RAMBOLL safe

IHEEM

Fire Engineering

Converting Engineering Experience to Design Excellence

IHEEM 28 October 2009

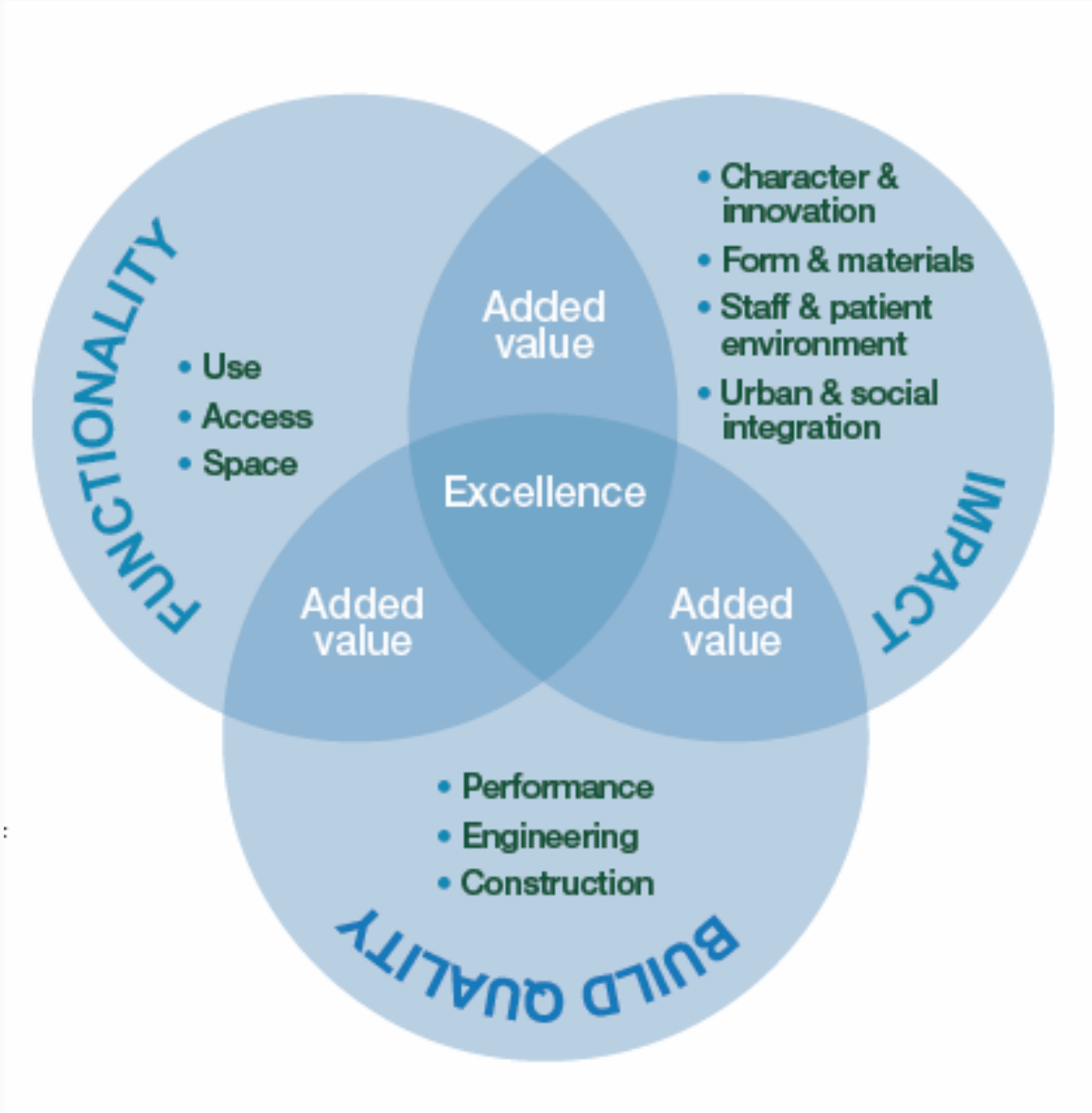
INVESTOR IN PEOPLE

Association of Fire Consultants

Rambøll SAFE

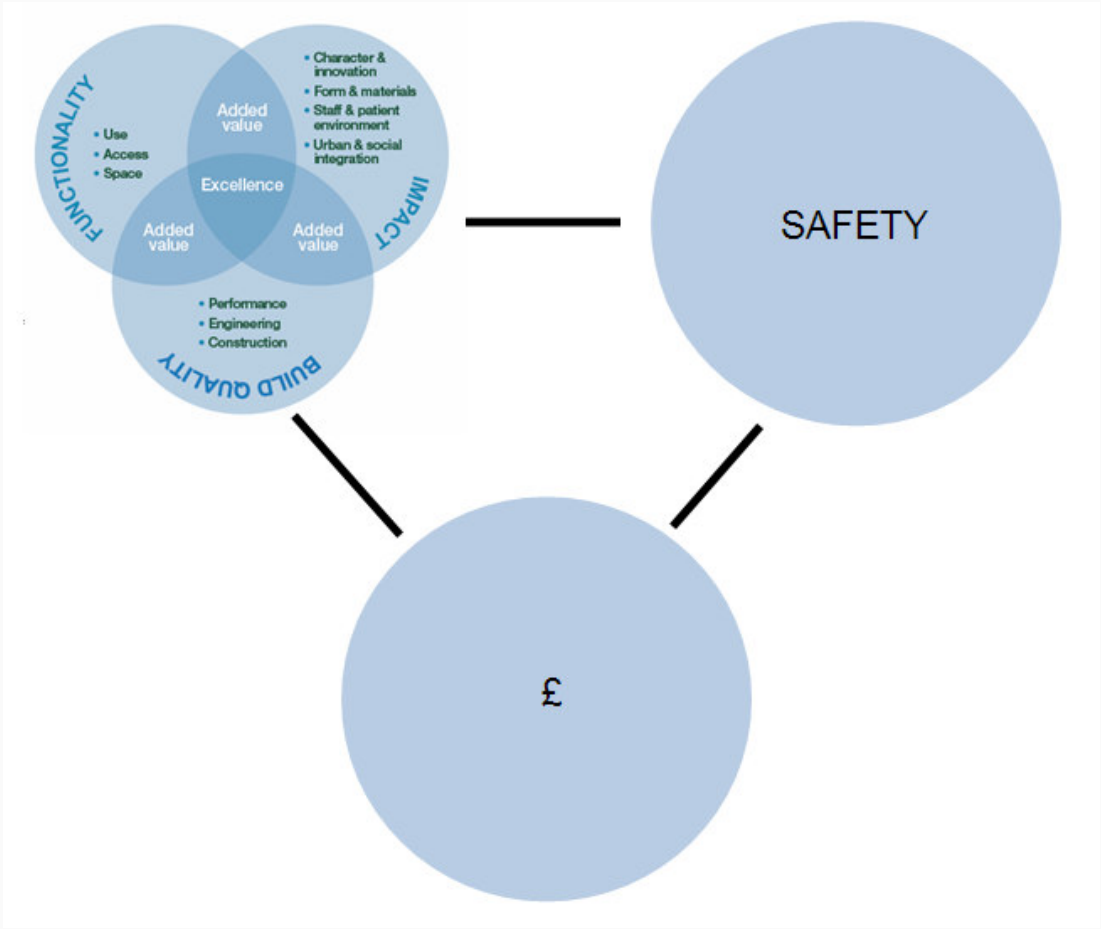
- SAFE - Fire Engineering group in Rambøll
- Involved in £3bn+ healthcare projects

Design Excellence - AEDET



Vitruvius (80-15BC): “firmitas, utilitas, venustas”

Design Excellence



Objectives

- facilitate an informed discussion
- highlight the benefits of a framework for common understanding in healthcare fire safety.
- develop coordinated and coherent guidance,
- ensure consistent understanding and application;
- form the basis for continuous improvement and ingenious, robust design solutions;
- enable better fire safety management;
- to deliver better hospitals, with less risk, in less time; **to capitalise on engineering experience and achieve design excellence**.

Challenges

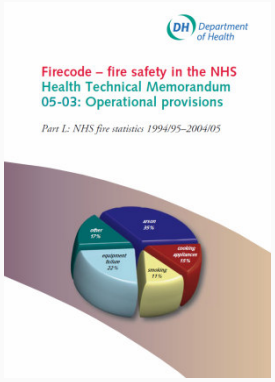
Victoria Hospital Acute

Forth Valley Acute

- Disparities in standards of safety in "complementary" guidance documents;
- Lack of clarity on performance within guidance documents;
- Subjectivity in interpretation of guidance;
- Incorrect guidance;
- Undue process.

DoH NHS Fire Statistics

- 10,662 fire incidents reported (England & Wales)
- £14.6m cost
  - does not include the costs for 2002/03. This is because of a single serious fire incident resulting in £10m damage, and the DoH considered that including this would have shown an unbalanced trend
- 17 fatalities and 651 injuries. Ten of these fatalities occurred on mental health wards
- since 1994, not been a fire incident that involved more than one fatality
- detailed data from 2004/2005 indicates that 84% of reported fires were confined to the room of fire origin
- DoH concluded from these statistics that FIRECODE is providing an appropriate standard of fire safety.



Sprinklers

LIVE BBC NEWS CHANNEL

Last Updated: Wednesday, 17 October 2007, 11:09 GMT 12:09 UK

E-mail this to a friend Printable version

No sprinklers for £300m hospital

Fire safety concerns have been raised over NHS Forth Valley's plans not to use sprinklers in a new £300m hospital.

The new hospital is being built to replace those in Falkirk and Stirling

The Fire Brigades Union criticised the health authority for the move and said it showed profits were being put first.

NHS Forth Valley said there were "more appropriate" measures which had been adopted for the hospital.

Work on the new "super hospital" at Larbert, which will replace Falkirk and Stirling infirmaries, is due to be completed in December 2009.

The project is among Scotland's biggest public private partnership (PPP) hospital contracts.

Current legislation dictates that a sprinkler system must be fitted in all care homes and sheltered housing.

However, the law is yet to be extended to cover their installation in all new-build schools and hospitals.

MRSA / Cdif

TIMESONLINE

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From The Sunday Times

March 23, 2008

MRSA and C difficile superbug deaths at 10,000 a year

Lois Rogers

The number of patients in British hospitals dying from superbug infections has reached more than 10,000 every year, according to an expert.

The new figure is about 20% higher than the official toll of 8,000 a year.

Mark Enright, professor of molecular epidemiology at Imperial College London, said that the real number of those succumbing to methicillin-resistant Staphylococcus aureus (MRSA) and Clostridium difficile (C difficile) in the UK is higher than the government's records show.

"I think it is at least 10,000 a year," he said. "A lot of people are never tested for these infections and their deaths are put down to something else."

EXPLORE HEALTH

- EXPERT ADVICE
- HEALTH FEATURES
- MENTAL HEALTH
- ALTERNATIVE MEDICINE
- CHILD HEALTH
- HEALTH CLUB

SWINE FLU

Atria

- BS 5588-7 superseded by BS9999 in April 2009
- BS 9999 does not apply to healthcare premises
- HTM05-03 Part M under development

Broomfield Hospital

Chelmsford

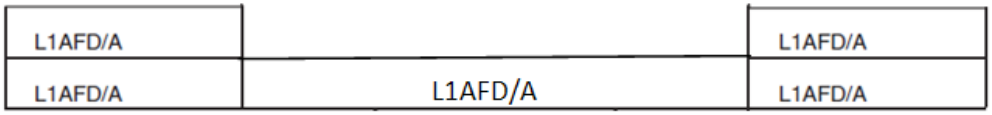
- Should required performance simply be to provide an equivalent level of safety to a hospital without an atrium?
- Is a courtyard a similar concern?

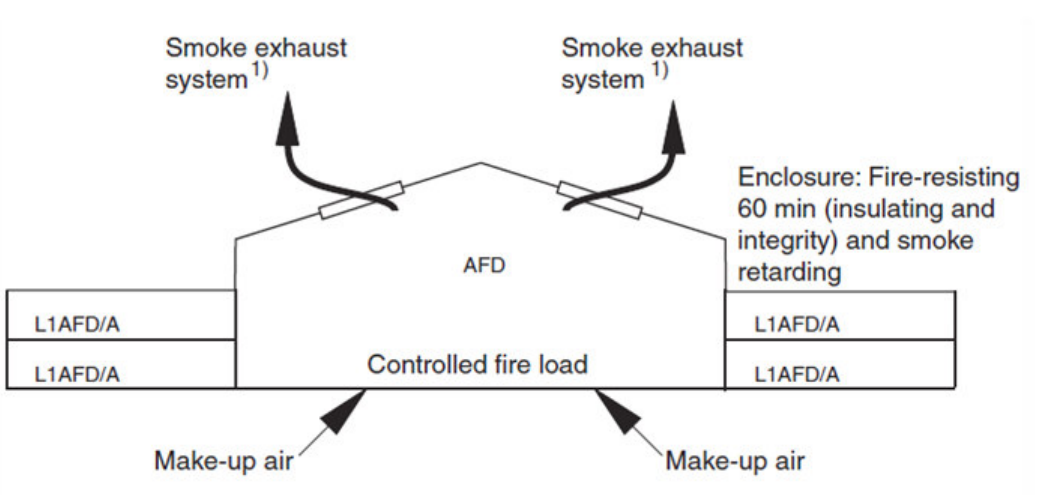
BS 5588-7 Atria

- Royal Alexandra Children's Hospital Brighton

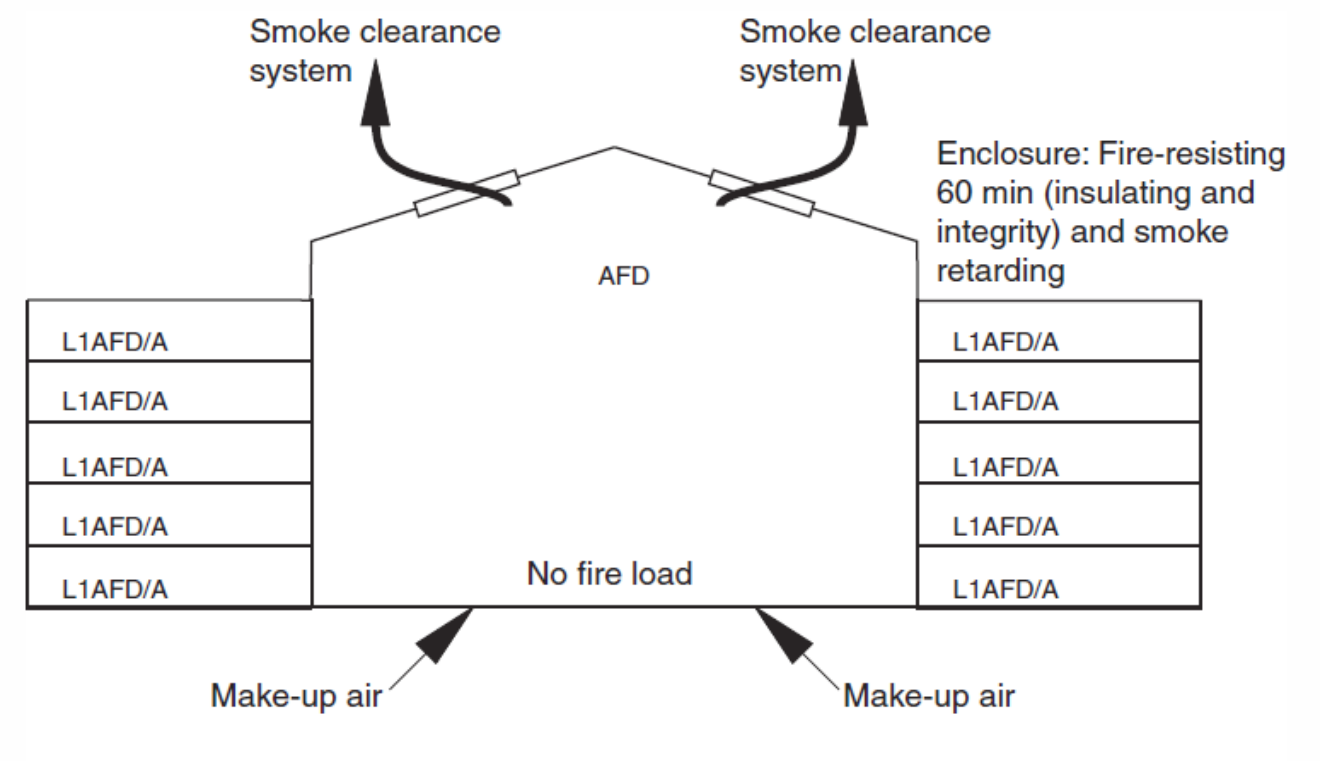
©Sanna Fisher-Payne/BDP

BS 5588-7 Atria





BS 5588-7 Atria



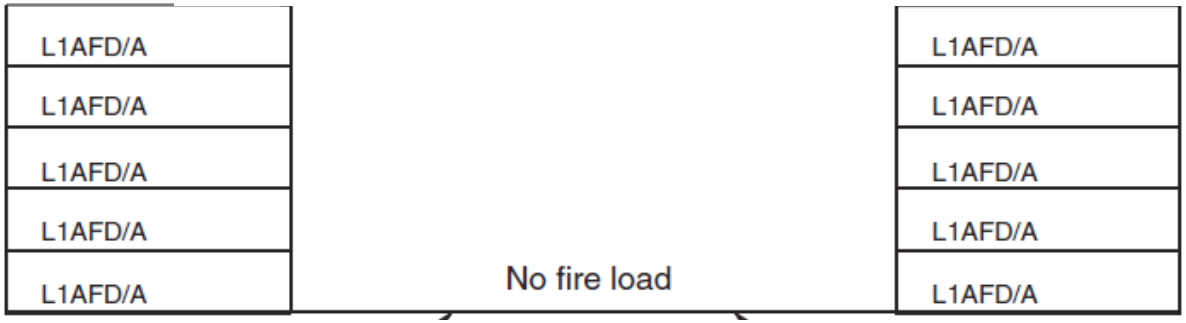
NOTE 1 The following facilities should not be provided in the atrium: sleeping accommodation, nursing or medical care, balcony seating areas.

Exhaust Area = 10% of Area of Atrium Base

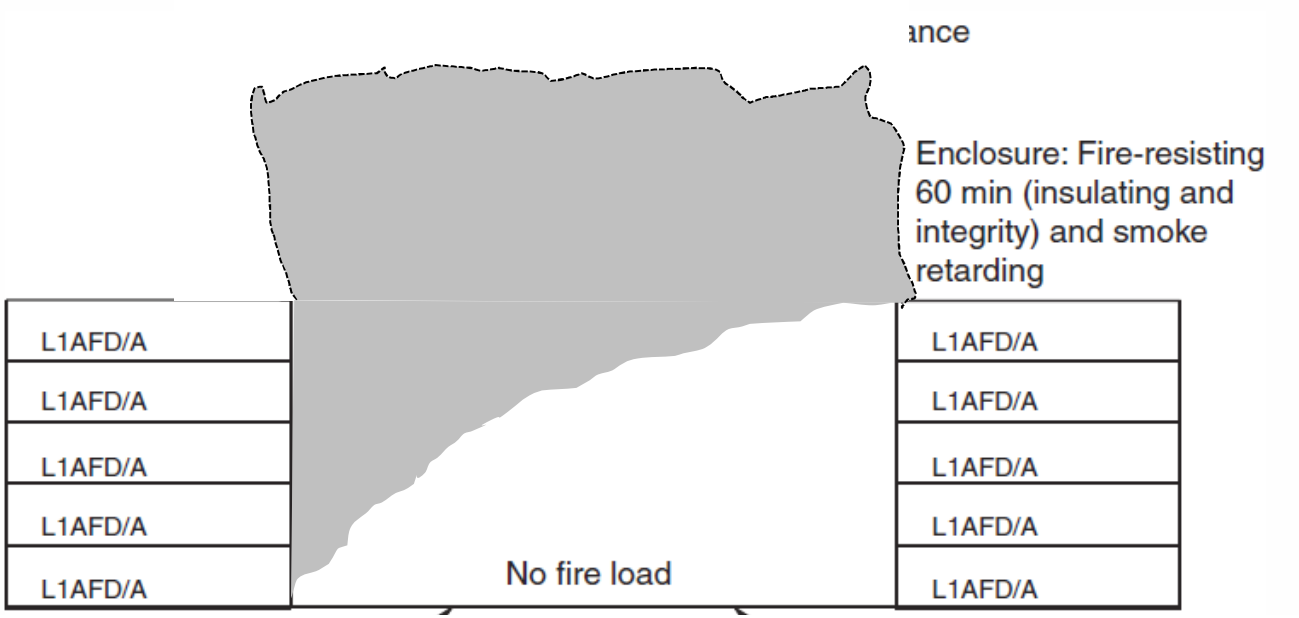
a) It is essential that there should be sufficient provision of make-up air, with a velocity into the atria base not exceeding 2 ms^{-1} for the proper functioning of any smoke ventilation, temperature control or smoke clearance system specified for the atrium.

d) The maximum velocity of air passing through an escape route should be 5 ms^{-1} and the smoke control system should be designed to avoid excessive pressures opposing the opening of escape doors located in the air flow [see **24.62**)].

HTM0503 Part M Atria



HTM0503 Part M Atria



Travel Distance / Escape Times

- What are appropriate travel distances and escape times

SHTM82- Void Detection

HTM82

- voids and roof spaces of any depth which contain only:
  - (i) mineral insulated wiring or wiring laid on metal trays or in metal conduits; and/or
  - (ii) non-combustible pipes and ductwork.

SHTM82

- voids and roof spaces which contain only:
  - (i) mineral insulated wiring or wiring laid on metal trays or in metal conduits; and/or
  - (ii) metal pipes or plastic pipes used for water supply or drainage; and/or
  - (iii) non-combustible ductwork.

HTM05-03 Part D
Commercial Enterprises

Queens Park Hospital Blackburn

- Sprinklers;
- smoke extract;
- fire enclosure of unit;
- compartmentation of commercial area;
- a smoke control system to maintain a clear layer 1m above head-height on circulation routes;
- ventilated lobbies between the commercial area and any surrounding in-patient departments.

HTM05-03 Part D
Commercial Enterprises

- **Commercial enterprise**
  Any undertaking established on hospital premises or within part of a building forming a hospital to which persons, including members of the public, may resort for the purposes of trading or business, whether such transactions are for gain or not, and whether the undertaking forms the whole or part of a private venture or a healthcare organisation's activity;

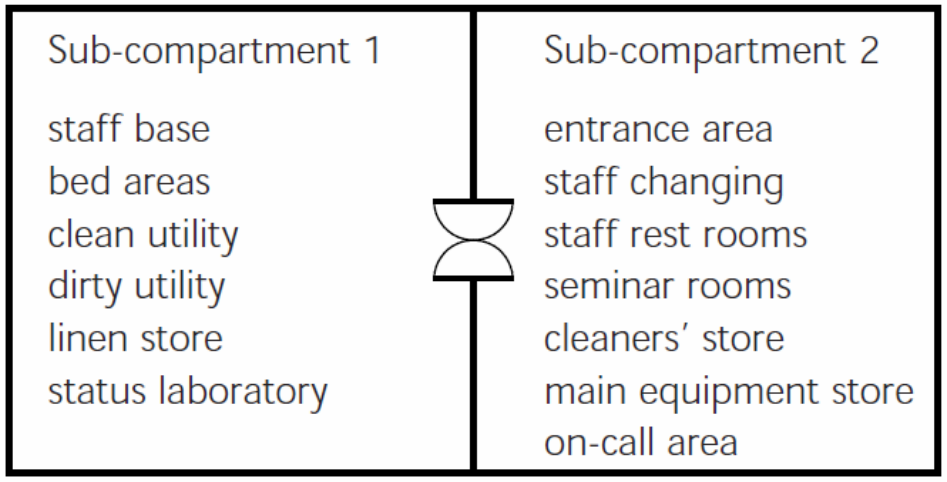
Technical Handbook 2009

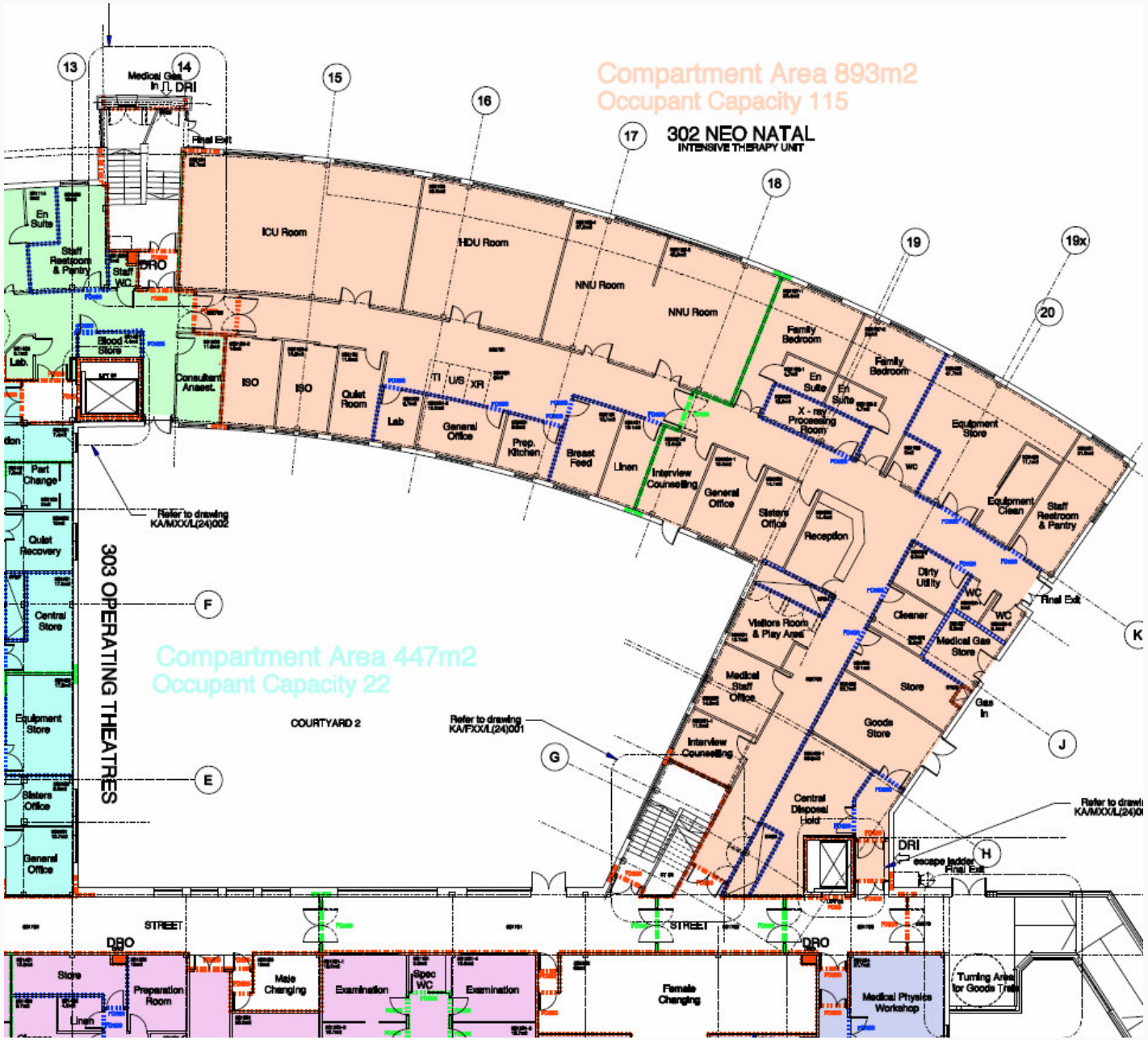
SCOTTISH BUILDING STANDARDS

Section 2.B.1:

Intensive therapy units

Every intensive therapy unit should be divided into at least 2 *sub-compartments* by *sub-compartment walls* with short fire resistance duration.




Compartment Area 893m2
Occupant Capacity 115
302 NEO NATAL
INTENSIVE THERAPY UNIT
Compartment Area 447m2
Occupant Capacity 22
303 OPERATING THEATRES
COURTYARD 2
ICU Room
HDU Room
NNU Room
NNU Room
Family Bedroom
Family Bedroom
Equipment Store
Staff Restroom & Pantry
Equipment Clean
Reception
Sisters Office
General Office
Interview Counselling
Breast Feed
Prep. Kitchen
General Office
Lab
Quiet Room
ISO
ISO
Consultant Anaest.
Blood Store
Lab.
Staff WC
DRO
En Suite
Staff Restroom & Pantry
Part Change
Quiet Recovery
Central Store
Equipment Store
Sisters Office
General Office
Refer to drawing KA/MXX/L(24)002
Refer to drawing KA/FXX/L(24)001
Visitors Room & Play Area
Medical Staff Office
Interview Counselling
Goods Store
Store
Medical Gas Store
Cleaner
Dirty Utility
Central Disposal Hold
Gas In
Final Exit
DRI
escape ladder
Final Exit
STREET
DBO
DRO
Store
Preparation Room
Linen
Male Changing
Examination
Spec WC
Examination
Female Changing
Medical Physics Workshop
Turning Area for Goods Trolley
13
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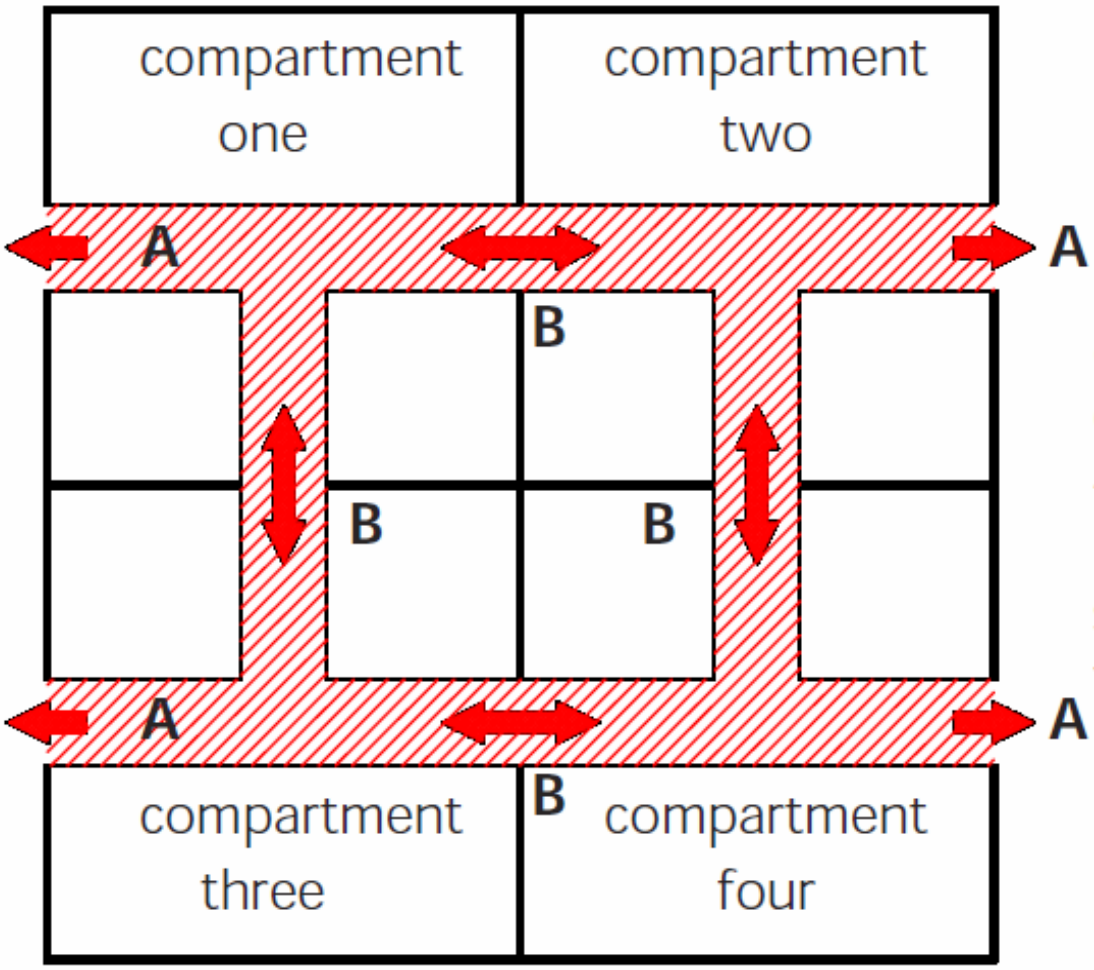
HTM81

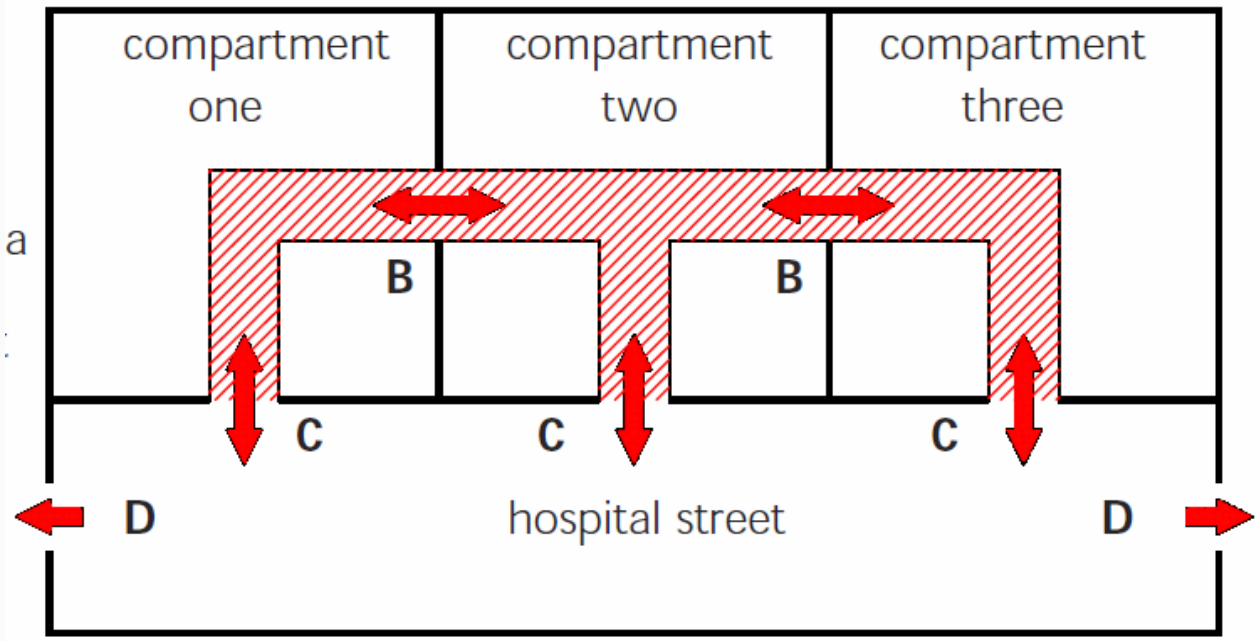


Exit A – a stairway

Exit B – to an adjoining compartment

HTM81

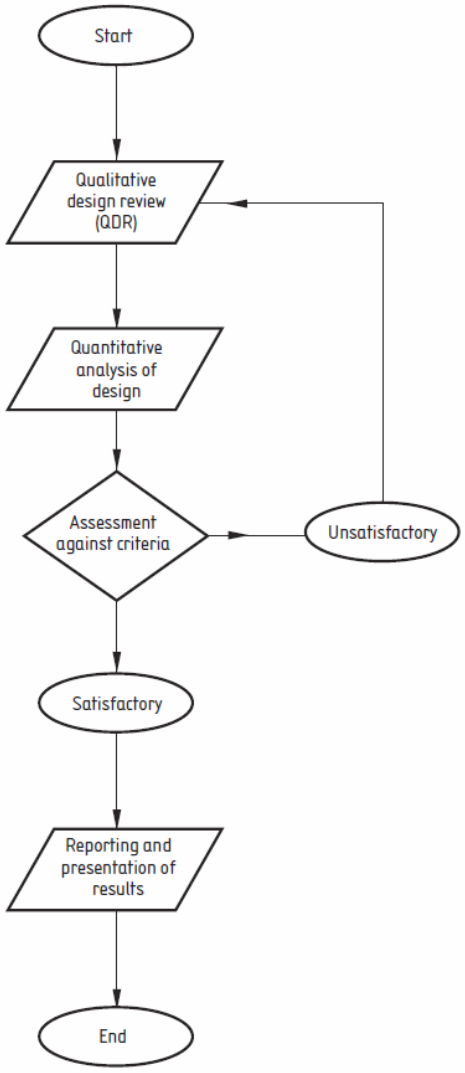
minimum of two exits required as indicated below

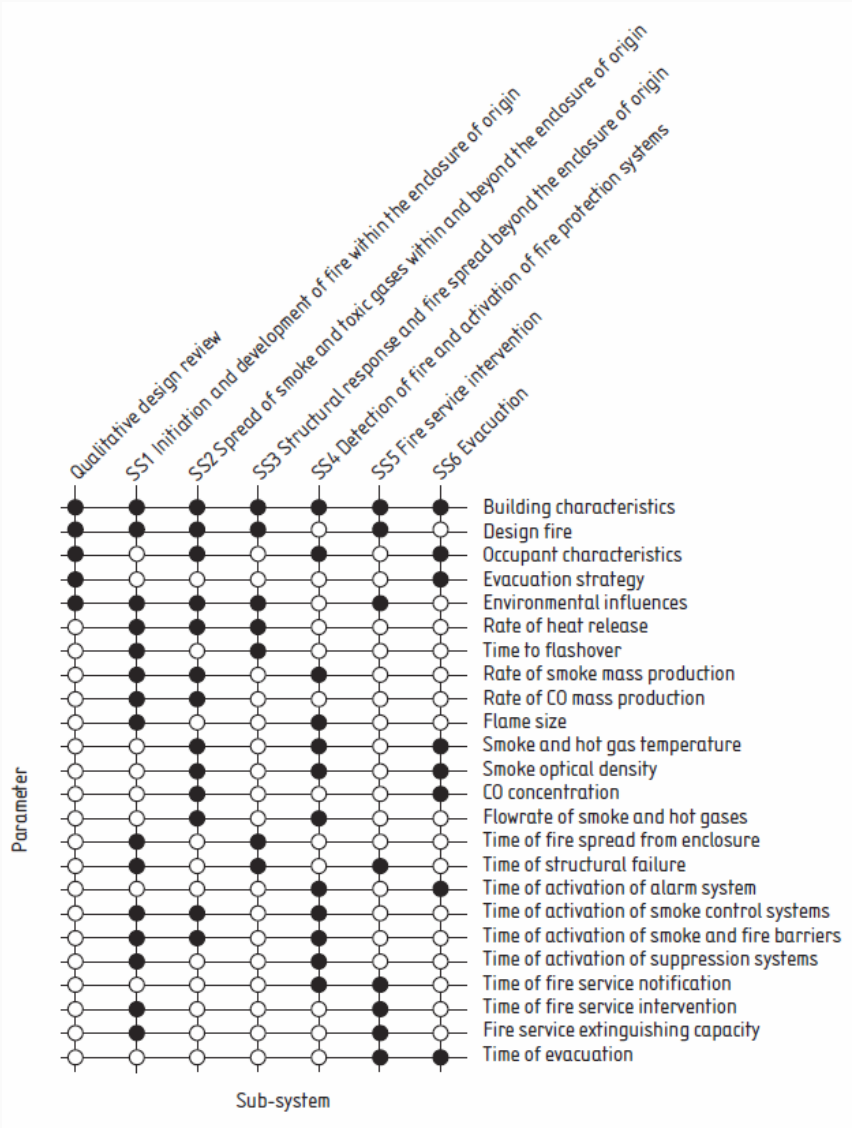


area of hospital street may be less than 500 m^2

Exit B – to an adjoining compartment
Exit C – to the hospital street
Exit D – a stairway

BS 7974


Start
Qualitative design review (QDR)
Quantitative analysis of design
Assessment against criteria
Unsatisfactory
Satisfactory
Reporting and presentation of results
End


Qualitative design review
SS1 Initiation and development of fire within the enclosure of origin
SS2 Spread of smoke and toxic gases within and beyond the enclosure of origin
SS3 Structural response and fire spread beyond the enclosure of origin
SS4 Detection of fire and activation of fire protection systems
SS5 Fire service intervention
SS6 Evacuation
Building characteristics
Design fire
Occupant characteristics
Evacuation strategy
Environmental influences
Rate of heat release
Time to flashover
Rate of smoke mass production
Rate of CO mass production
Flame size
Smoke and hot gas temperature
Smoke optical density
CO concentration
Flowrate of smoke and hot gases
Time of fire spread from enclosure
Time of structural failure
Time of activation of alarm system
Time of activation of smoke control systems
Time of activation of smoke and fire barriers
Time of activation of suppression systems
Time of fire service notification
Time of fire service intervention
Fire service extinguishing capacity
Time of evacuation
Parameter
Sub-system

World-Class Excellence

New Stobhill Hospital

Glasgow

- World-Class
  - Guidance
  - Experience
  - Fire Engineering
  - Definition of Performance
  - Approvals Process