000.

Drainage and waste pipe work

The drainage pipe work should be made of HDPE, stainless steel or cast iron. PVC should be avoided on environmental grounds.

Acoustic lagging should be installed around the down pipes, with a minimum density of 5kg/m^2. For more information see EN 1519, EN 1124-1, EN 1124-2 and BS EN 877.

Water supply

The flow rates to the taps and cisterns should be a maximum of 0.15 litres per second to the taps and a minimum of 0.10 litres per second to the cisterns. This can be from the mains, gravity or boosted water supply, local or centralised hot water generator.

All final taps and fittings should have an isolation device, which will need to comply with the Water Regulations 1999 and BS 6700:1997.

Water meters

Water meters can be installed on multi-storey toilet cores to rainwater feeds and mains cold feeds to monitor water use.

A pulsed output should be provided on the water meter, which should be fitted to comply with BS ISO 7858-1.

Sanitary shut off valves

There is the option for adding a single solenoid to the pipe work serving all toilets and connecting it to a Passive InfraRed (PIR) sensor. This provision may provide an additional BREEAM point.

Avoiding Legionella

Detailed information on avoiding Legionella is available in BSRIA AG 4/94, HSC L8 and CIBSE TM13.

Cold water should be distributed at no more than 20° C. Hot water should be stored and circulated at 60° C.

Recycled rainwater

Filtered recycled rainwater may be provided to the toilets.

Header tanks should be housed at the top of each toilet core.

Ozone treatment is recommended.

This installation should meet the standards set out in Water Regulations Advisory Scheme (WRAS) GN 9-02-04 and WRAS GN 9-02-05. Also see CIRIA W12 2006 for more information.

12 www.planningportal.gov.uk/uploads/br/BR_PDF_ADH_2002.pdf

Temperature and heating

Heating is often unnecessary in a toilet facility if it is surrounded by other internal space heated to 18-20˚C.

Sufficient heating can be provided to the toilet facility by drawing heated air from the adjacent circulation space.

The internal temperature should be a minimum of 15˚C, in compliance with the SPRs and BB 87.

Ventilation

To ventilate the toilet, there should be a minimum of six air changes per hour (ac/h) during occupied hours.

Ventilation should be provided by a Heat Recovery Unit.

Tempered fresh air should be supplied to the corridor and then extracted via air transfer grilles to the toilets.

When air is used as a heating medium, there should be 10 ac/h to ensure air quality.

Timed or occupant boost options for ventilation rate control should be considered.

Noise from the mechanical ventilation should not exceed 45dB (A). There is an option to raise this level to provide masking noise to increase aural privacy. While such a noise level is not desirable, the noise from the mechanical ventilation should not exceed 55dB (A).

This installation will need to comply with ADF: 2006.

Lighting

The lighting level in the toilet facility should be 200 lux, as set out in the CIBSE Code for Interior Lighting[13]. This lux level may be varied if it is supported by a strong and practical lighting design strategy.

The recommended lamps to be used are linear and/or compact fluorescents.

Luminaires should be complete with diffusers to avoid a direct view of the lamp.

Luminaires should be a minimum of IP 44 rated to avoid water and/or moisture entering the luminaire. See also SSLD guidance, *Lighting in schools*.

Lighting control

The preferred method of lighting control is occupancy sensing, which will switch on the light automatically when the sensor(s) detect occupancy. The lights remain on during a time delay that can be varied, after which the lights automatically switch off if no one is detected.

When the length of time to be set is considered, care should be taken not to cause a 'blackout' while the pupils are in the toilets and sensors must cover movement within the individual cubicles.

This method has the advantages of saving energy and avoiding pupil interference with lighting (as there are no accessible switches). See also SSLD guidance, *Lighting in schools*.

13 www.cibse.org/index.cfm?action=showpage&PageID=449&TopSecID=16

Fire alarm

Smoke heads have been shown to be a deterrent for smokers. These heads may be linked to a separate alarm system or the main system, depending on insurance requirements and arrangements with the local fire brigade.

This installation should meet the requirements set out in BS 5839-1:2002 and BS EN 5411.

Toilet pan and cistern

Options for materials: vitreous china (BS 3402), stainless steel, or a material that performs equally well.

All parts of the toilet construction should be sourced from a single manufacturer.

The toilet should be wall hung to avoid dirt and germ build-up around the floor junction – lifting the pan off the floor allows for more effective cleaning.

A wall hanging fixing frame should be provided as part of the IPS system. It will need to comply with BS EN 997:2003.

The cistern and associated pipe work should be concealed, both to avoid dirt and germ build up and to remove the potential for pupil interference or vandalism. The toilet should have an internal overflow.

The cistern may be fed with filtered recycled rainwater from the header tank above.

The flushing mechanism should be sensor operated to avoid the germ transfer that occurs with more traditional touch operated flushing mechanisms. Associated wiring, controls and isolators should be housed in the service void behind toilets. This should comply with WRAS approved, Sensor IP 65 rated, Wiring regulations BS 7671 and ADP.

A low flush cistern of 4 or 4.5 litres is recommended. However, the pan chosen must be designed to work with this amount of water or it will not work correctly.

Where dual flush is preferred by the school it should be a 6L flush and a 3L flush. This needs to meet the requirements set out in BS 1125:1987.

The toilet pan seat and lid should be top fitting as this type of fitting has been recommended as more durable and suitable for school applications than alternative types. They should comply with BS 1254:1981.

The toilet pan chosen should meet the robustness recommendations set out by BS EN 14600 for use within a secondary school environment.

Chosen materials should be easy to clean with readily available environmentally friendly cleaning products.

Although stainless steel is one of the options, it is worth noting that some schools have found keeping it clean problematic – and in some schools it has been vandalised because of its prison-like feel.

Urinals

The use of urinals should be avoided, particularly the trough type. If they are used, there should be at least equal numbers of toilet pans to urinals in male toilet facilities and each urinal should be screened from the adjacent facility. If urinals are to be fitted into the design proposals shown in this guidance, the same spacing should be maintained, the toilet pan simply replaced by a urinal and the cubicle door removed (but cubicle walls retained to act as screening).

Wash trough

Options for materials: solid surface material, recycled plastic, vitreous china, stainless steel, or a material that performs equally well.

The wash trough should be constructed of a continuous surface with no visible joints so that they can be cleaned effectively – joints lead to dirt and germ build up.

The wash trough should include an integral up stand against the wall, providing a splash back that will have the taps fixed through it. This should be an integral part of the trough and not be jointed, thus avoiding the build up of grime. For the same reason, the wash trough should be supported solely off the plywood partition wall (i.e. there should be no legs or other connections to the floor).

All fixings through the trough should be both watertight and as inconspicuous as possible, to discourage pupil interference and minimise dirt and germ build up.

The wash trough should incorporate a minimal down stand to conceal services and paper hand towel disposal bins, while allowing easy access to them for maintenance and emptying.

The down stand should be removable and fixed with tamper-proof fixings – see drawings in Section 3 for further dimensional information.

Materials used should be easy to clean with readily available environmentally friendly cleaning products. Although stainless steel is an option, some schools have found keeping it clean problematic – and in some schools it has been vandalised because it feels prison-like.

Accessible toilet sanitary ware (including wheelchair/ambulant and wet room)

There should be a visual contrast between the fittings and the wall finish to help people with visual impairment locate the fittings. This is especially important for the alarm and the grab rails.

All the sanitary ware fittings should be set out in the positions and dimensions that comply with ADM: 2004 and BS 8300:2001.

NB As mentioned in 'Key requirements', all the fittings should be of the same quality functionally and aesthetically as the other toilets. Where reasonable, a full-length mirror should be installed within the wheelchair accessible toilet.

Toilet paper dispensers

Sheet type dispensers should be used rather than rolls, which have been found by schools to encourage anti-social behaviour. If a roll type dispenser is installed it should be a controlled feed type.

The dispenser should be filled with soft absorbent paper. Research has shown shiny transparent paper to be ineffective – and it can contribute to sore skin and urinary infections.

Recycled paper should be used wherever possible.

Dispensers should be fitted with a lock to prevent pupil interference.

Soap dispensers

Cartridge type dispensers should be used for soap, as liquid soap that can be 'topped up' can become contaminated, causing health problems. Liquid soap supplied in replaceable cartridges does not have this problem.

All fixings should be concealed to avoid pupils tampering and potential dirt and germ build up on visible fixings. Self-adhesive fixing pads avoid numerous holes in the walls every time the dispensers are changed.

Liquid soap should comply with BS 1545:1990.

Hand drying

Recycled paper towels should be used – they are currently both the most hygienic and environmentally friendly method of hand drying.

If electric hand dryers are used, they should be the high efficiency, high velocity air sheet hand dryer type.

The design allows for integral bins under the wash trough for disposal of paper hand towels. These will need to be emptied regularly throughout the school day to avoid overflowing.

Sanitary products

A sanitary product vending machine should be located in each block of female toilets.

For maximum privacy, the machine should be situated so that pupils can use it without being visible from the circulation areas. Where space allows, a private location in a common area used only by females, rather than an individual cubicle, is preferable.

There should be a sanitary product disposal bin in each female cubicle, with sufficient space beside the toilet pan to comfortably locate it – BS 6465 provides recommended dimensions. The designs shown in Section 3 allow for this space. However, if space is particularly tight within the cubicles, the toilet pan can be offset from the centre of the cubicle to allow more space on one side for the bin.

Taps

The taps should be wall mounted to avoid the dirt and germ build up that can occur around deck-mounted taps.

Taps should be WRAS Approved.

The taps should be sensor operated and turn off automatically with less than one litre of use. This will help avoid the germ transfer that happens with more traditional touch operated mechanisms. It will also save water and minimise the risk of potential flooding.

Associated battery, control box, connections and solenoid valves should be located below the wash trough, behind the removable down stand. They will need to comply with BS EN 816:1996, Sensor IP 65 rated, Wiring regulations BS 7671 and ADP.

The water supply to the taps should be at a pre-mixed temperature of a maximum 41˚C as set out by the Thermostatic Mixing Valve Association. The Thermostatic Mixing Valve (TMV) should meet TMV3 scheme standard, with built-in full flow strainers, shut-off valves, auto safety shut-off should one supply fail, integral check valves and flow regulators, and flushing kit.

The TMV should be within 1.5m of the taps. This will need to comply with ADG, ADH, BS 7942:2000, BB 87, and SPRs.

Furniture and fittings

Mirrored doors above the wash trough, concealing the dispensers, will allow access for refilling them, whilst also discouraging pupil interference.

The mirrored fronts will need to be backed with an impact-resistant safety layer to allow them to be fixed directly to the timber framework behind, or an alternative suitable material.

All fixings should be concealed, including hinges, and the doors should be locked shut with concealed tamper-proof locks.

▲ **Above** accessible toilets should be high quality design

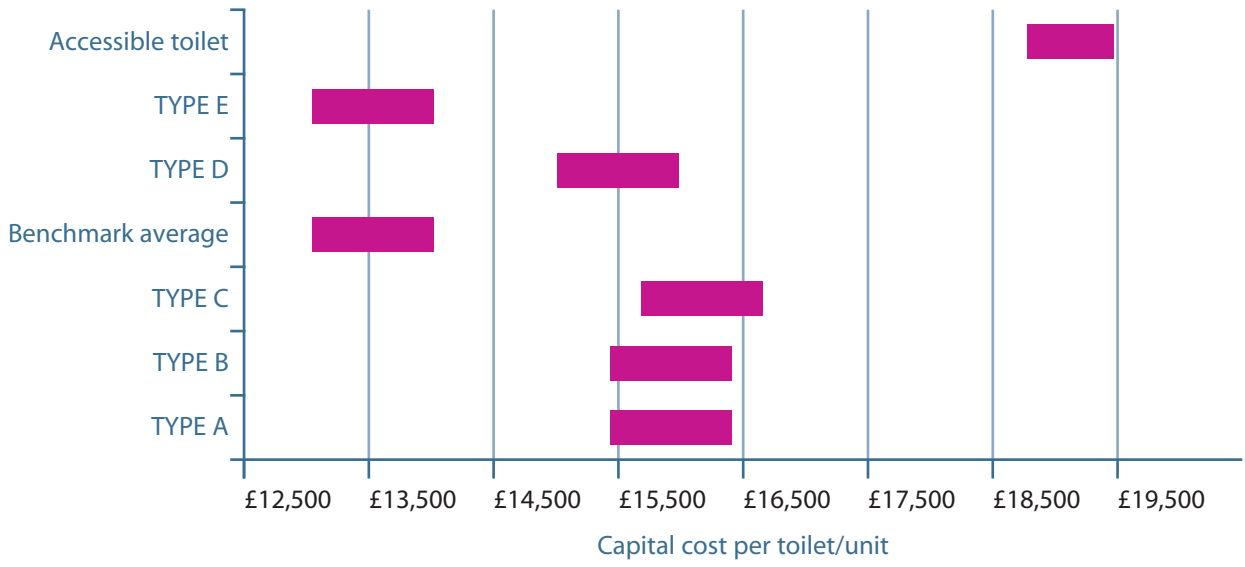
Cost comment

Five examples of toilet configurations (types A to E) are described in Section 3. The table below summarises the cost based on a 900 pupil school, assuming that the total number of toilets units required will be 45 (based on SPR requirements). The capital cost for each type is summarised. Costs are at second quarter 2007 prices and include preliminaries, overheads and profit, but exclude contingencies and professional fees. The table also includes the average equivalent costs from four sample schemes for comparison.

	Total floor area needed to provide 45 toilets	Total cost – lower range	Total cost – upper range	Average cost per toilet
Type A	168	£700,000	£725,000	£15,500
Type B	161	£700,000	£725,000	£15,500
Type C	170	£710,000	£735,000	£15,750
Type D	165	£675,000	£700,000	£15,000
Type E	125	£595,000	£620,000	£13,250
Accessible toilet	3	–	–	£19,000
Sample average	171 to 240	£585,000	£600,000	£13,000

The average cost per toilet unit is shown in the graph below.

WC Design/cost comparison



The graph shows that, depending on the type adopted, the proposals in this guidance are between 0 and 20% more expensive than the provision in the sample schools. The total extra cost for implementing these proposals in a typical 900 pupil school would therefore range from around £10k to £125k.

The extra cost is mainly attributable to the specification enhancements that raise the standard of toilet design to help improve supervision and behaviour in schools.

Over time there is likely to be considerable scope for efficiencies from the standardised approach and from opportunities for off-site fabrication, particularly in large serial programmes like BSF, which will help to partially offset the additional costs.

While initial capital costs may be higher, the proposals should deliver savings in whole-life costs through reduced anti-social behaviour and vandalism. Management, cleaning and supervision of the toilet areas is likely to be easier and expenditure on unplanned maintenance may be lower. It is recognised, however, that it may cost more to refresh or replace elements over the life cycle.

Optional extras and cost savings

It should be possible to implement many of the best features in this guidance at a lower overall cost than outlined above. The schedule below highlights optional savings or extras that could be deducted from or added to the base costs identified above.

The potential savings should help clients adopt the proposals at a manageable overall cost – but any omissions should be considered in conjunction with the proposed benefits of that particular element as discussed in this guidance.

Potential savings

Element descriptions	Approximate saving per school
WCs in lieu of urinals The current design does not include urinals in the male toilets. The unit cost of a urinal is cheaper than a toilet. Not only would there be savings from not installing a toilet; there would also no longer be a requirement for toilet cubicles or toilet paper holders. It is realised, however, that toilets cannot be completely replaced with urinals throughout the entire school. This has been allowed for in the cost savings opposite. Whole-life cost Additional maintenance is needed for toilet cubicles/paper holders and the replacement cost for breakages is higher for toilets in comparison with urinals.	WC pan over urinal – £9,000 Toilet paper holders – £2,000 Omitting cubicle doors – £4,000 Overall £19,000
Wall-hung toilet units The current specification requires the toilet units to be wall hung and not floor mounted. Floor-mounted units would produce a capital cost saving. Whole-life cost Wall-hung units would produce negligible savings in cleaning costs and would not affect the overall whole life cost of a scheme. There would however be a greater replacement cost per unit, as these units are more expensive to replace then floor-mounted units and there is also the possibility of damage to the wall on which the units are hung.	£10,000-£15,000
Sensor taps The proposed specification requires the taps to the basins to be sensor operated. There would be a capital cost saving from moving to standard taps from sensor operated taps. Whole-life cost Water-saving taps would show some credit back over the year. However, the energy consumption of the power supply to the taps and transformers should also be considered.	£5,000

Element descriptions	Approximate saving per school
Doors The current specification allows for glazed doors to the toilet areas. The cost saving for the omission and subsequent replacement with alternative options can be summarised as follows:	
• Omission of glass doors (current) – to be replaced by solid doors (typical).	£12,000
• Omission of glass doors (current) – to be replaced by solid doors with vision panels.	£10,000
• Omission of glass doors to toilets.	£20,000-£25,000
Whole-life cost There is potentially a higher life cycle cost for glazed doors due to cleaning and breakages. The replacement cost for glazed doors is higher than timber. These doors also tend to be heavier than timber doors, therefore the maintenance of hinges and door handles tends to be relatively high.	
Mechanical and electrical enhancements	
• Omission of sensor-operated toilet flushing mechanism	£15,000
• Omission of thermostatic mixing valves	£2,000
• Omission of presence detection (PIR) lighting control	£10,000-£12,000
• Omission of mirrored cabinet over trough – to be replaced by mirror	£20,000-£23,000

Potential extras

Element descriptions	Approximate extra per school
Ceiling-hung partitioning The current costs indicated above do not allow for ceiling-hung partitioning. The price variance for the partitioning is in the region of 50% to 80% higher than standard cubicle partitioning. There may also be structural implications to the slab and ceiling-hung above (depending on the overall school design), which is an unknown without design and a structural engineer's input. Whole-life cost There are varying views about the robustness of ceiling hung partitioning and whether it would be suitable for the environment. It is recommended that the school assess the various options when considering this type of partitioning. The replacement cost for this system is 50% to 80% higher in comparison to standard partitioning.	£20,000
Mechanical and Electrical Enhancements Rainwater Harvesting/re-cycled rainwater installation	£65,000-£75,000

Maintenance

All consumables should be topped up regularly throughout the school day.

The toilet facilities should be cleaned at least once a day; ideally twice. NB To achieve the 'school toilet award' from the Bog Standard Campaign, school toilets need to be cleaned twice a day during peak periods[14].

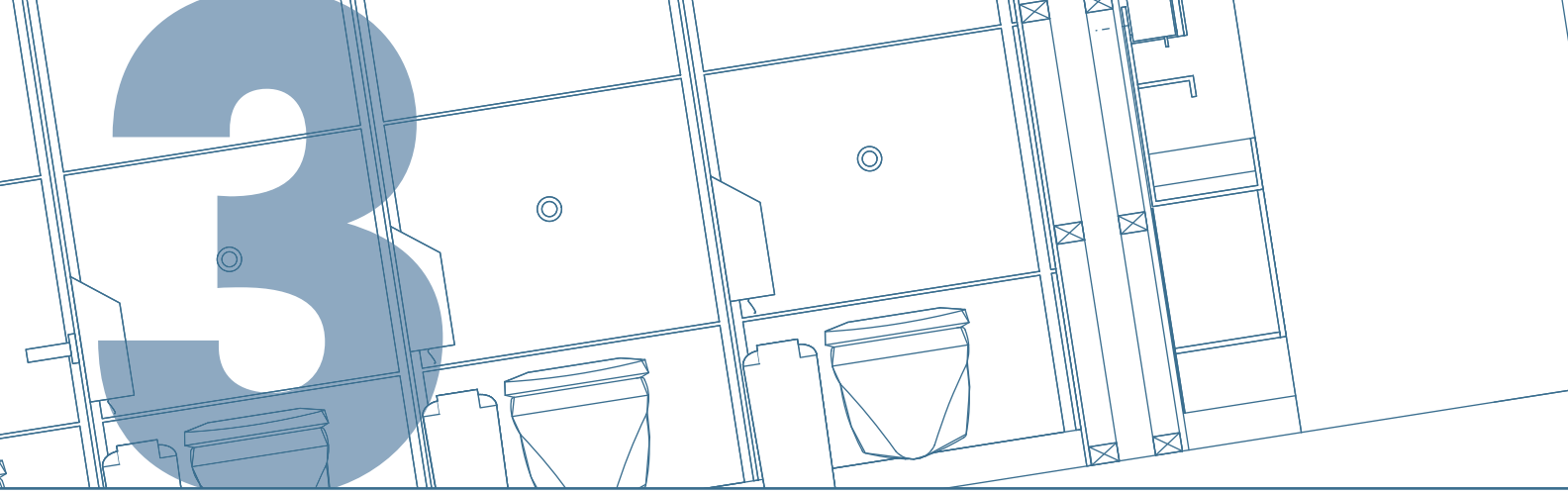
It is recommended that the toilet blocks are deep cleaned during school holidays.

Cleanliness should be checked regularly throughout the day and checks should be recorded visually within the toilet facility.

Planned maintenance should happen outside school hours.

Any emergency maintenance should be carried out promptly to minimise disruption to the service.

14 www.bog-standard.org/adults_healthy.aspx

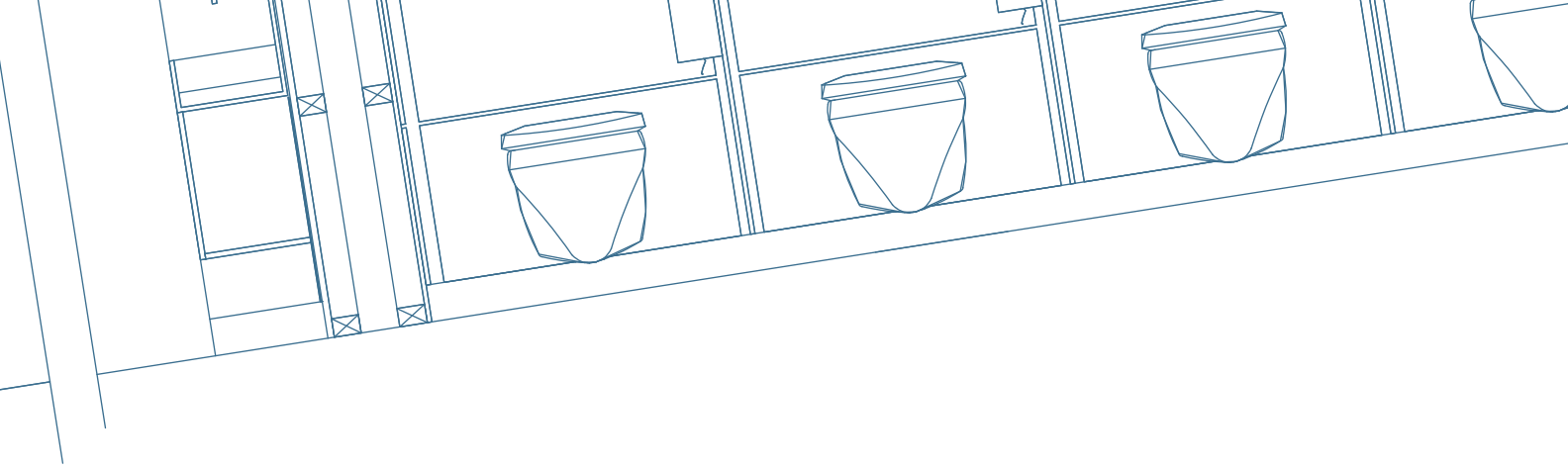


Some design examples

The design examples detailed below simply offer guidelines – it is for those involved to use their own skill and expertise in deciding what will be a reasonable and appropriate final design solution in their particular situation.

The four configurations included here are:

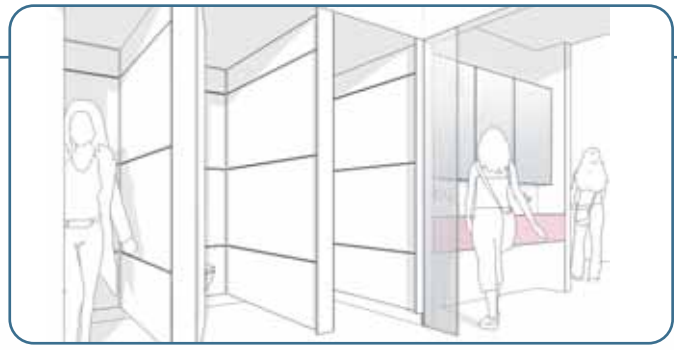
Type A	Standard back-to-back layout with split hand washing areas
Type B	Standard back-to-back layout with central hand washing area and no wheelchair accessible toilet
Type C	Split layout parallel to circulation with central hand wash area
Type D	Standard back-to-back layout with split hand washing areas and rotated wheelchair accessible toilet
Type E	Individual toilets incorporating toilet pan and basin within a standard room construction

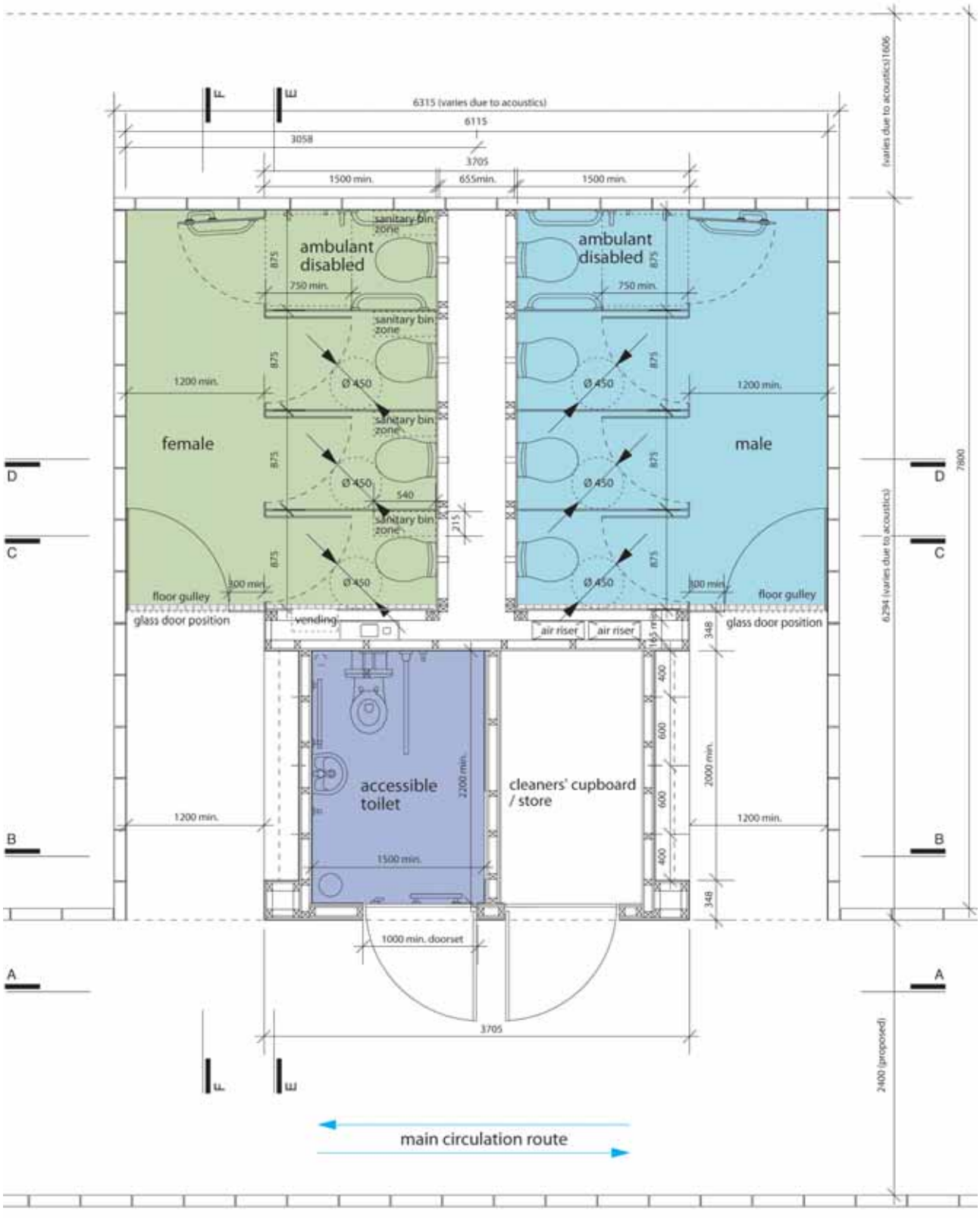


Floor areas of different types of toilet facility

	Type A	Type B	Type C	Type D	Type E
Number of standard toilets	6	6	6	6	8
Number of ambulant accessible toilets	2	2	2	2	0
Number of wheelchair accessible toilets	1	0	1	1	0
Total number of toilets	9	8	9	9	8
Cleaners' cupboard/store room (m^2)	2.7	0	3.7	0.5	0
Services risers (m^2)	3.5	3.6	4.3	3.4	3
Total area of one block including store (m^2)	39.8	30.7	42.0	36.8	20.4
Total area of one block excluding store and risers (m^2)	33.6	27.1	34.0	32.9	17.4
Additional area allowance for wheelchair accessible toilet (m^2)	0	5	0	0	5
Total area of 9 toilets including wheelchair (m^2) N.B. type E includes extra 25% required by BS 6465	33.6	32.1	34.0	32.9	28
Area per toilet unit (m^2)	3.7	3.6	3.8	3.7	3.1
Total area for typical 900 place school (m^2) – 45 toilets	168.0	160.5	170.0	164.5	140.0
Area for additional toilets – staff/visitor (m^2) – 3 toilets based on BB 98 area	10.5	10.5	10.5	10.5	10.5
Total area for typical 900 place school Including additional staff/visitor toilets (m^2)	178.5	171.0	180.5	175.0	150.0
BB 98 total area for staff and pupil toilets for typical 900 place school (m^2)	161.0	161.0	161.0	161.0	161.0

TYPE A




6315 (varies due to acoustics)
6115
3058
3705
1500 min.
655min.
1500 min.
(varies due to acoustics)1606
ambulant disabled
ambulant disabled
sanitary bin zone
750 min.
875
female
male
1200 min.
Ø 450
540
215
floor gulley
300 min
glass door position
vending
air riser
air riser
accessible toilet
cleaners' cupboard / store
2200 min.
2000 min.
400
600
348
1000 min. doorset
7800
6294 (varies due to acoustics)
2400 (proposed)
A
B
C
D
E
main circulation route

Rationale

This is the preferred type of layout for a toilet block, as it incorporates all the features highlighted as beneficial by the research:

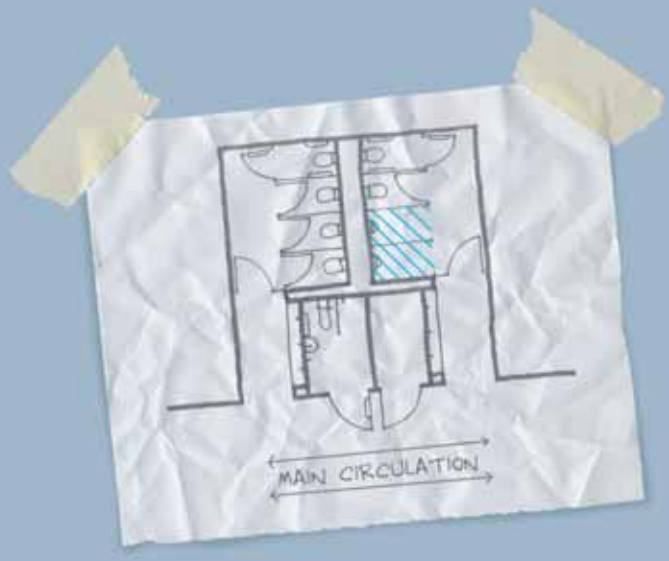
- Clear visibility to the toilet cubicle lobby without compromising user privacy.
- Unisex hand washing facilities located as an extension of the main circulation space.
- Easy access into the unisex wheelchair accessible toilet from the main circulation space.
- Made from standard components, allowing off-site construction.

There is also space for a cleaners' cupboard or store.

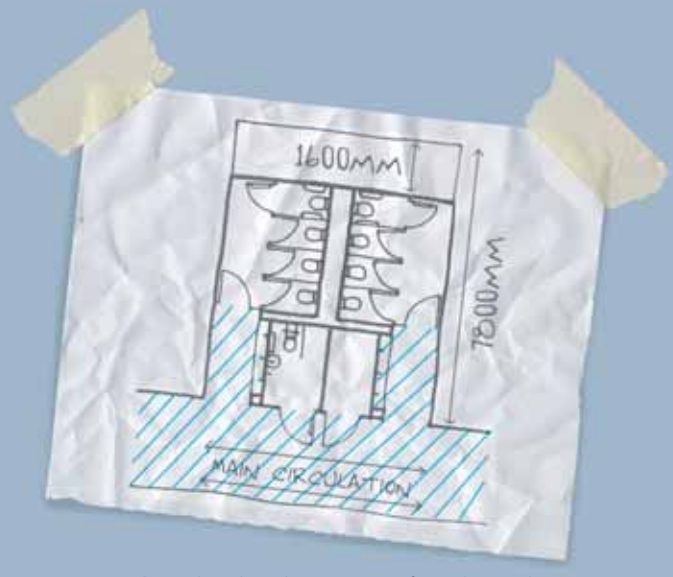
Section 3.14g of Building Regulations Document M suggests that the accessible toilet door should not open into the major access or escape route. If the circumstances of the design are such that this is the main access and escape route, the options to consider are either to move the door to the accessible toilet onto the wall between the cleaners' cupboard and the toilet, making the cleaners' cupboard smaller, or, if acceptable by Building Control, provide parliament hinges, allowing the door to open 180˚.

The sketch adjacent shows the relationship of this layout to the proposed standard classroom depth of 7.8m. Depending on size, the space behind the toilets could be used for various purposes including store room, office or a small meeting room. See SSLD guidance, *Classrooms*.

▲ **Above** visibility to toilet cubicle lobby and access to wheelchair accessible toilet

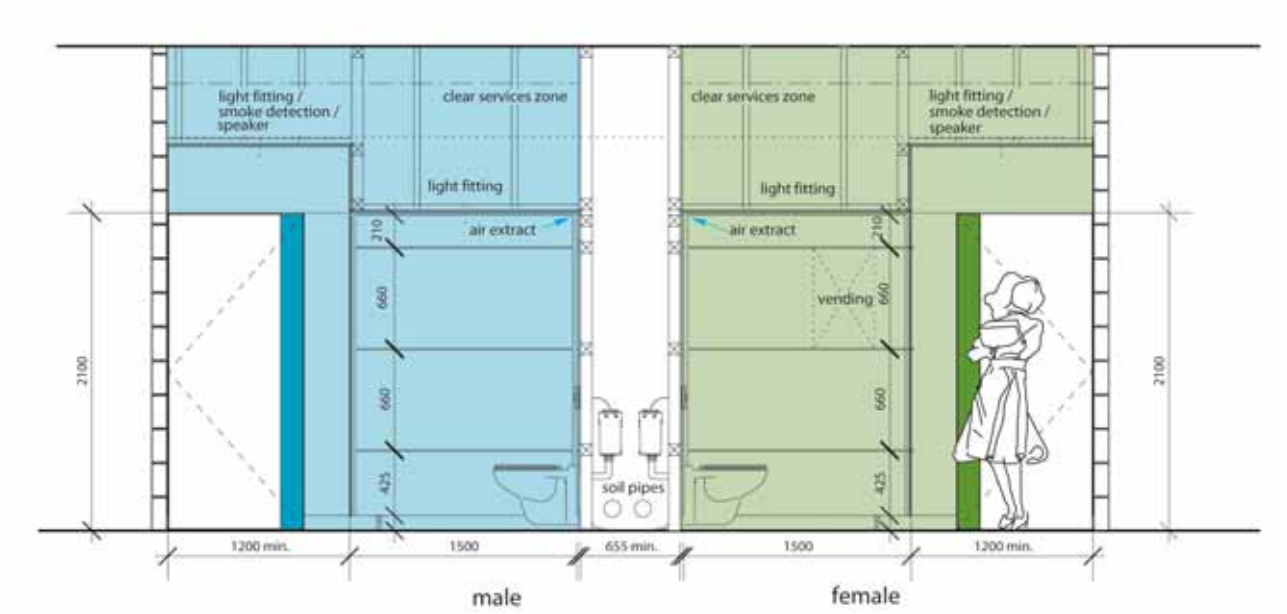


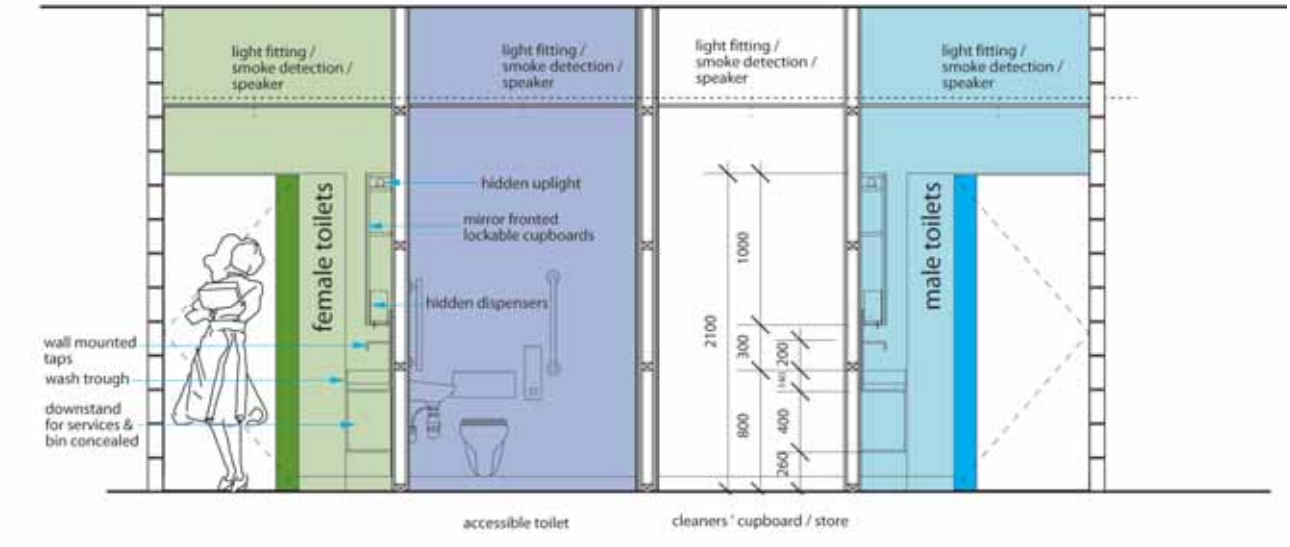
▲ **Above** alternative design with urinals

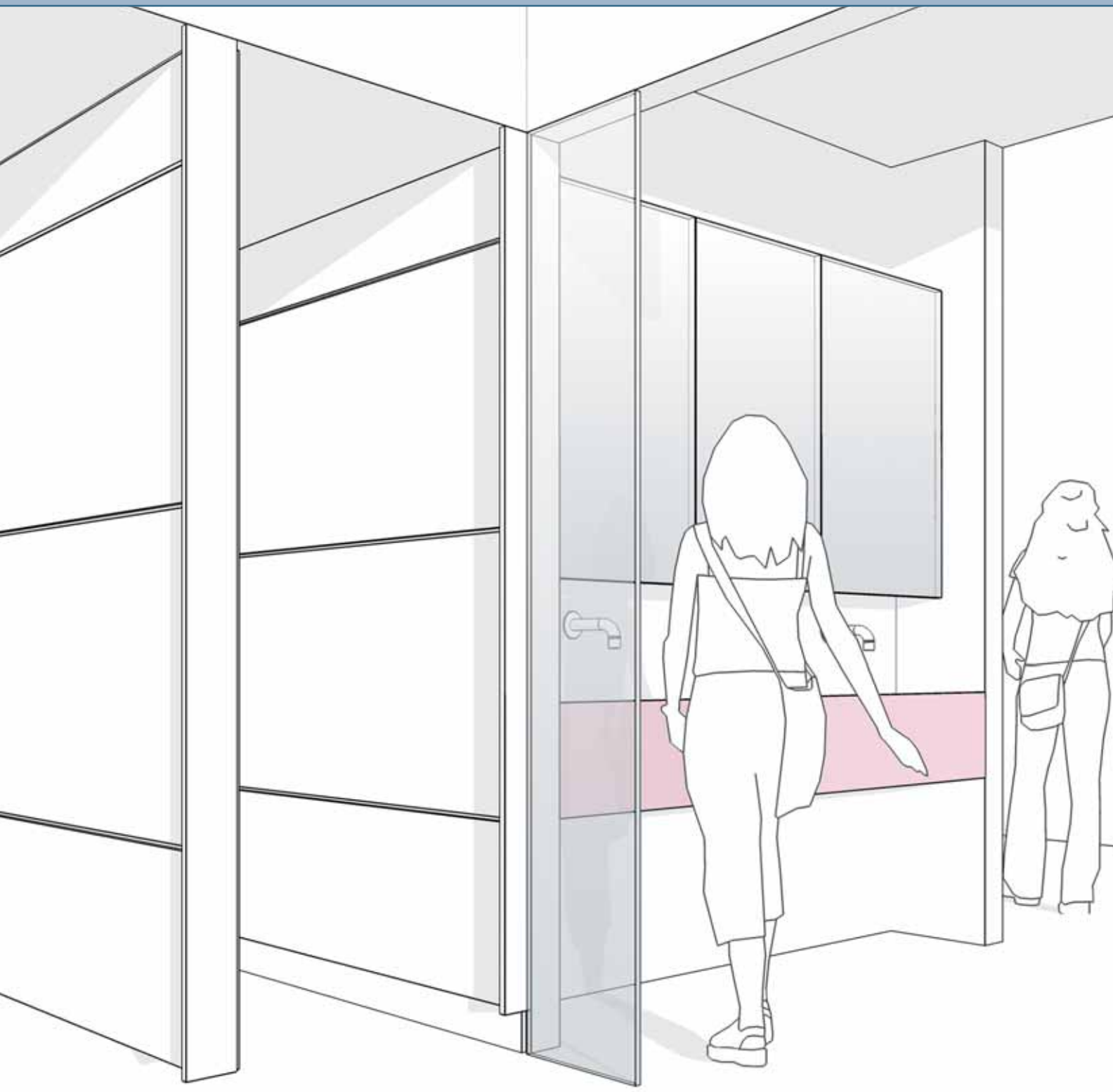


▲ **Above** hand wash extension of circulation showing proposed standard classroom depth of 7.8m

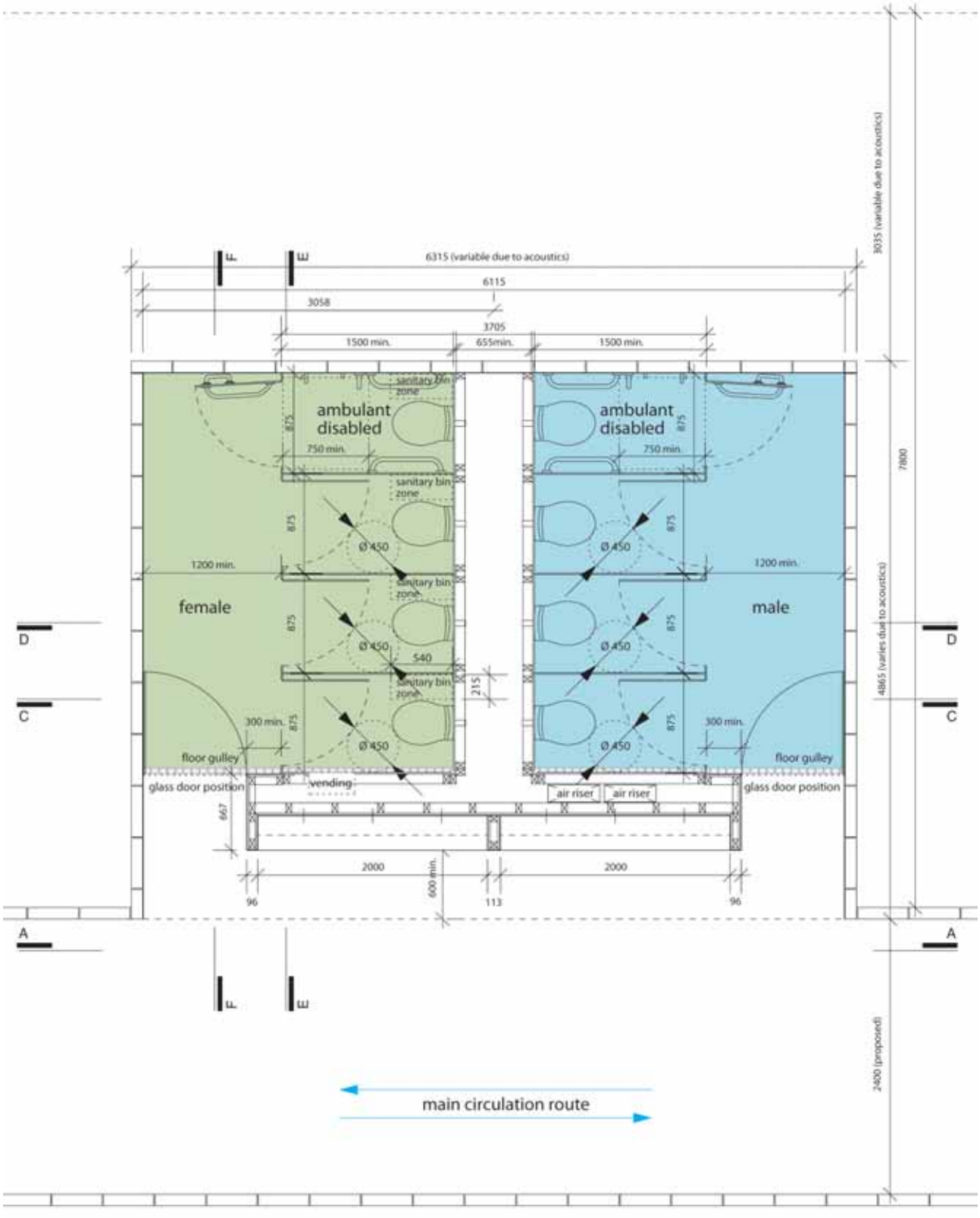
TYPE **A** elevation







TYPE B


6315 (variable due to acoustics)
6115
3058
3705
1500 min.
655min.
1500 min.
3035 (variable due to acoustics)
7800
4865 (varies due to acoustics)
2400 (proposed)
ambulant disabled
ambulant disabled
sanitary bin zone
750 min.
875
Ø 450
1200 min.
female
male
540
215
300 min.
floor gulley
glass door position
vending
air riser
air riser
667
2000
2000
600 min.
96
113
96
A
C
D
main circulation route

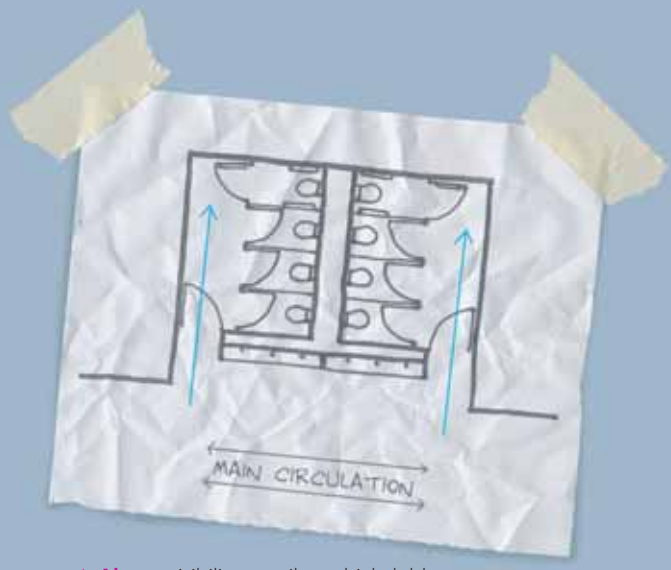
Rationale

This layout incorporates most of the features highlighted as beneficial by the research:

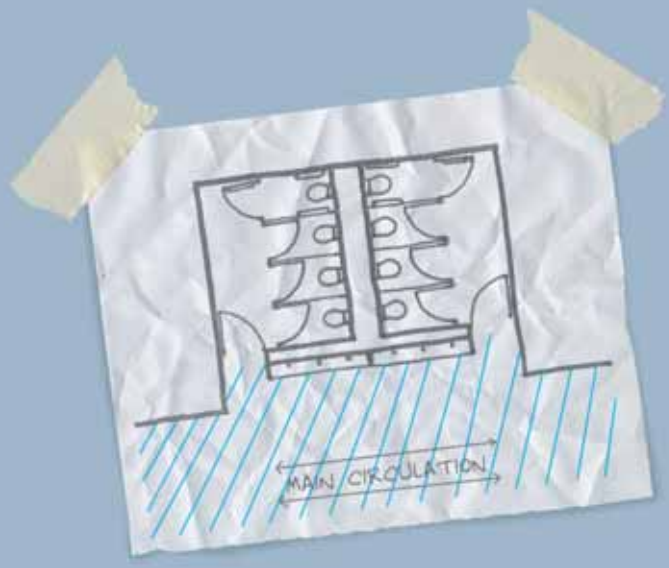
- Clear visibility to the toilet cubicle lobby without compromising user privacy.
- Unisex hand washing facilities located as an extension of the main circulation space.
- Made from standard components allowing off-site construction possibilities.

There is no wheelchair accessible toilet in this layout, which is not ideal since it does not promote the desired level of equality. If a wheelchair accessible toilet could be located next to the toilet block and the same quality and aesthetic used, this should not be a problem. This layout does not incorporate a cleaners' cupboard or store.

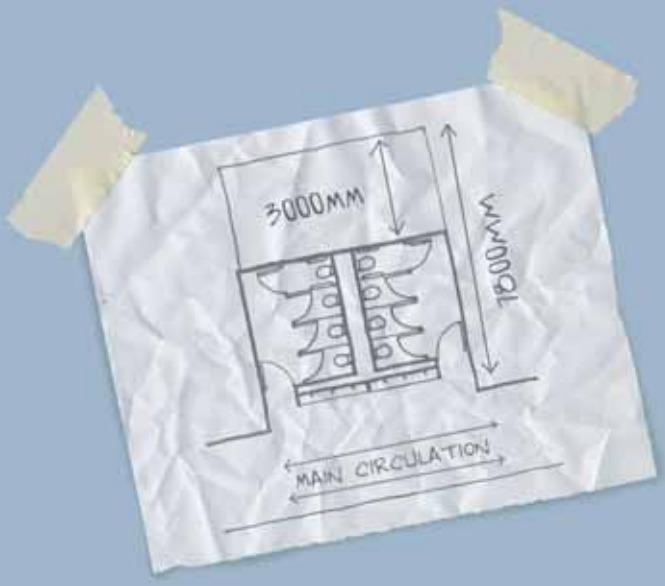
The sketch below shows the relationship of this layout to the proposed standard classroom depth of 7.8m. Depending on size, the space behind the toilets could be used for various purposes including store room, office or a small meeting room.

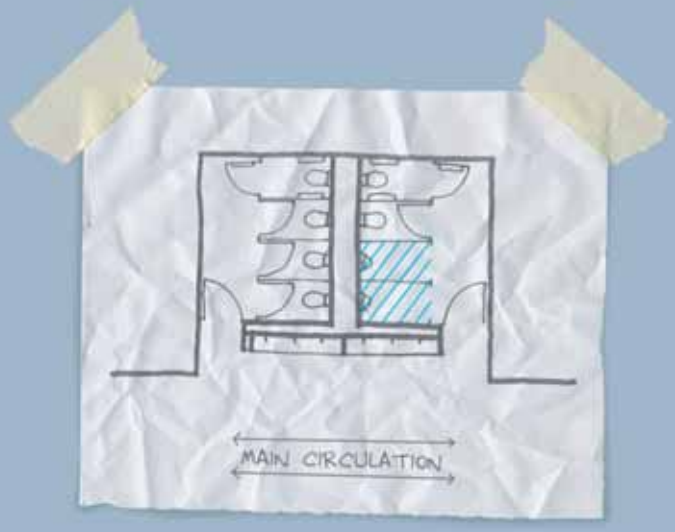


▲ **Above** visibility to toilet cubicle lobby



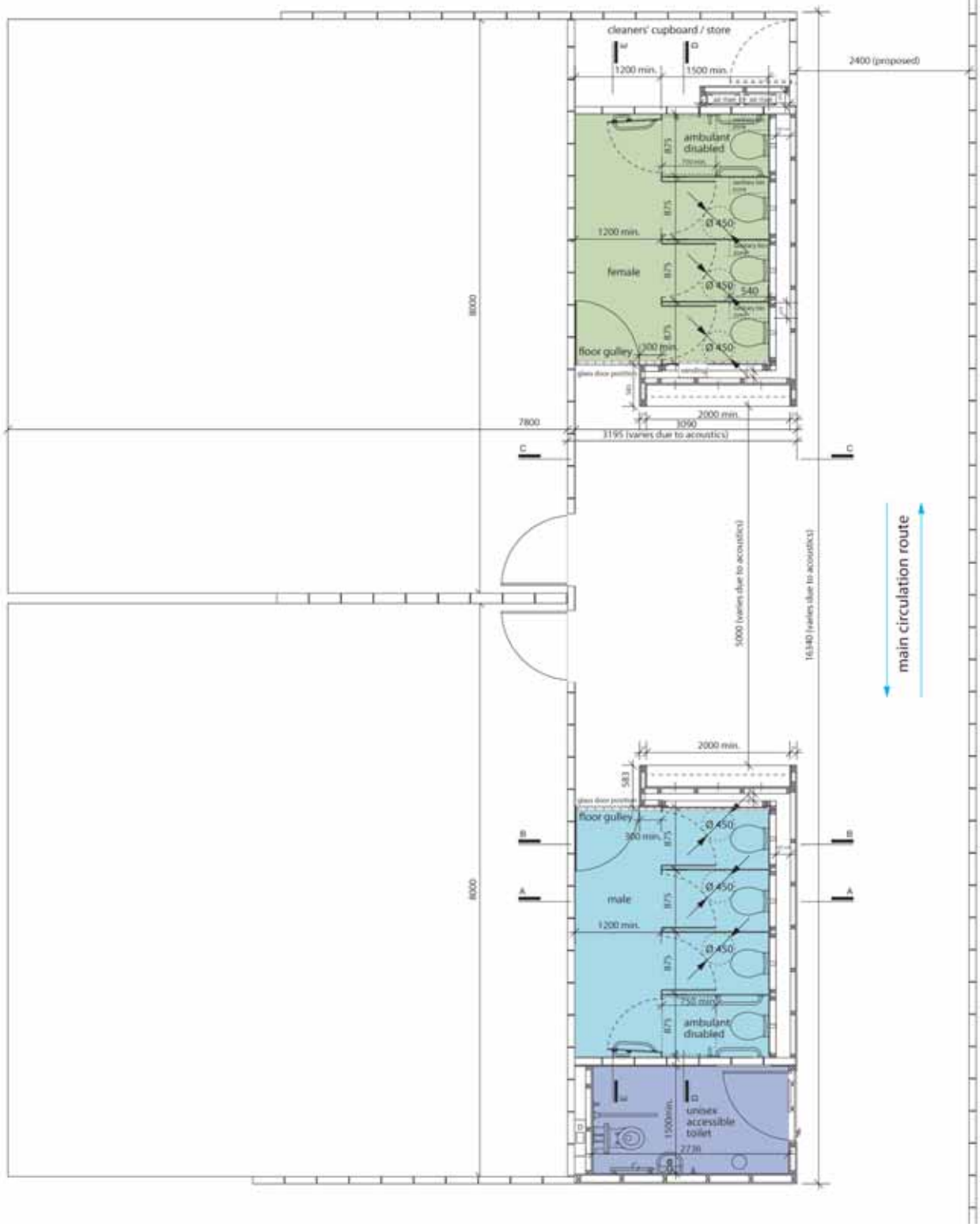
▲ **Above** hand wash extension of circulation





▲ **Above** alternative design with urinals

TYPE C


cleaners' cupboard / store
1200 min.
1500 min.
2400 (proposed)
ambulant disabled
1200 min.
female
floor gulley
300 min.
Ø 450
540
2000 min.
3090
3195 (varies due to acoustics)
8000
7800
5000 (varies due to acoustics)
16340 (varies due to acoustics)
main circulation route
2000 min.
583
male
750 min.
unisex accessible toilet
1500min.
2730

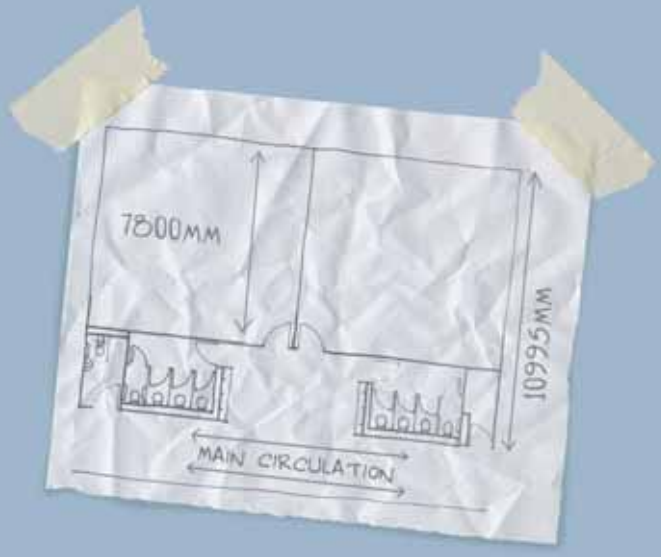
Rationale

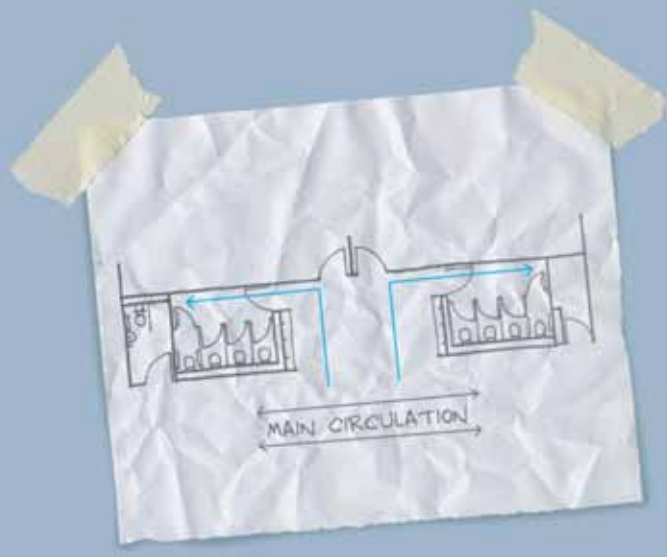
This layout incorporates most of the features highlighted as beneficial by the research:

- Unisex hand washing facilities located as an extension of the main circulation space.
- Easy access into the unisex wheelchair accessible toilet from the main circulation space.
- Made from standard components allowing off-site construction possibilities.

Although this layout allows clear visibility to the toilet cubicle lobby without compromising user privacy, it is not ideal as there is clear visibility only when entering or leaving the classrooms, rather than just passing by on the main circulation route. This layout does incorporate a cleaners' cupboard or store.

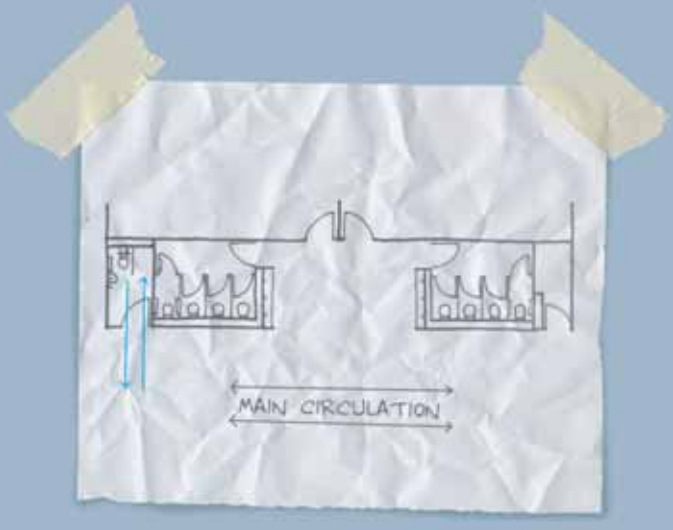
The sketch below shows the relationship of this layout to the proposed standard classroom depth of 7.8m.





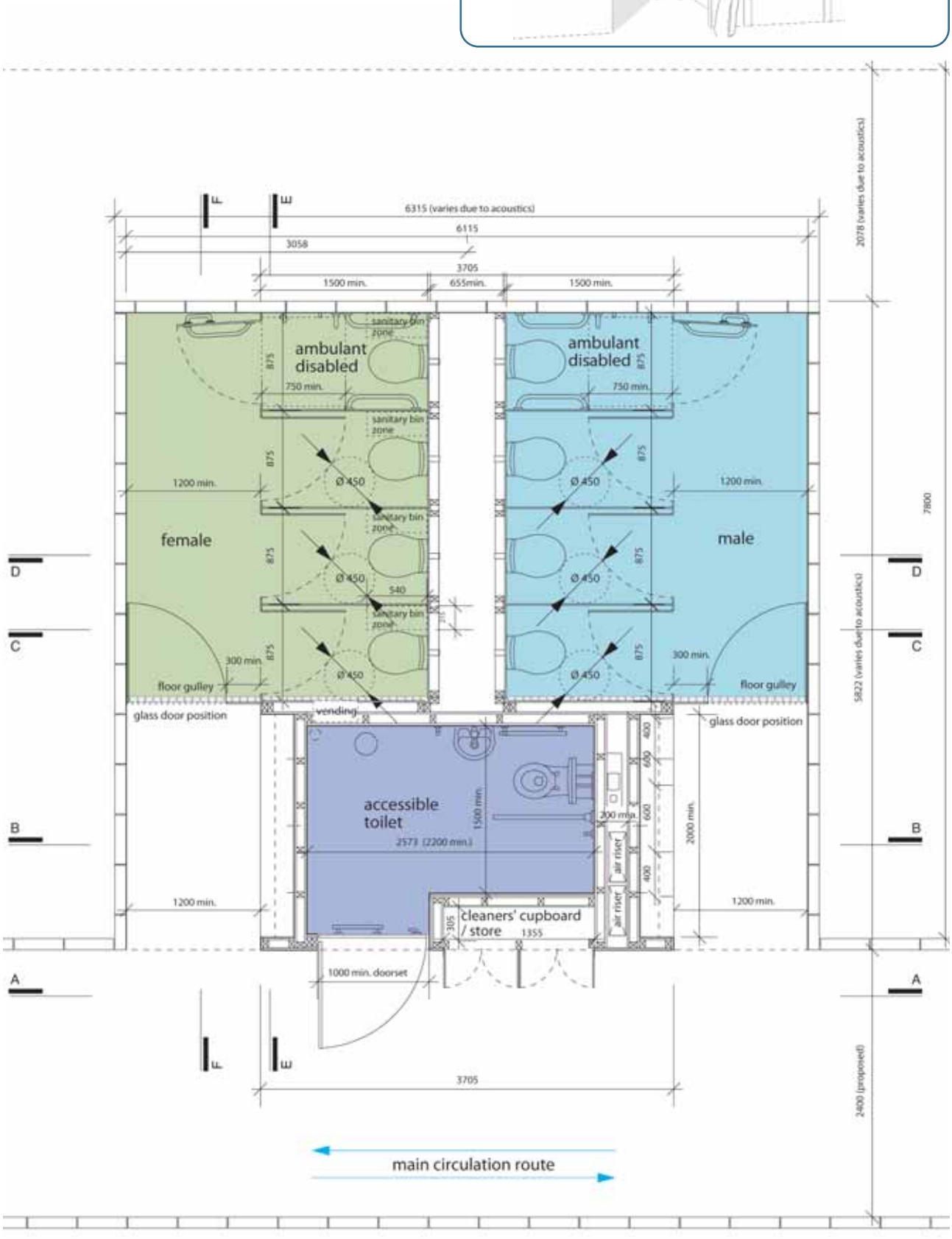
▲ **Above** visibility to toilet cubicle lobby

▲ **Above** hand wash extension of circulation



▲ **Above** access to wheelchair accessible toilet

TYPE D


6315 (varies due to acoustics)
6115
3058
3705
1500 min.
655min.
1500 min.
2078 (varies due to acoustics)
7800
5822 (varies due to acoustics)
2400 (proposed)
ambulant disabled
ambulant disabled
750 min.
750 min.
sanitary bin zone
sanitary bin zone
sanitary bin zone
sanitary bin zone
875
Ø 450
1200 min.
1200 min.
female
male
540
300 min.
300 min.
floor gulley
floor gulley
glass door position
glass door position
vending
accessible toilet
2573 (2200 min.)
1500 min.
200 min.
2000 min.
air riser
air riser
400
600
600
400
cleaners' cupboard / store
1355
305
1200 min.
1200 min.
1000 min. doorset
3705
A
B
C
D
E
F
main circulation route

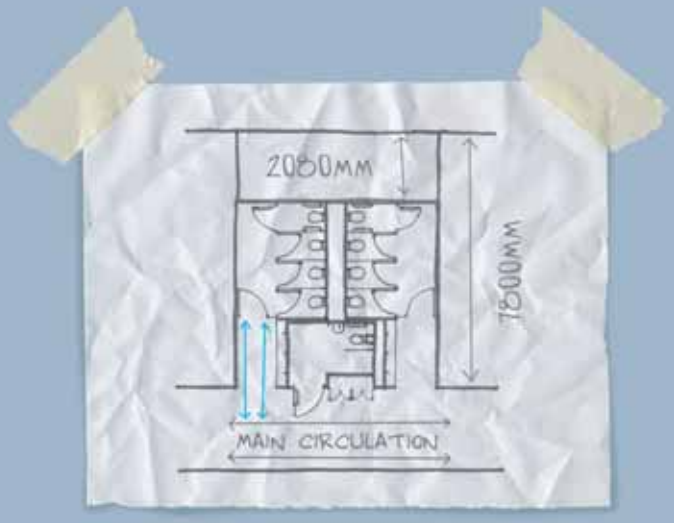
Rationale

This layout incorporates all the features highlighted as beneficial by the research:

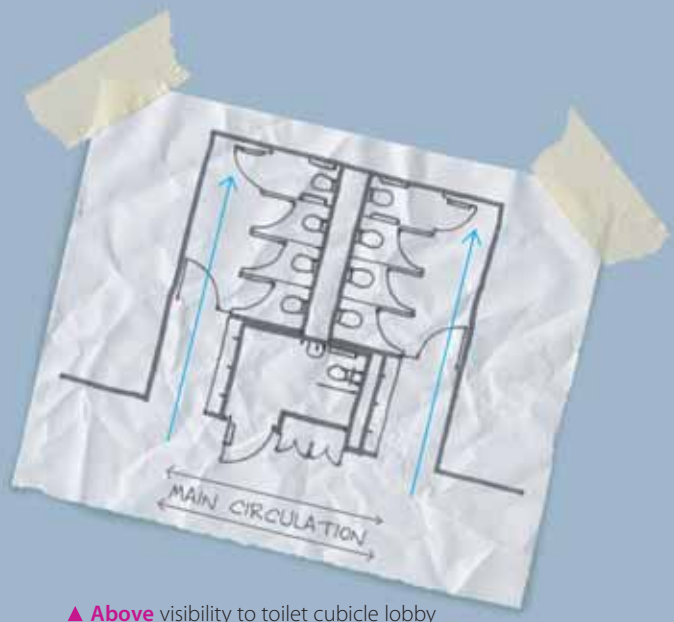
- Clear visibility to the toilet cubicle lobby without compromising user privacy.
- Unisex hand washing facilities located as an extension of the main circulation space.
- Easy access into the unisex wheelchair accessible toilet from the main circulation space.
- Made of standard components allowing off-site construction possibilities.

It also incorporates space for a compact cleaners' cupboard or store.

The sketch below shows the relationship of this layout to the proposed standard classroom depth of 7.8m. Depending on size, the space behind the toilets could be used for various purposes including store room, office or a small meeting room.

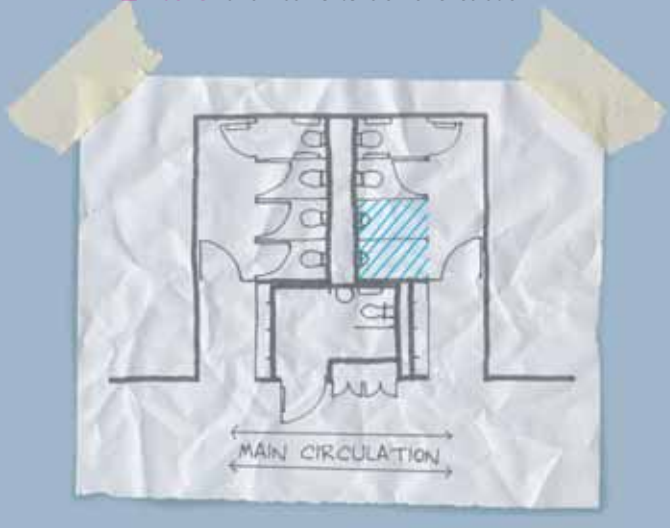


▲ **Above** access to wheelchair accessible toilet showing proposed standard classroom depth of 7.8m



▲ **Above** visibility to toilet cubicle lobby

▲ **Above** hand wash extension of circulation



▲ **Above** alternative design with urinals

TYPE E


2400 (proposed)
main circulation route
1400
1400
1400
1400
8000
600
800
sanitary bin zone
250
1330
7800

Rationale

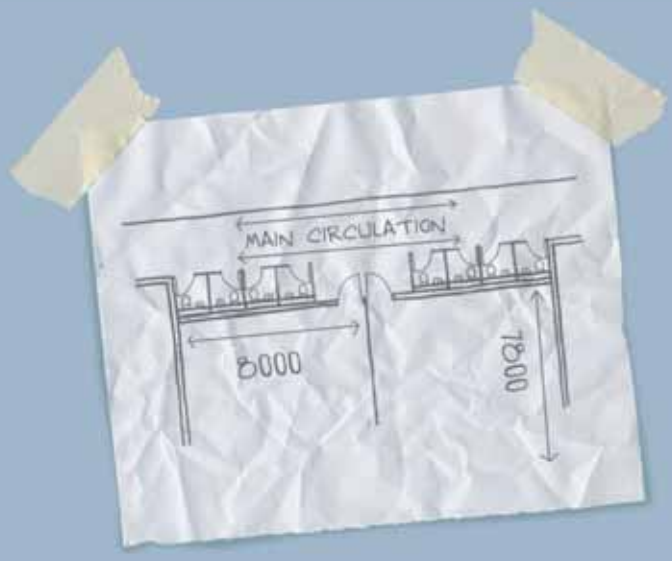
This layout principally differs from types A to D in that it is based around an individual room for each toilet rather than a block of cubicles. The reasons for choosing this layout over other options will depend on the individual school ethos and the level of anti-social behaviour. It may be well suited to schools that are organised on the basis of 'Schools Within a School'[15].

The layout does increase the level of privacy for the pupil while they are within the toilet area. It brings added benefits of preventing groups from assembling around toilet banks and associated issues that arise from this type of behaviour. It also sends a clear message of a non-hierarchical structure and valuing individuals, as toilets do not need to be identified for different user groups – i.e. adults/students.

However, these toilets open directly off the corridor so pupils will be seen entering and leaving. Because more space is needed to locate the toilet pan and basin within the room, there is an increased risk of more than one pupil entering a toilet, which could lead to anti-social behaviour.

This layout does not affect accessibility. The wheelchair accessible toilets can be directly off the corridor adjacent to the other toilets, in which changes can be incorporated for ambulant disabled users. It does limit some of the opportunities in the other examples for using panelised off-site construction – but it may be more suitable for a volumetric solution.

The sketch below shows the relationship of this layout to the proposed standard classroom depth of 7.8m and width of 8m. In this case it is proposed that the toilets be placed either within or outside these dimensions, depending on the client's preference.



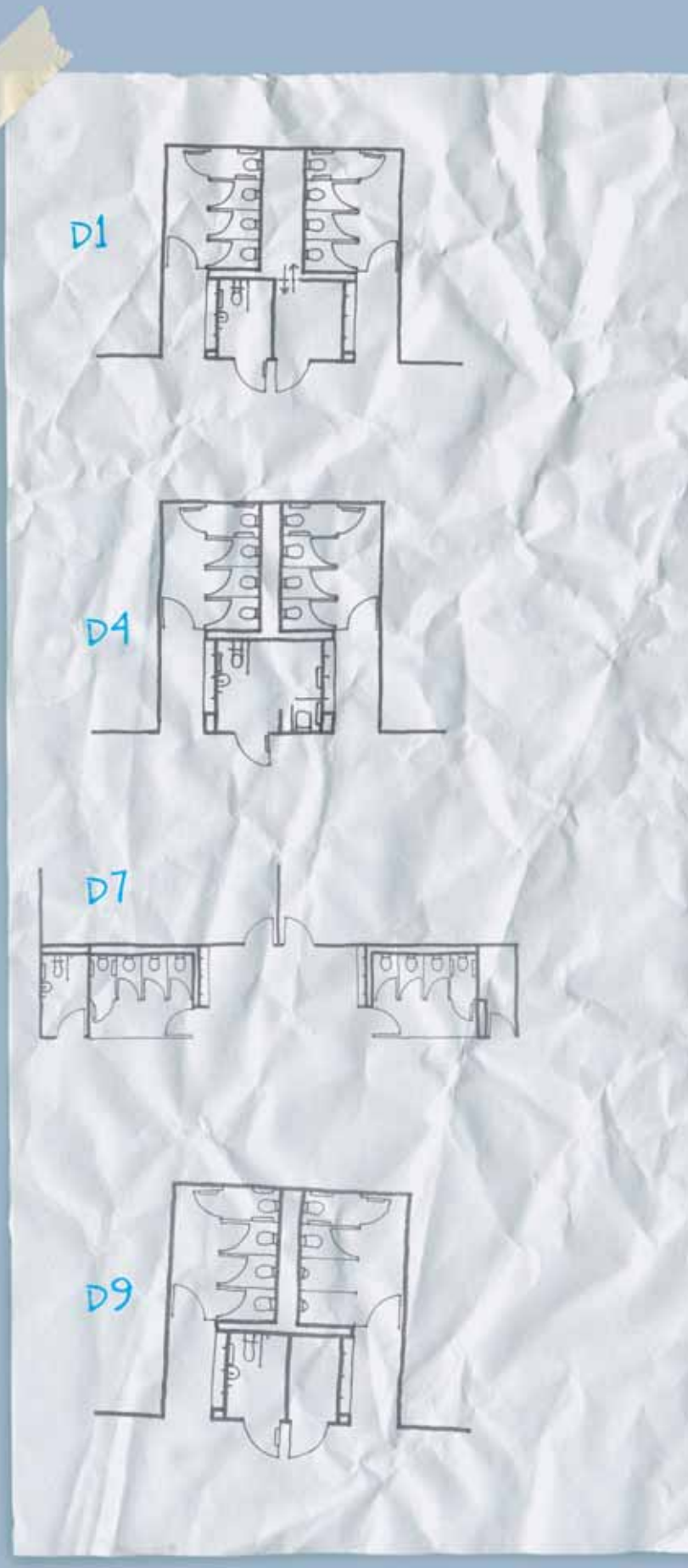
15 For example, a large school of 900 students may be sub-divided into three to allow for three small learning communities to develop. These smaller schools are semi-autonomous and offer their students vertical pastoral groupings and learning pathways that enable education to be delivered according to a student's need rather than their age.

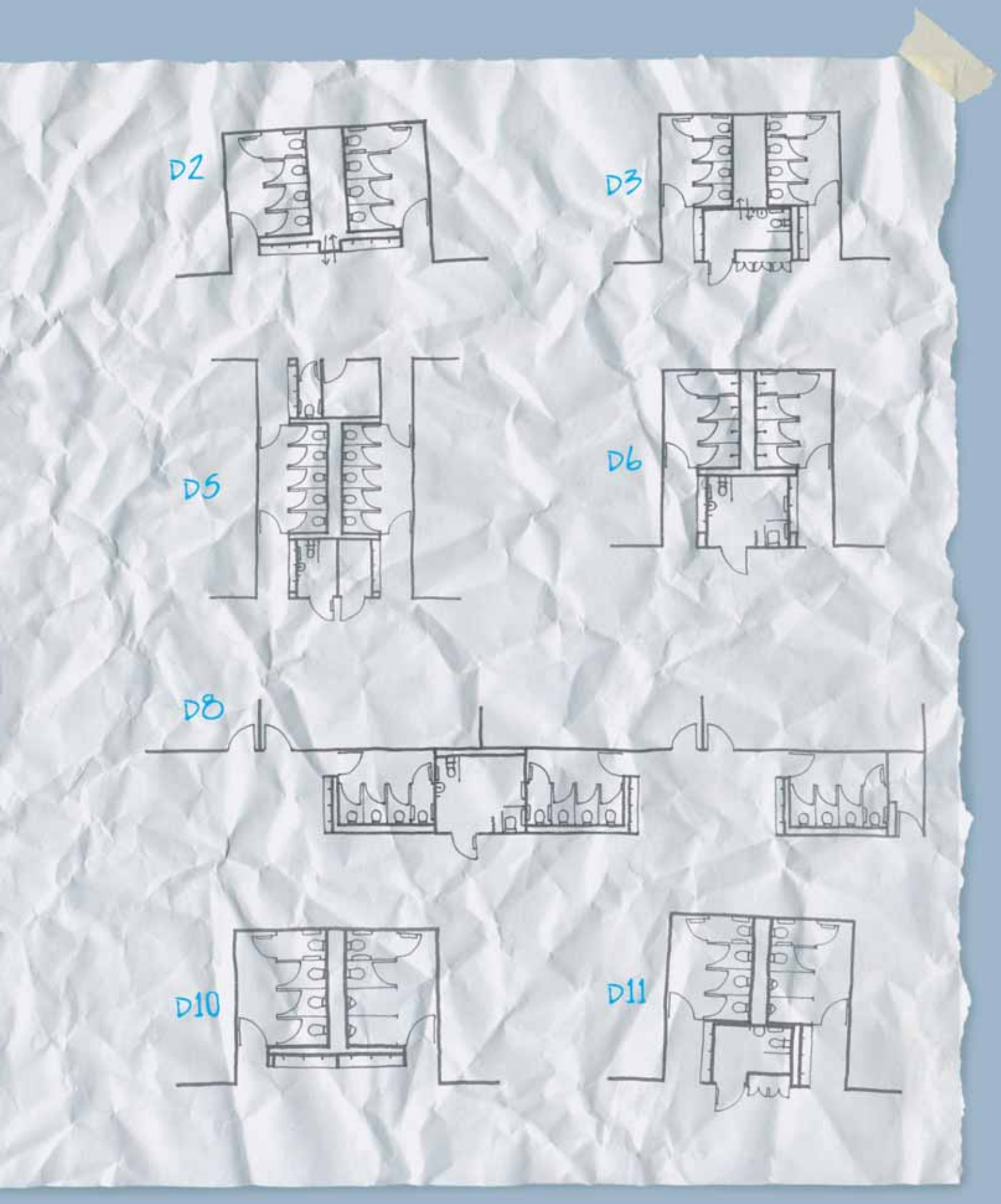
These smaller communities enable a family ethos to develop during which breaks and lunchtimes will take place as appropriate to the learning rather than following bells. Therefore a smaller, individual, more family style of toilet facility would work in such an environment.

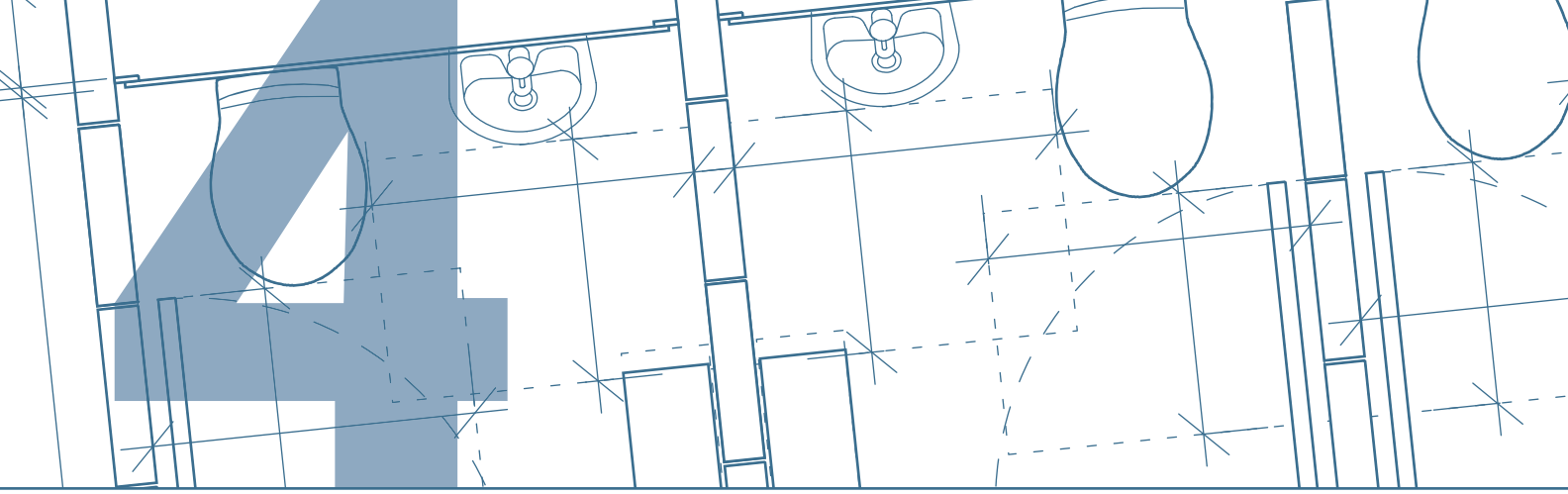
Some layout variations

The potential for rearranging the standard components shown in types A to D to suit varying requirements is vast. But care should be taken to ensure that the design rationale is not compromised. A few variations include:

- The services void could be enlarged to allow for walk-in access as shown in diagrams 1-3.
- The wheelchair accessible toilet could be replaced by a wet room as shown in diagrams 6 and 8.
- The number of toilets could be increased as shown in diagrams 5 and 8.
- The toilet cubicles could become shower cubicles as shown in diagram 6.
- The layouts could be rotated as shown in diagram 7, incorporating a glass screen.
- The layouts could be modified to incorporate urinals as shown in diagrams 9 to 11. It should be noted that the cubicle partitions should remain as privacy screening although doors can be omitted.




D2
D3
D5
D6
D8
D10
D11



References

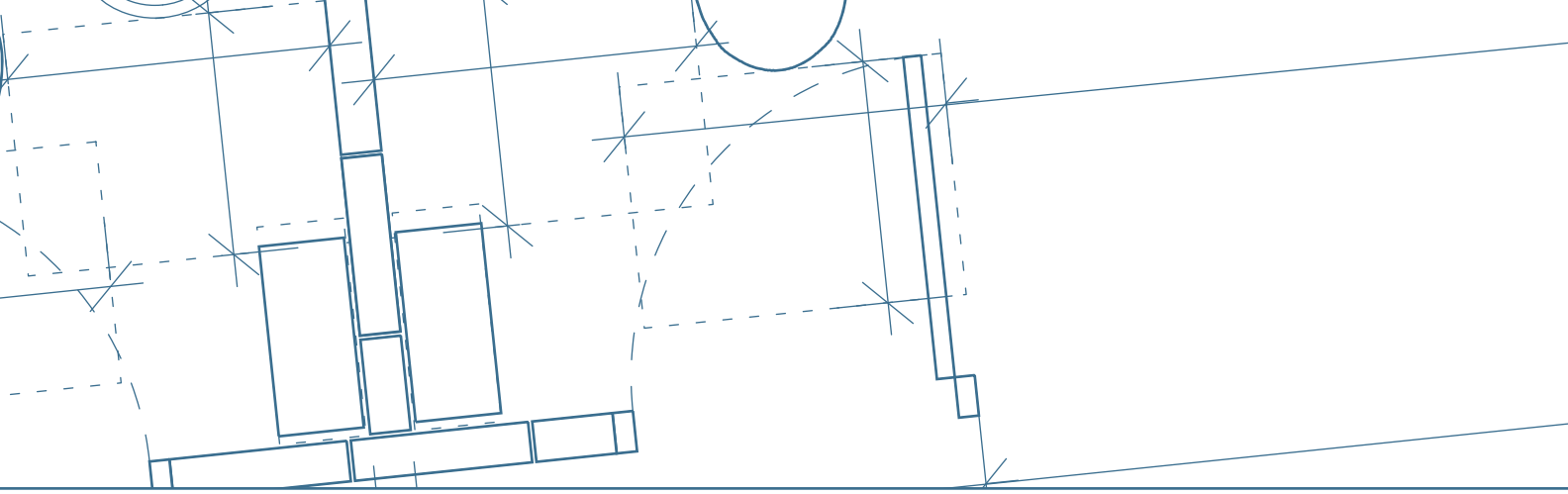
This document was published in April 2007. After this date readers should ensure they use the latest edition of all references.

Department for Education and Skills

- BB 87 *Guidelines for Environmental Design in Schools*
- BB 93 *Acoustic Design of Schools*
- BB 98 *Briefing Framework for Secondary School Projects*
- *Education (School Premises) Regulations 1999*, ISBN 0 11 080331 0, The Stationery Office

The Building Regulations

- ADA: 2004 Structure
- ADB: 2006 Volume 2 – Buildings other than dwelling houses
- ADE: 2003 Resistance to the passage of sound
- ADF: 2006 Ventilation
- ADG: 1992 Hygiene
- ADH: 2002 Drainage and waste disposal
- ADL2A: 2006 Conservation of fuel and power (New buildings other than dwellings)
- ADM: 2004 Access to and use of buildings
- ADP: 2006 Electrical safety



General guidance

Bog Standard Campaign www.bog-standard.org

Joinedupdesignforschools, John and Frances Sorrell, Merrell Publishers Ltd, 2005, ISBN 1 85894 308 6

Flush! Modern Toilet Design, Ingrid Wenz-Gahler, Birkhäuser, 2005, ISBN 3-7643-7180-3

Good Loo Design Guide, Andrew Lacey for Centre for Accessible Environments, 2004, ISBN 1 85946 144 1 Product code 35236

The Green Guide to Specification, Jane Anderson and David Shiers with Mike Sinclair, Blackwell Publishing, 2002, ISBN 0-632-05961-3

BREEAM www.breeam.org

British Standards: Sanitary installations

BS 6465 – *Part 1:2006 Code of practice for the design of sanitary facilities and scales of provision of sanitary and associated appliances,* ISBN 10: 058047917X

BS 6465 – *Part 2:1996 Code of practice for space requirements for sanitary appliances,* ISBN 10: 0580254569

BS 6465 – *Part 3:2006 Code of practice for the selection, installation and maintenance of sanitary and associated appliances,* ISBN 10: 0580491994

Supplementary Standards and Information

- BS 8300:2001, BS 7543, BS ISO 15686
- BS 1230, BS EN 520:2004, BS 476: Part 7, BS EN 1350-1:2002, BS 7976:2002 Parts 1,2 & 3, BS EN 12217:2003
- BS EN 12056-1:2000, EN 1519, EN 1124-1, EN 1124-2, BS EN 877, BS 6700:1997, BS ISO 7858-1, BS 5839-1:2002, BS EN 5411, BS 3402, BS EN 997:2003, BS 7671, BS 1125:1987, BS 1254:1981, BS EN 14600, BS 1545:1990, BS EN 816:1996, BS 7942:2000
- BSRIA AG 4/94, HSC L8
- CIBSE TM13
- *Water Regulations 1999*
- *CIRIA W012 2006 Sustainable Water Management in Schools*
- *Water Regulations Advisory Scheme GN 9-02-04 and 9-02-05*
- *CIBSE Code for Interior Lighting*

Supplementary acknowledgments

Andrew Beard, **21st Century Schools**

Hanif Kara, John Gerrard, **Adams Kara Taylor**

Dan Davies, **Altro Floors**

Nigel Fort, Laura Drew, **Altro Walls**

Paul Hetherington, Katie Nie, Martin Taylor, **Alumasc Interiors**

Tim McSweeney, Heather Lewis, Tony Rheinberg, Rebecca Lee, **American Standard Companies (Ideal Standard & Armitage Shanks)**

Grant Ellis, Dominic Hill, **Armitage Venesta**

Jill Hudson, **Armstrong Floor Products UK Ltd**

Ian Young, **Armstrong World Industries Ltd**

Philip Williams, **Atlantis Water Management Ltd**

Don MacDonald, **Babington Community Technology College**

Dick Hibdige, **Bedminster Down School**

Kevin Grieve, David Purglove, **Decra Ltd**

Ros Stephen, **Dorothy Stringer School**

Paul Culley, **East Hampshire District Council**

Beverley Leeson, **ERIC**

Anne Anderson, **Finham Park School**

David Sanders, Simon Whittaker, **Freudenberg Building Systems**

Darren Sands, **Geberit Ltd**

Carl Burkinshaw, **Gerflor Ltd**

Andy Whitehead, Mark Cuthbert, Nigel Patch, **Grant Westfield Ltd**

Jon Green, **Kimberly-Clark Professional**

Jeremy Salisbury, **Kohler UK**

Andrew Armes, **Milton Keynes Local Authority**

Kate Grimes, **Monkseaton School**

Nicole Gray, Barry Dellow, Amanda Allen, **Muraspec**

Jim Flockhart, Justin Barnes, Robert Stocker, James Pollitt, **Polyflor Ltd**

Graham J. Fisher, **Polypipe Bathroom and Kitchen Products Ltd**

Andrew Clifford, **Sheppard Robson Architects**

Andrew Savage, Terry Rolfe, **Skanska Ltd**

Howard Noh, Natasha Smith, Julie Warner, **Staron (UK) Ltd**

Mark Brooks, John Wilson, **Stratum Resin Flooring Ltd**

Steve Klose, **Sylmar Solid Surfaces**

Lee Congon, **TBS Fabrications Ltd**

Gillian Fearnyough, **The Architecture Centre**

Mike Rymill, Yonne Orgill, **The Bathroom Manufacturers Association**

Sharon Plant, Helen Lowdell, **The Sorrell Foundation**

Roy Seaward, **Thomas Dudley Ltd**

Sarah Bagnall, **Thrislington Sales Ltd**

Karen Homer, **Twyford Bathrooms**

Stuart White, **Twyford Bushboard**

Adrian Leaman, **Usable Buildings**

Sameer Sawart, **Velstone International Ltd**

David Shepherd, **Vitrex (pty) Ltd**

Jean Donovan, **Wallgate Ltd**

Grant Turner, **WH Foster and Sons Ltd**

Tom Weaver, Peter Warner, **Yorkon Ltd**

You can download this publication or order copies online at: **www.teachernet.gov.uk/publications**

Search using the ref: 00365-2007BKT-EN
You can also download this publication at **www.everychildmatters.gov.uk**

Copies of this publication can also be obtained from:
DfES Publications
PO Box 5050
Sherwood Park
Annesley
Nottingham NG15 ODJ
Tel 0845 60 222 60
Fax 0845 60 333 60
Textphone 0845 60 555 60
Please quote ref: 00365-2007BKT-EN

ISBN: 978-1-84478-925-2

Published by the Department for Education and Skills

PPDUD/D35/0407/13

department for
education and skills

Creating Opportunity
Releasing Potential
Achieving Excellence