



Fire Safety Guidance

School Halls – Calculating the Capacity

General Points

The following notes should enable schools to reach a realistic calculation of the capacity of their school hall.

It is very likely that there will be more than enough exit capacity for seated or standing groups in a purpose built hall but a quick calculation should verify this for you. Some older premises e.g. Victorian schools may not have such generous exit routes and this may affect your calculation.

The overriding principle when determining a maximum safe occupancy figure in any room is the capacity of the designated fire exits, *regardless of the floor area available*. Therefore you must ensure the exit capacity matches the potential occupancy for your event.

If it is not possible to achieve this (i.e. the floor capacity will accommodate a greater number of people than the exits will safely allow to escape) then it is essential that the numbers allowed in the hall are limited to the safe capacity determined by the exit width calculation.

For all such calculations where more than one exit is provided you must discount at least one exit (normally the largest one) as being impassable due to fire/smoke.

When only a single exit is provided, the capacity is limited to 60 persons irrespective of the space available.

Exit routes can only be counted as true alternatives if they are at least 45 degrees apart or otherwise separated by fire-resisting construction (otherwise they are regarded as part of the same exit route).

Capacity of Exits

Table 1 below gives the exit capacity for situations where there is more than one exit (for standard exit door widths):

Exit width	Exit Capacity
750mm	100 people
1050mm	200 people

An additional 75mm in exit width would increase capacity by another 15 persons (or part thereof) e.g.

1200mm	230 people
1500mm	290 people
1800mm	350 people etc.

Table 2 below has been reproduced from Building Bulletin 100 *Design for Fire Safety in Schools* and enables you to calculate the theoretical occupant capacity based upon floor space.

Room/Area	Occupant capacity based on floor space factor (m ² /person)
Assembly Hall/dual purpose area	0.45 (standing people)
Sports Hall (not used for assembly or examinations etc)	5.0 (sports activity)
Office	6.0
Staff Room	1.0

Stairs and Corridors

In the unlikely event that emergency exit routes include stairs and corridors you should include these impediments in your calculation.

- Stairs – reduce the exit capacity by 20%;
- Corridors with corners – reduce the exit capacity by 15% to allow for slower flows round corners.

Standing Events

As a guide, for standing events 0.45m² of available floor space per person (see table above) should be allowed but the overriding consideration of capacity in your hall remains the exit capacity.

Seated Events

Your capacity for seated events can be calculated by laying out seats and aisles. This figure may well be fewer than the number that can be evacuated via fire exits so the constraints of the floor area of the hall, in effect, impose a safe limit.

If the figure is greater, the actual numbers permitted to enter must be limited to the figure determined by fire exit egress calculations. Other factors for consideration are given below hence no guide figure of x/m² being given here.

Layout and Gangways

As far as practicable, seating should be in regular blocks, having gangways of uniform width. In addition:

- gangways: at least 1100mm wide;
- not more than 14 seats in a row with a gangway each end; or
- not more than 7 in a row with a gangway at one end;
- space between rows to be at least 300mm;
- seatback to seatback measurements between seats at least 740mm; or 600mm in bench seats with no backs.

You also need to be aware of any specific licensing requirements and adhere to any capacity limits set by these requirements.

Other Factors to Consider

A simple risk assessment for events should always be made to ensure safety of participants. This will include considerations such as:

- for halls you should discount the area immediately adjacent the exit door and account for aisles and notional gangways to permit orderly escape. Areas where the view of the stage is obstructed, e.g. by pillars, should also be excluded
- if people are sat at tables in a hall, the number is reduced even further (take account of the total area occupied by furniture fixtures and fittings)
- age of participants
- any mobility issues
- any disability issues
- likely behaviour of the group;
- familiarity of people with the premises
- provision of staff who can act as stewards to supervise the event and, if needed, assist the evacuation.

Worked Example

- A school hall with an area of 200m² would have a maximum theoretical capacity of $200/0.45 = 444$ (from Table 2), and as there are over 60 people in this area a minimum of 2 exit routes or more are required.
- Remember for 2 exits or above you discount 1 exit (normally the largest) as being unavailable due to fire or smoke.
- If we take a 2 exit only situation. As a minimum in this case the width of the smaller of the 2 exits must be at least (from Table 1) a combination of 2 x 1200mm exit widths or 2400mm e.g. 2 x 1200mm large double-door widths to accommodate 444 persons.
- If only 2 exits were actually provided of 1050mm width, discounting one of the exits would mean (from Table 2) that the capacity of the hall would be limited to only 200, despite the theoretical space available.

Sources of further information

For further advice and guidance please see the Government guide for Fire Safety in Educational Premises which is available from the following weblink:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/14887/fsra-educational-premises.pdf