Primary Accommodation

In most primary schools, the main indoor PESS accommodation is the main hall. This hall is often multi-use, accommodating activities such as dining, assembly and performance. It is also the space most likely to be shared with the community. If a space is expected to serve too many functions, this may compromise delivery of the PESS curriculum. So, it may be worth including a dedicated PESS hall if possible. Some larger schools may also need a second, smaller hall or studio in order to provide sufficient area for their pupil numbers.

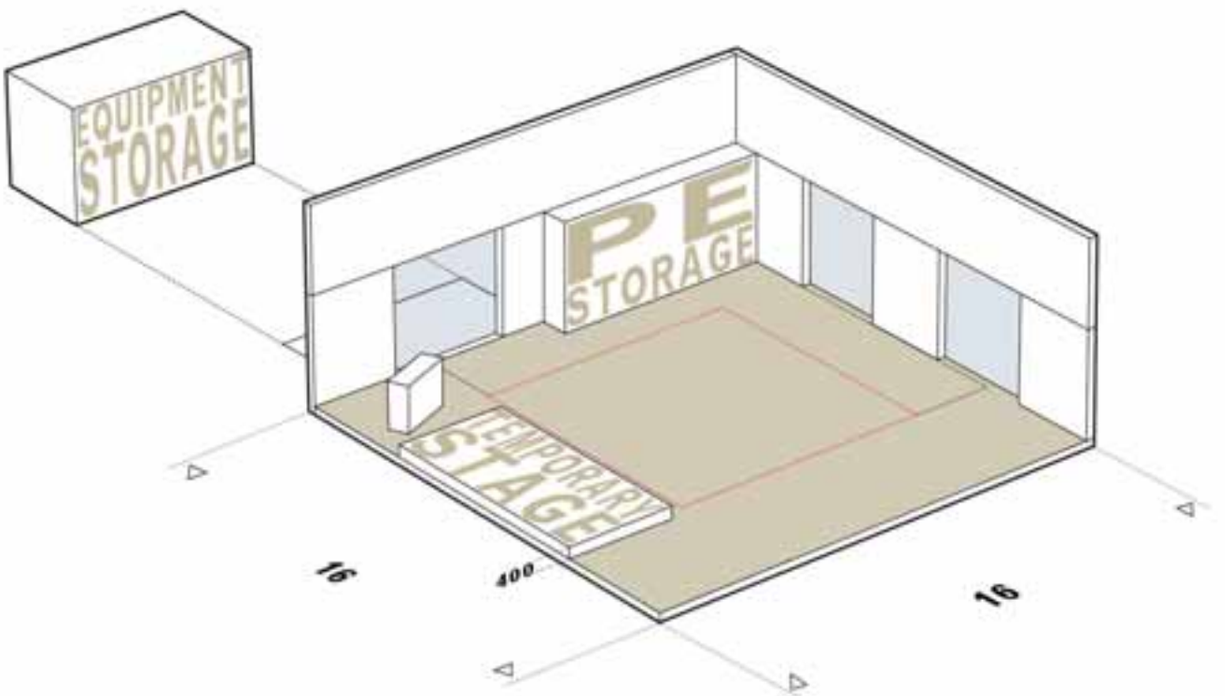
Multi-use game areas (MUGAs) are extremely useful for taking the PESS curriculum out of doors, and can also be opened up for after-school and community use.

Playgrounds and outdoor spaces are particularly important, as primary school pupils spend up to a quarter of their day in the playground. Well-designed playgrounds which cater for a range of different activities play an important role in supporting the informal PESS curriculum, encouraging physical activity and the development of skills and coordination.

The diagram shows how the overall areas for halls in primary schools can be built up. This is an indicative model and there is considerable flexibility in how space may be allocated in each case.[1]

[1] For more Primary area guidelines refer to *Building Bulletin 99: Briefing Framework for Primary School Projects* DfES 2005


50 Pupils
120 m2
210 Pupils
140 m2
50 m2
420 Pupils
180 m2
50 m2
630 Pupils
180 m2
50 m2
80 m2
Main Hall
Activity Studio
Small Hall



Main Halls

The main hall - which in primary schools is frequently used for sport, arts and community use - presents a complex design challenge. As one of the key spaces in the school, it should be large, light and inspiring. The technical requirements for sport, social gatherings and performance are very different. The project team should clarify exactly what activities are to take place, so that the scale and form of the hall can accommodate everything that needs to be included. Some of the activities will take place infrequently, so it is essential to try out timetabling scenarios throughout the design process. It is important that enough space is provided to ensure the proper teaching and learning of physical education and school sport. Adequate and accessible storage will make it easier for users to change activities, and help the space to work effectively for different functions. Storage space needs to be big enough to accommodate PESS and performance equipment.

It is clear that in many current examples, the use of the hall for sports activities is highly compromised by its use for other activities, such as daily assemblies and dining. Seasonal use, for example nativity plays and end-of-year performances, can severely reduce the time during which the hall can be used for physical education and school sport. It is worth considering whether it is feasible to create a more dedicated sports area, if the community and other funding sources are factored in.

Main Halls Example 1

St Werburgh's Primary School
Richard Biddulph Architects Ltd

The main hall at St Werburgh's School has large 'barn doors' which open up to enable the outside space to be used for sport and performance activities. This has added considerable flexibility to the way in which the hall is used, and is particularly good for events and celebrations that involve parents and the wider community.

Photo: Richard Biddulph Architects Ltd

Design Points

Map all of the use patterns at an early design stage to ensure maximum fit between the programming and the space

Ensure that lighting is flexible enough to allow for both general and more specific situations (e.g. performance)

Good acoustic design will greatly enhance the teaching and learning experience in the hall

Linking the hall to outside space will increase the opportunity for flexible and imaginative programming

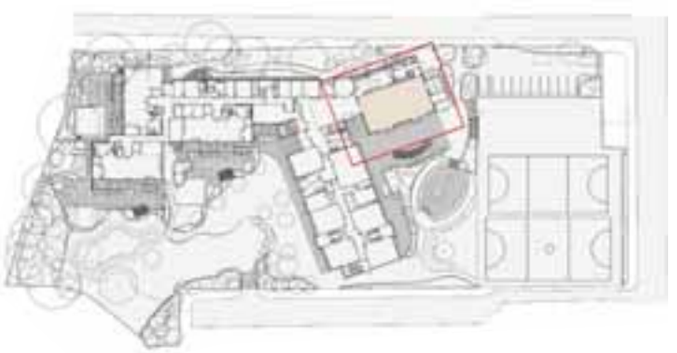
Technical Points

Stage

If the hall is to be used for performance, the size and construction of the stage should be carefully considered. Decisions on the type of stage affect initial cost, storage and the time and labour required to set up performances. A fixed stage requires more space and makes the hall less flexible but is useful if frequent performances are planned or if the facilities are to be hired out. When not in use, the stage area can be screened off with sliding screens or doors to create an additional room. There are considerable benefits in the flexibility provided by temporary stages and these can be created in a variety of ways. Modular blocks for example only need a small amount of storage space when not in use.

Whether fixed or temporary, the stage should be big enough to accommodate the types of performances that will take place. Stage width should be a minimum of 6.5 metres. Plays and medium-sized music performances can work with a stage depth of 5 metres. A stage height of approximately 300mm to 400mm allows pupils to sit at the edge of the stage for informal performance.

Dance requires a particular stage finish. Dance mats work well and can be rolled and stored when not in use. As they need time to adapt to different humidities, it can be useful for the school to have its own mat in storage.

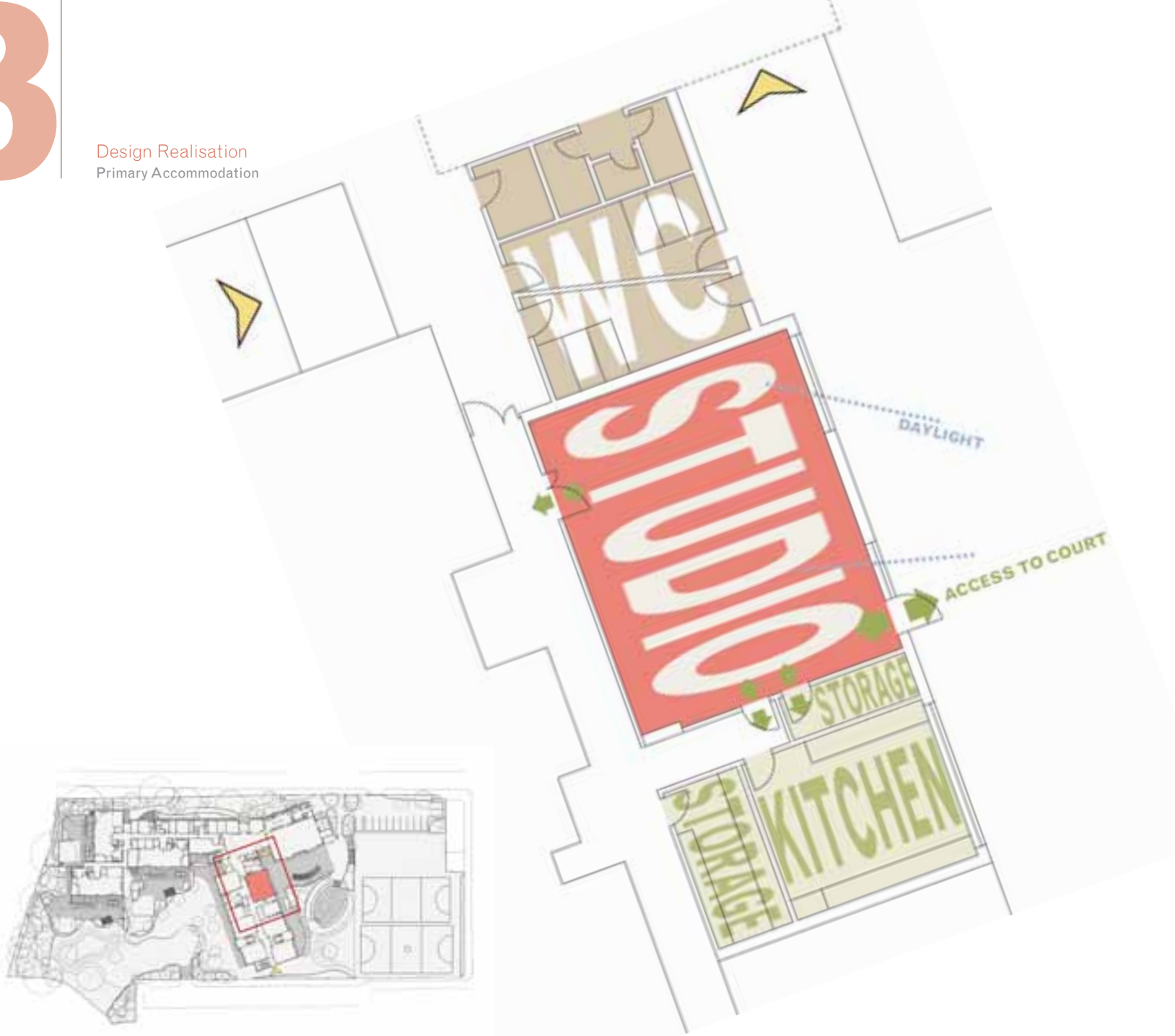


Main Halls Example 2
Mulgrave Primary School
Dannatt, Johnson Architects

Technical Points

Seating
Individual stackable chairs which can be arranged in different ways and raised on simple platforms at the back of the performance area provide a straightforward way of meeting many performance needs. However, they take time and labour to set out. Retractable bleacher seating with padded folding seats is most appropriate in a main hall. Some areas of the hall floor may need to be strengthened to support the seat runners.

This hall is a good example of a contemporary multi-use design. The space is used for assembly and lunch, and also fulfils the physical education and school sport requirements. The kitchen opens directly off the hall, and there is a large 'garage' storage area at one end where the wheeled combination tables and stools (used for dining) are parked. Intelligent furniture specification means that the tables can be rapidly deployed and stored. Exercise bars are placed along one side and there is good access to the outside space allowing creative use of external areas for the delivery of physical education and school sport activities. There are acoustic panels lining the top section of the hall, which are particularly helpful for large gatherings (such as lunchtime, when the panels help to deaden the high levels of noise). The hall has good daylight.



Small Halls & Activity Studios

Primary schools must provide enough facilities to offer at least the minimum PESS to all pupils, as well as space for others in the community who need to use them. Larger primary schools may well need to build a small hall or studio in order to provide sufficient area for their pupil numbers. This may be sited to combine with the main hall on occasions when a particularly large space is needed. A small hall or studio should be at least 10 metres by 10 metres by 3.5 metres high, and can be used for sports activities such as table tennis, dance, yoga and martial arts. It can also serve for poetry readings, music or choir practice and small performances. The functional requirements of these spaces are similar to those of the main hall. As with the main hall, particular attention should be given to good ventilation, lighting and acoustics.

Small Halls & Activity Studios
Example

Mulgrave Primary School
Dannatt, Johnson Architects

Photo: Peter Cook / VIEW

Design Points

Ensure that there is good daylight and controllable ventilation

Site the small hall to allow maximum use across the curriculum

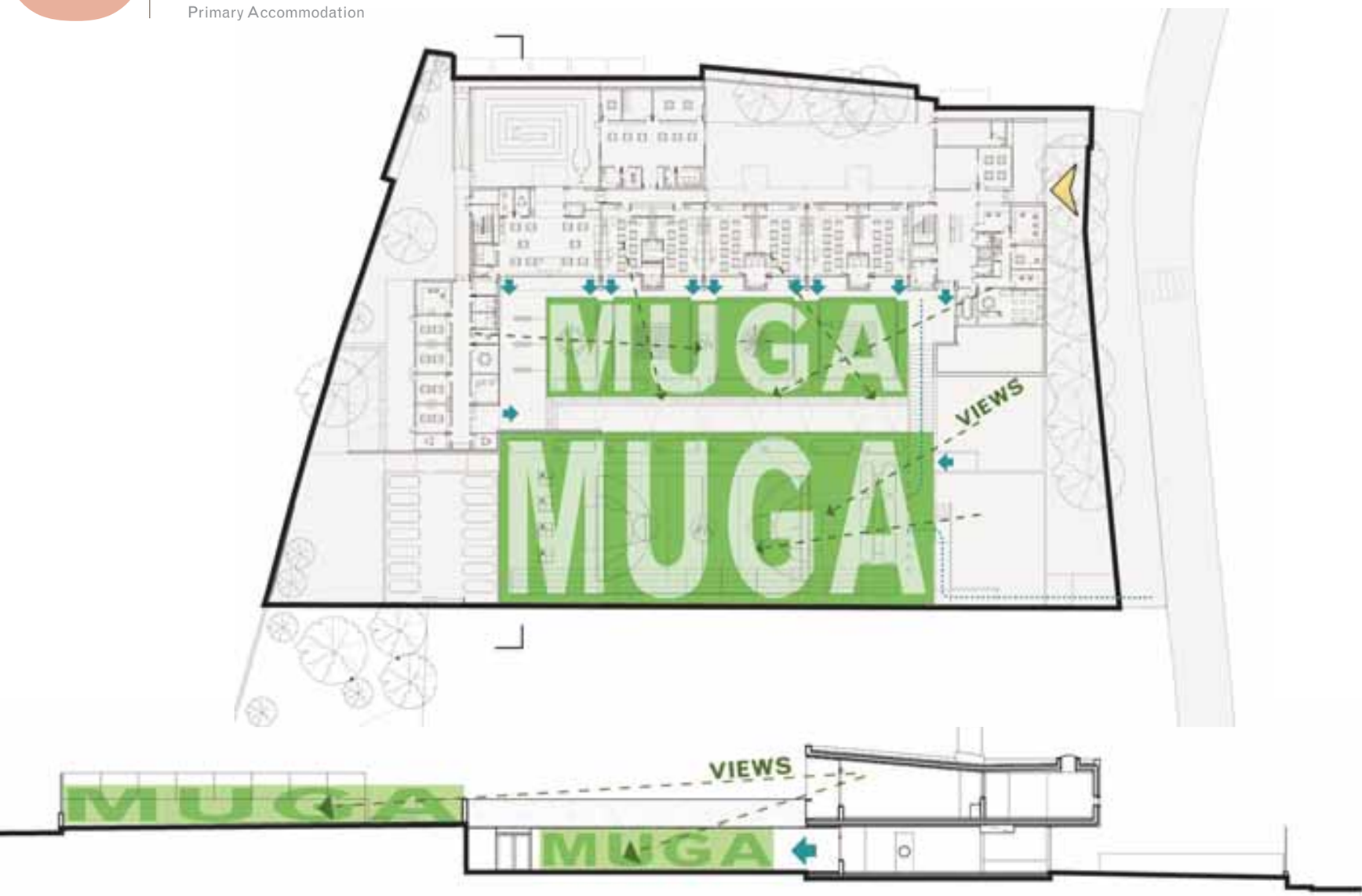
Access to the outside will greatly increase the usefuless of the space

"Daylighting and ventilation were key design concerns for the activity studio. As an extension of the arrangement of the ground floor class-rooms, this was solved in the same way by using a rear light/vent well to bring light down from the first floor and to allow through ventilation. Ventilation needs to be sufficient to deal with the high occupancy of the space, so much of the window wall is openable. All the high level windows are electrically operated via controls near the light switches.

The space needed to be designed for overhead digital projector use: on rainy days it is used almost like a small cinema to show the children DVDs at break time.

The accommodation is located near the central court beyond the point at which the classrooms could be locked off to allow out-of-hours use. The food technology lab is adjacent so that catering could service the space if used for conferences, seminars or parties.

We also wanted to achieve a good inside-outside relationship, so the external landscaping could be breakout space. The central 'up-stand' element of the window wall is there to allow the space, like the assembly hall, to function around both axes: i.e. with audience arranged either facing the end wall or the window wall."
Carl Cairns, Dannatt Johnson Architects



Multi-Use Games Area

An outside multi-use games area (MUGA) can greatly extend the opportunities for participation in PE and sport activities.[1]
A fenced, all-weather play area about the size of a tennis court (approximately 35 metres by 20 metres) works well. It should be linked to the changing rooms exit by a paved route suitable for wheelchairs. A MUGA should be floodlit, subject to planning approval by the local authority. Kickboards around the bottom metre of fencing are recommended.

Asphalt is the standard surface for external hard-surfaced games courts though other artificial surfaces have advantages, especially for use in wet conditions. Any new play area should be securely fenced and safely surfaced, and preferably located on the south side of the building. Good quality fencing and gates will reduce future maintenance and renewal costs. Sun shading should be incorporated in the design. It should not be possible to open doors and windows into the paths of pupils and players using the MUGA.

Multi-Use Games Area Example
Jubilee Primary School
Alford Hall Monaghan Morris Architects

[1] See Sport England Guidance Notes on the design and specification of MUGAs

Photo: Tim Soar

Design Points

Site away from overshadowing trees that encourage moss growth and increase maintenance

Floodlighting can greatly extend usefulness and hire-out

Multiple line layouts will extend the usefulness of the MUGA as long as individual markings are clearly legible.

Ensure that any equipment requiring sunken slots (goals, posts etc) are taken into account

Surfaces and enclosures should be integrated with the landscape design of the school

The school has an urban setting, and therefore limited ground area. The distribution of buildings across the site has been carefully planned to maximise the use of external space for sport and recreation. This includes using a terraced strategy to give two multi-use games platforms and a series of pocket gardens and courtyards that bring air, light and planting into the section of the building. The MUGAs are given a strong graphic treatment to encourage participation in games, both formal and informal, and also to give a decorative and uplifting feel to the large areas of artificial surface.

Play Areas

Playgrounds should be designed to maximise the available space for outdoor physical education and school sport. The provision of outdoor sports areas, as well as more informal spaces that can be used for PESS, will enhance teaching and learning in both the formal and informal curriculum.

'Zoneparcs' is a programme which aims to transform traditionally uninspiring primary school playgrounds into vibrant, exciting and welcoming spaces for children. Playgrounds are zoned into three distinct areas: the Red Zone for traditional, active sports; the Blue Zone, a multi-activity area for children to play alone; and the Yellow Zone, a quiet area for reading or playing board games. Combined with careful management, the playgrounds have resulted in increased activity and enjoyment among children.[1]

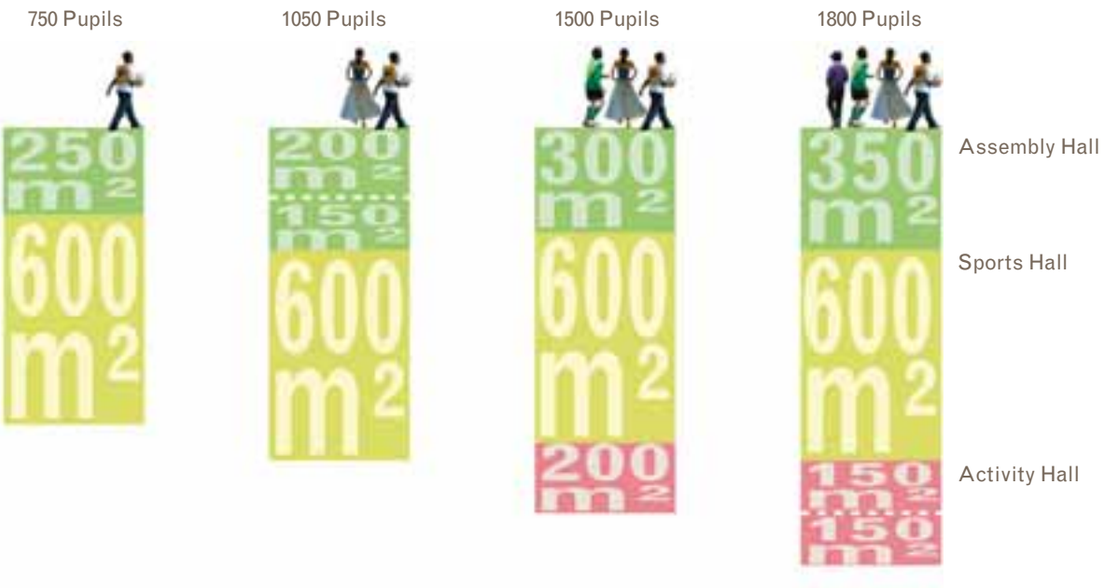
[1] Further details about the joint Youth Sport Trust/ Nike/ DfES programme are set out in a DfES booklet *Primary Playground Development* available from www.teachernet.gov.uk/docbank/index.cfm

Play Areas Example
Mulgrave Primary School
Dannatt, Johnson Architects

The site layout for Mulgrave Primary is designed to ensure the maximum usefulness of all areas for play and recreation. A variety of spaces have been created, including dedicated play areas for early years, and a range of outdoor play spaces for the primary classes with different scales and qualities, which encourage different kinds of play, from boisterous to contemplative. The layout includes some densely-planted garden areas, which greatly enhance the setting of the school and provide wildlife habitats.

Secondary Accommodation

The current secondary school building programme presents an opportunity to ensure that new facilities for PESS are designed to maximise teaching and learning.



Basic Accommodation

Whilst there is a base level of common provision that most secondary schools will share, each school will have particular needs driven by differences in curriculum emphasis, tradition and geography.

PE and sport facilities in secondary schools are usually more wide-ranging than in primary schools with more dedicated, as opposed to multi-use, spaces. This reflects the curriculum structure, which begins with basic skills, and evolves to more specialist application of these skills at secondary level. For example, ball catching and control skills that can be developed in a number of different general locations may be applied in games of netball or rugby, which require more specific spaces. Large spaces in secondary schools still need to meet a number of functions. It is important to understand the exact requirements of all activities that will go on in the space. The design of sports facilities in secondary schools gets close to the standard expected for adult provision and these facilities can work well for community use. A professional ambience can do a lot to boost user aspirations, particularly for pupils who are less 'sporty'.

The recommended overall area for secondary school halls depends on the number on the school roll. Where halls are used for other activities, such as exams, it is important to make sure these needs are balanced with those of the PESS curriculum. Creative and lateral thinking by the design team, in addition to full client briefing on the activities to take

Photo: Architecture plb

Technical Points

The aim should be to meet all the programming and technical criteria in a way which results in delightful, welcoming and beautiful spaces. This requires careful attention to detail, in particular to the level and quality of technical infrastructure.

Ceilings should appear light and uncluttered, with services and fittings well-integrated with the use and layout of the hall. Stark contrast of light and colour and shiny reflective surfaces should be avoided (unless these are required for activities, such as mirrors for dance). Ceilings should be light in colour to prevent glare and improve the general level of illumination, with a reflectance value of at least 90%, while walls should mediate between ceiling finishes and floors with a reflectance value of 40-50%.

Surface finishes and colours for walls and ceilings need to be carefully selected for optimum sports performance. This means that they must be robust, hardwearing, and easy to maintain, and must not present problems of vision in fast-moving sports.

place, will ensure that a hall appropriate to specific school needs is designed.

The diagram shows how the recommended overall area[1] can be broken down into different types of hall to meet the school's requirements. The recommended overall area allows any secondary school to have a sports hall of 600m^2 and an assembly hall that is large enough to take the whole school. In larger schools where this does not provide enough space to meet the PESS needs, it may be better to have a smaller assembly hall plus a second or third activity hall. Some smaller schools may opt for two indoor PESS spaces, instead of one single space. The essential point here is that it is up to the project team to be clear about the PESS ambitions of the school, and how to deliver these in an imaginative way.

[1] Refer to *Building Bulletin 98: Briefing Framework for Secondary School Projects* DfES/TSO 2004

"Our new Sports Hall is brilliant, People in the area want to come and use it. That makes us really proud. People were not interested in our school before."
Pupil Waverley School

Sports Halls

A modern, light, attractive design, both internally and externally, will send out a signal that this is a place where you want to go and take part. Since large sports halls are big buildings, often with large blank wall surfaces, it requires design skill to make the building elevations work successfully. An interesting visual appearance should fit with an overall good quality of design and selection of high quality materials. Acoustic control should be considered, as poor acoustics can place a strain on teachers' voices and make using sports halls for more than one group difficult. Siting is essential. An intelligent overall site plan should include good access for pupils and the public with secure, well-lit entrances. Where appropriate, a large opening can facilitate both indoor and outdoor use of sports halls. An intelligent circulation layout should seek to minimise wasted areas and blind spots.

All large spaces may be used for examinations. Where schools have separate assembly halls which are large enough to take all 11 to 16 year olds, this space will be big enough for a whole year group exam, allowing sports halls to remain available for indoor PESS even during examination periods. Practitioners have begun to question the wisdom of using PESS spaces for examinations. Floor surfaces can be damaged by inappropriate footwear and furniture, and lighting, for example, is often not ideal for writing work. Smaller halls or classrooms are often more appropriate contexts for examinations.

A sports hall will need to accommodate as wide a range of activities as possible. A creative approach is essential in deciding how big the halls should be, and how to divide the internal spaces. The project team should research the key activities and critical dimensions of each, in order to decide the best way to accommodate the projected use.

Photo: HBG Uk Ltd

Design Points

Good siting and access are essential

Selecting good quality materials and appropriate internal finishes for playing sports (see specialist technical briefs)

Ensure good daylighting to all major internal spaces

Plan ahead for possible extension and addition

Technical Points

Sport England determines the size of its recommended range of halls by the number of badminton courts that can be accommodated. (A badminton court measures 6.1 metres by 13.4 metres excluding run-off areas). Sport England's modular standards are now a four court hall (33 metres by 18 metres by 7.6 metres high), six- eight- and twelve-court halls with stipulations on the standards achievable for different activities[1]. Where facilities are intended for County, Regional or National standard sport, guidance should be sought from Sport England as standards for safety margin dimensions needed to surround the court vary depending on the competitive level.

In some cases additional space should also be allowed for spectators and general circulation around court areas. It is important that spectators do not interrupt or invade games areas, and therefore space for spectating should be considered early in the design.

[1] Refer to Sport England Guidance Notes for detailed information, www.sportengland.org

Sports Halls Example 1

The City Academy Bristol
Feilden Clegg Bradley Architects LLP

"The hall is the principal volume of the sports development on the site and is set back from the street behind a tree-lined frontage. A masonry plinth at the base of the hall provides a 3-metre-high 'flush' surface to the inside. A series of long narrow bands of glazing provides the opportunity to engage with the activities through a 'public' window. Above, a lightweight aluminium cladding system wraps around the building to enclose and further express the volume. This strong horizontal emphasis presents a clear and simple elevation to the street. A transparent roof rises from behind the cladding, allowing sports activities to take place predominantly under daylit conditions."
Feilden Clegg Bradley Architects

Sports Halls Example 2
Haute Vallée School
Architecture plb

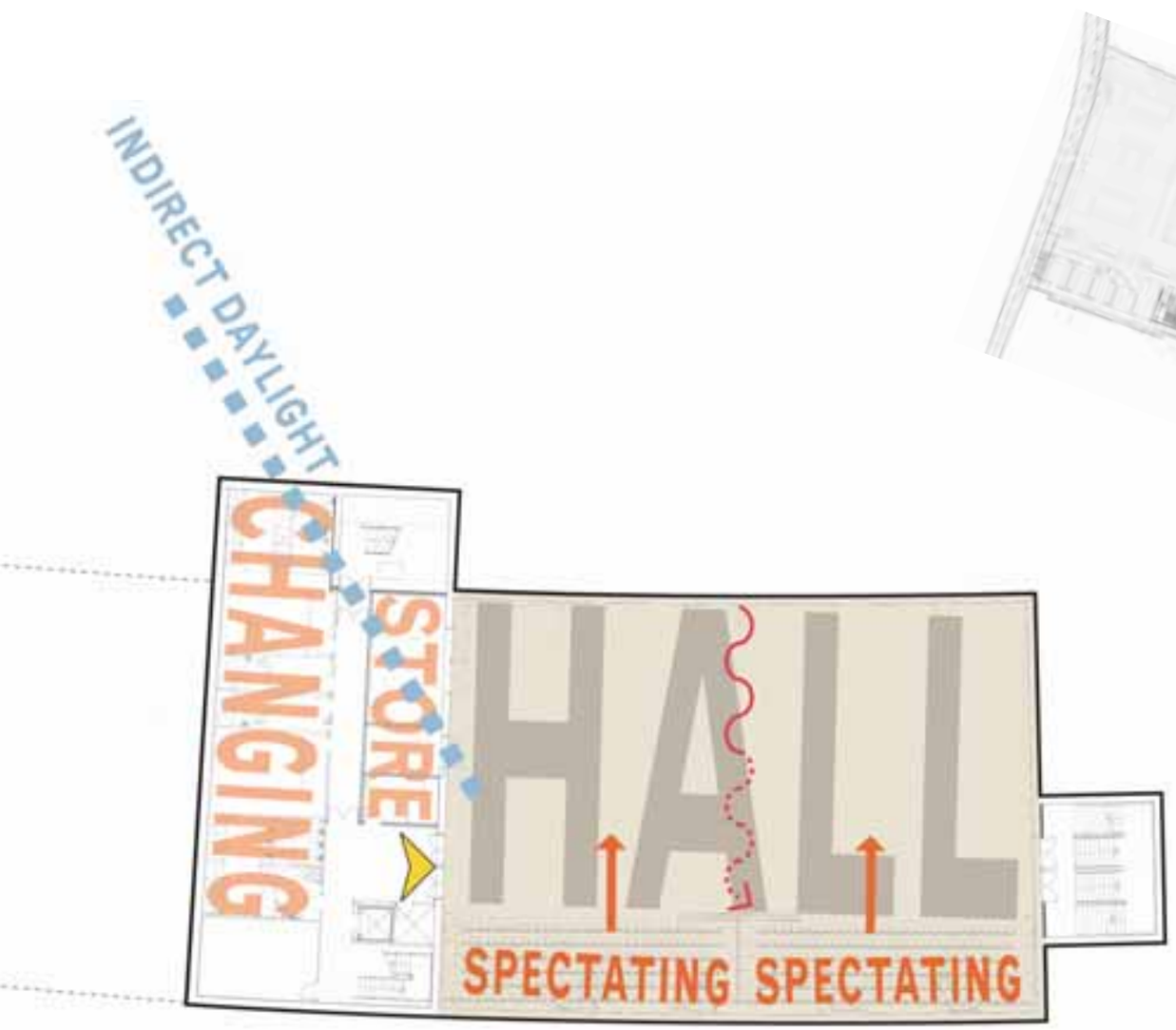
Photo: Jonathan Moore

Technical Points

The form of illumination in the hall is of particular importance. The layout of structural members needs to be considered in relation to the lighting scheme and the introduction of daylight to the space. It should coincide with the requirements for structural support of certain elements: tracks for space dividers; ducts and engineering services; and support for light fittings.

A sports hall of the minimum provision of 594m² can accommodate two groups of 30 for many activities and can also be used by one group for indoor sports requiring large pitches. Sport England can provide detailed information on the spaces required for each type of activity (www.sportengland.org).

Lighting is well-managed, with diffusing skylights in the ceiling. Artificial lighting supplements this when necessary, with uplighters reflected from the ceiling to prevent glare. There is a mezzanine level balcony, allowing for spectating and more casual overlooking of sports hall activities, which is helpful for encouraging participation in physical education and school sport activities, especially for less confident pupils.


INDIRECT DAYLIGHT
CHANGING
STORE
HALL
SPECTATING SPECTATING


INDIRECT DAYLIGHT
SPECTATING
DINING
CHANGING
HALL

Photo: Nigel Young, Foster and Partners

Sports Halls **Example 3**

Capital City Academy
Foster and Partners

The sports hall has a clear and strong aesthetic, with a palette of materials including self-coloured concrete and timber. The overall effect is of a rugged but elegant sport space. Lighting of the space is largely artificial, with the ceiling acting as a diffuser, and some daylight entering the space as 'borrowed light' through the glazed mezzanine to the dining space. The focal position of the sports hall is reinforced by being able to see into it from other important parts of the school, such as the main circulation space. There is good provision for spectating, both more formally in the bleacher seating in the hall itself, and also more casually from the mezzanine.

Activity Halls

Smaller halls are frequently used for activities to encourage participation in physical education and school sport such as dance, gym and yoga. It will not be possible to design an activity hall to meet every possible need, so good briefing is essential to ensure that the priorities of the space are established early on in the project. Activity halls may often be used for more reflective activities and should be designed accordingly.

Choosing different finishes and varying elements for different spaces can make identification and orientation much easier. The pleasure and enjoyment that people get from using a range of spaces can be increased by varying its light, proportions, finishes and colour.

Activity Halls Example 1

Manor School
Design Services, Nottingham County Council

The activity hall is intelligently located off the main foyer area, with good access to the changing areas, and adjacent to the main hall. This makes the space very functional, and it is one of the most intensively used of the school's sports areas, both by the pupils and the wider community. The activity hall has a servery with a hatch opening directly into the hall, which means that the space is useful for functions and occasions where food is a complement to the programme.

Photo: Nigel Young, Foster and Partners

Design Points

Design points as sports halls but also:

Proportions – in particular ceiling heights – should be designed to be appropriate to more reflective activities.

Surfaces: walls with mirrors are especially useful for tracking movements in dance and martial arts.

Design floors to protect feet from damage

Technical Points

A hall of 145m² can accommodate dance, aerobic and some gymnastic activities for a group of 30 pupils and can also be used as a drama workshop. Dimensions should be 12m x 12m or 10m x 14.5m. A minimum ceiling height of 4.5m allows for free movement below stage lighting.

In pilates, aerobics or keep-fit classes, space is needed for stepping platforms and floor mats. A space standard of 3.5m² per person should be allowed. Activity halls can also function as a viewing gallery to a sports hall if appropriately located and acoustically isolated.

Activity Halls Example 2

Capital City Academy
Foster and Partners

The activity hall is a well-proportioned space with good daylight entering through a glazed clerestory strip. It has a sprung floor and a mirrored wall for observation work. Natural ventilation is achieved by high level and low level pivoting openings that are flexible, simple and easy to operate. The design, material selection and finishes give a crisp, clean and hardwearing feel.

All-weather Facilities

The emphasis on greater participation in sport at all ages requires more generous provision of outside sports facilities capable of catering for out-of-hours and community use. Both grassed and artificially-surfaced areas are needed to ensure that a range of skills can be developed.

Inclement weather can be a major inhibitor to the physical education and school sport programme. In order to meet the new targets for increased PESS provision, schools are likely to need to plan for a higher proportion of all-weather surfaces, which can be used far more of the time than traditional grass pitches.

Many schools run sports activities at the end of the day that put demands on the school grounds. For out-of-hours and community use, synthetic turf pitches and multi-use games areas should be provided with floodlighting. All-weather pitches should be accessible to all users, including people in wheelchairs and people with mobility problems. The greatest potential for community use will generally lie in the hard games courts and multi-use games areas. All-weather pitches should not be separated from buildings by grass as this leads to mud being trodden into the surface and presents difficulties for wheelchair users.

Siting of the sports facilities should take account of community users. Access routes to changing facilities should be prominently positioned and public entrances to playing areas clearly signed from the school.

The maintenance and management of outside spaces is key to maximising year-round participation and enjoyment. Grass areas should be well tended with good ground care and well-maintained goals. All-weather areas should have well-maintained surfaces and lines, with goals and nets stored and changed as appropriate. Artificial grass areas should have well-maintained surfaces with netting kept in good repair.

Photo: Kilian O'Sullivan

Design Points

All-weather surfaces and enclosures should be integrated with the landscape design of the school

Site all-weather areas away from overshadowing trees, which encourage moss growth and increase maintenance

Ensure that equipment requiring sunken slots is taken into account

Good quality fencing and gates will reduce future maintenance and renewal costs

Storage provision should be placed adjacent to sports areas

All-weather Facilities **Example 1**

Charter School
Penoyre & Prasad LLP

In this tight site, the use of courtyard spaces between buildings to provide all-weather surfaces has allowed the school to maximise the available space for play surfaces. Only by creating all-weather areas could the school possibly meet the demand for use in the curriculum.

The resulting layout is successful, with internal circulation areas and covered walkways giving views over the animated play areas, helping to generate an exciting and dynamic feel that is in keeping with the optimistic, modern look of the school.

"We can do everything on our range of artificial surfaces, and we can do it when we want to. Before we were at the mercy of the weather, and we often had to cancel activities because of waterlogging (this area has one of the highest rainfalls in the UK). Artificial surfaces are the way forward."
Vice Principal Ivybridge Community College

All-weather Facilities Example 2
Ivybridge Community College
Devon Property

Technical Points

Performance, safety and durability are key factors in determining the choice of surface for sports pitches. Requirements of the games to be played, slip resistance and abrasiveness, wear resistance and maintenance requirements should all be taken into account.

A range of artificial surfaces is available that can be used immediately following rain and can be used much more intensively than grass in any conditions. These surfaces may be hard porous (water-bound), synthetic turf or polymeric.

Marking out a variety of courts within a single area extends the range of possible games and makes supervision easier. The shape and size of the area should allow for courts with the required safety margins.

Multi-use games areas and adjacent skills-practice areas should be level, drain well and have an even surface. Surfaces, floodlighting and fencing should conform to relevant British Standards. (Refer to Sport England *Technical Guidance Notes*.)

In some cases additional space should also be allowed for spectators and general circulation around court areas. It is important that spectators do not interrupt or invade games areas, and therefore space for spectating should be considered early in the design.

Ivybridge Community College has an extensive range of all-weather surfaces, including a three-pitch hockey area (sand-filled synthetic grass), a rubber crumb synthetic grass all-purpose pitch (suitable for contact sports), a pair of rubber crumb tennis courts, and a large asphalt area including three basketball courts and a 200-metre marked-out running track. The school also has an 80-metre hurdle and sprint training strip, which is an imaginative use of an otherwise 'waste' space.

"Our gymnastic hall is big and open. I don't think it could be any better."
Pupil Marriotts School

"You can do any kind of gymnastic activity in our hall, which means that you can move from one exercise to another. The good thing about this is that you never get bored or have to wait around in a class. Also, since we have all the equipment, you can push your standard."
Pupil Marriotts School

Secondary Specialisms

When considering specialist facilities, such as a gymnasium or fitness studio, the design team should liaise with national governing bodies, for example, the National Governing Body for Gymnastics. It can also be helpful to contact specialist subject associations.

Some gymnastic and dance activities can take place in a multi-purpose activity hall or even an assembly hall but some schools may choose to have a space that is designed and equipped for a particular activity.

The specialised nature of the sport and the need for pits makes it impractical to share specialist gymnasia with other sports. In addition, the need for staff trained in the use of the apparatus puts these activities beyond the scope of many schools at this level, unless the school intends to become a specialist centre.

Photo: Masser Architects

Specialist Gymnasia

Sports activities are becoming more specialised and standards are rising. A significant development in gymnastics is the use of sunken pits with resilient material to cushion landings from vaults and high bars. Specialised training halls have been developed to accommodate these floor pits and allow for the setting out and fixing of equipment[1].

Briefing for the equipping of a specialist sports area is a complex process, and the project team should include an appropriately experienced and qualified gymnastics teacher, the architects and a specialist gymnastics equipment supplier. Of all the activities included in physical education and school sport provision, gymnastics is one of the most specialised and prescriptive. A specialist gymnastics hall will be exclusively used for gymnastics, and permanent features (such as pits on the floor, and structural provision for support wires) will need to be included from an early stage in the design of the space[2].

Gymnasia Example 1

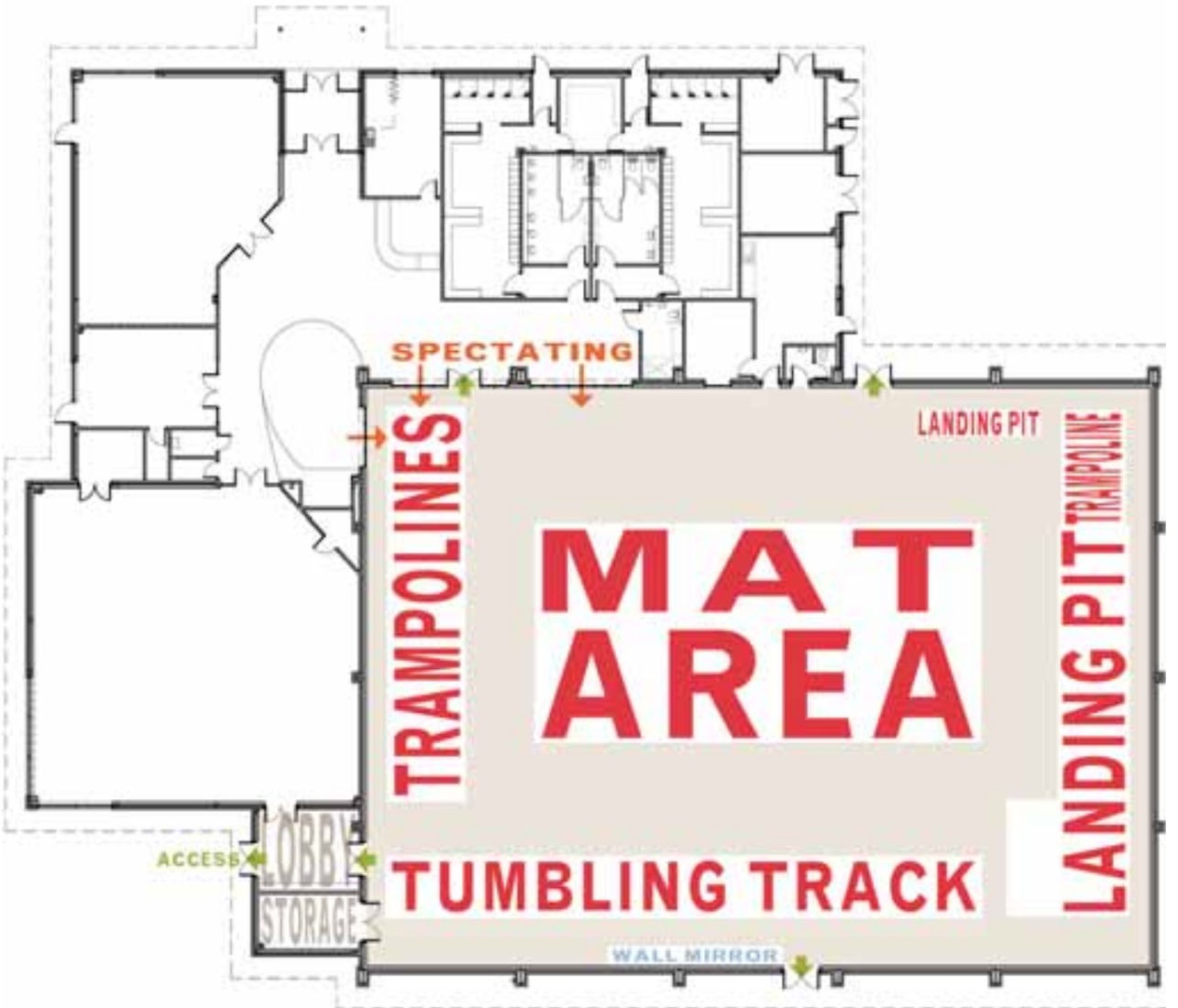
Hamble Community Sports College
Masser Architects

"The gymnasium is physically linked to a new lottery-funded sports hall, and therefore shares the ancillary facilities of the hall such as a manned reception, café area and changing rooms.

A major priority in the design was to provide a clear span to accommodate the equipment including a travelling spotting rig and a trampoline spotting rig. The interior layout was determined by an 'ideal' coaching layout. It was important that the design complemented the vast array of different shapes and sizes of the apparatus.

Specialist equipment and deep pits filled with resilient foam make using tower scaffolds or cherry pickers for light changing very inconvenient. At Hamble the lights are mounted on tracks, which can be lowered to the floor by motors for maintenance. Ventilation systems can be badly affected by chalk dust used in gymnasia. At Hamble, passive vents were introduced at low level in conjunction with a simple extraction duct at high level to overcome these problems."
Masser Architects

[1] Detailed information is given in Sport England Guidance Notes and *Handbook of Sports and Recreational Building Design,* Vol. 2 – Indoor Sports.
[2] For detailed advice contact the British Gymnastics Association (www.baga.co.uk)



Gymnasia Example 2
Marriotts School
Widdup/Amer Architects

Design Points

Floor pits and other 'fixed' equipment will impact on the building design

Structural support will be required from above for some pieces of equipment

Allow for large equipment to be moved for maintenance

Ensure good daylight

If provision is to be made for spectators, this will impact on the design of the space and equipment layout

Technical Points

Designers need clarification on the chosen activities and should discuss requirements with specialist suppliers who will advise on setting out and the structure needed to anchor equipment. Additional exercise equipment in the form of climbing ropes, benches and wall bars may also be considered.

Secure fixing points will be needed for anchoring pieces of equipment to the floor, wall and roof beams. These should be recessed or flush fitted to avoid injury.

Flush wall surfaces must be specified wherever possible and projections avoided whenever overrun impact is possible.

Glazing in the roof or upper wall levels must be carefully located to avoid the hazard of blinding glare.

This specialist gymnasium has exemplary provision of facilities, allowing all standards of gymnastic teaching and learning including elite performance. The space allows highly specific requirements (including the tumbling track) to be accommodated without difficulty. Since there are a number of pits in the floor, to create landings for bar and other work, the adaptability of such spaces is limited, so the precise location of all elements needs careful planning. The space is top lit, but perhaps would benefit from a higher percentage daylight factor, since artificial lighting is required at all times for the high illuminance levels needed for gymnastics. Servicing such a large space also needs careful planning: light fittings must be accessible for bulb replacement, either with drop wires or a high-level gantry. The hall has been designed to maximise access and inclusion, with details such as door handle heights and door spring tension optimised for wheelchair users.

Exercise & Dance

Dance activities taught in school range widely and include street dance, ballroom dancing, salsa, tap, jazz, contemporary dance and classical ballet. Dance needs a lot of space and shares many requirements with sports halls, such as a sprung floor and changing and showering facilities. However, more formalised dance forms such as contemporary dance or classical ballet benefit from dedicated studio spaces, designed specifically for dance.

A successful dance space requires a good sprung floor and a mirrored wall (preferably with a barre). Many schools are finding that providing an attractive dance studio has been a helpful factor in encouraging wider participation in physical education and school sport, and in particular has been instrumental in attracting pupils who are not interested in more traditional activities.

Exercise & Dance Example 1

Waverley School
Southwark Building Design

Generic Layout
Exercise & Dance

Design Points

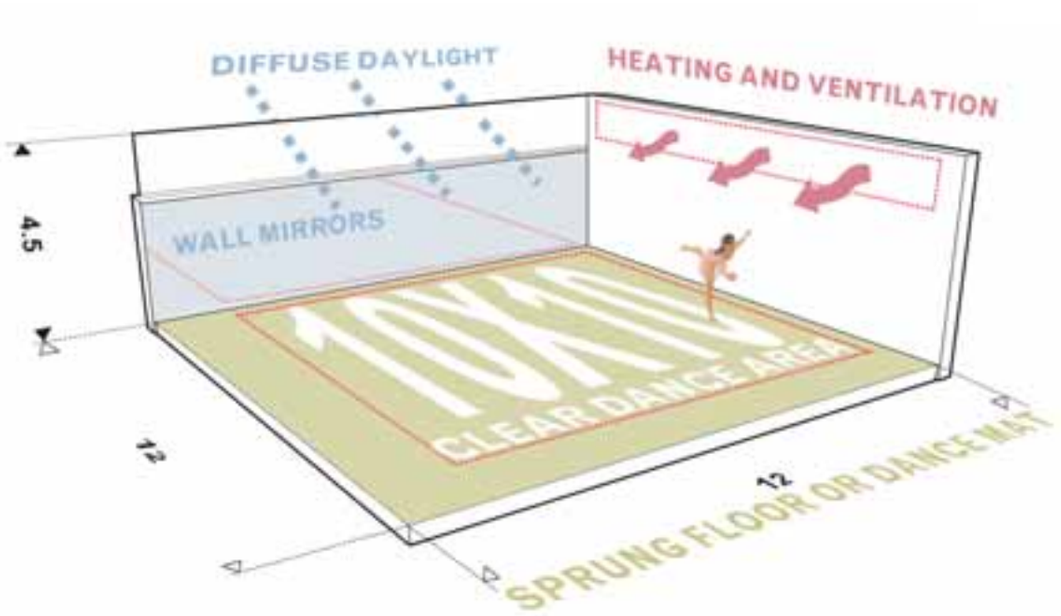
Design points as activity halls but also:

Surfaces: walls with mirrors essential for tracking movements in dance and martial arts

Include points of reference in the space to allow dancers to orientate when moving at speed

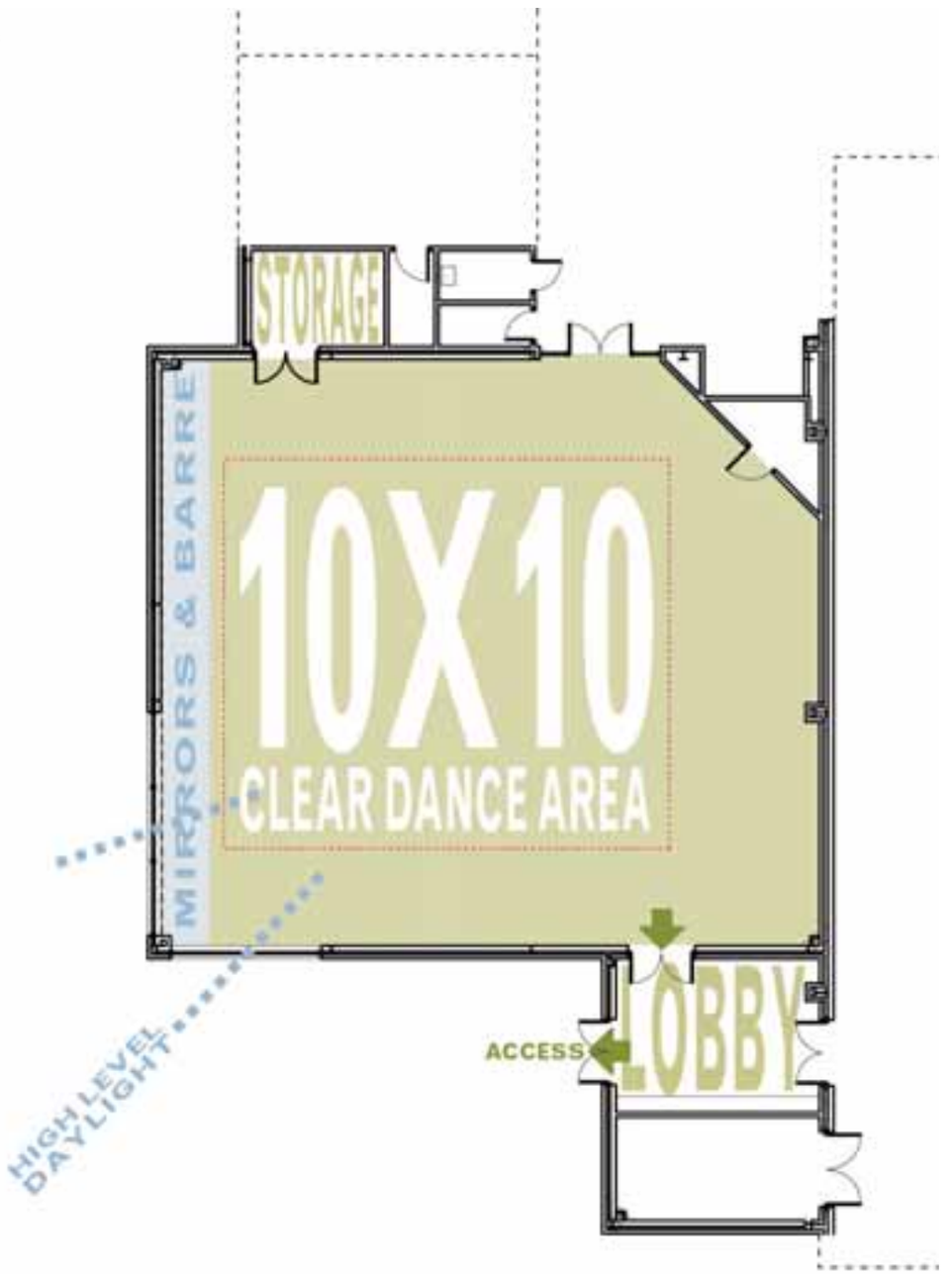
Good daylighting and views help to create a calm and enjoyable environment for dance

Lighting design should allow a 'performance' atmosphere to be created, for example, daylight blackout and directional lighting



This dance studio is an exemplary space. There is a complete wall of mirrors, which is helpful for teaching and learning where close observation and co-ordination of detailed movement is important. The floor is designed specifically for dancers. The space is well-serviced, with a large storage area accessed directly from the studio, and a connecting small catering area that is particularly useful for community participation.

The space has a double orientation, with one viewing window looking over the road to the park, and the other long line of full height windows giving a good view over the school playing fields. Movement-based activities such as dance require orientational features for 'spotting' (to assist navigation through complex movement sequences), making distinctive features in different parts of the room helpful.


STORAGE
MIRRORS & BARRE
10X10
CLEAR DANCE AREA
HIGH LEVEL DAYLIGHT
ACCESS
LOBBY

Technical Points

For most forms of dance, a space of at least 10m x 14m x 4.5m high is suitable. A space measuring 12m x 12m would also suit, allowing for the 10m x 10m clear floor area needed for GCSE and 'A' level dance examinations.

A single badminton court hall size of 18m x 10m would provide ample space for dance. The clear space dimensions should be taken between the wall barres. In an average dance class of 25 - 30 pupils, these studio/halls will provide clear space for participants to move without clashing, while floor sequences are generally undertaken in turn along the length or diagonal of the space. In larger halls where dance, dance exercise or aerobics may be practised by greater numbers, the space requirements for each participant can be calculated by allowing 3.5m² per person.

Dance training usually follows the format of dance performance, where the audience is located on one side of the stage. The dance studio space must therefore be orthogonal in shape, well-proportioned and with a clear sense of 'front', back and equal sides. In the studio, 'front' is generally where the dance mirrors are located, with the teacher usually positioned with his/her back to the mirrors.

Studio spaces need to be inspiring places to work in, airy and uncluttered. The quality of light is important. Daylight should be diffused, enhancing the sculptural form of the body and avoiding a silhouette of the dancer's image in the mirror.

A good sprung or semi-sprung floor system is essential for all dance activities. Dancers work in bare feet or thinly-soled shoes and take the full force of impact with the floor. A floor system that complies with the European DIN-standard 18032 Part II giving a shock absorption coefficient of at least 55% (preferably 60%) is regarded as an absolute minimum for dance.

Dancers experience cold and draughts keenly so air temperatures should be maintained at a minimum level of 20°C, and preferably at 24°C. The intense activity of some dance and exercise movement requires an efficient mechanical ventilation system providing between 6 and 10 air changes per hour, particularly in smaller spaces. Natural ventilation may appear the simplest way of venting a space but risks cold draughts. Forced air systems need to be well-attenuated in order not to block communication.

Exercise & Dance Example 2
Marriotts School
Widdup/Amer Architects

This dance hall is generously scaled, which allows plenty of room for informal spectating and performance. The space has a good floor, and high-level windows that help orientation and give a light and spacious feel. The mirror and barre along one wall allows sufficient area for teaching a whole class.

"You can learn any kind of dance at our school now. I really like break dancing, and take part in demonstrations and performances."
Pupil Marriotts School