Fire Safety in Purpose-Built Blocks of Flats

National Guidance
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Why a New Guide?

- Impact of Fire Safety Order
- Limited guidance available
- Inconsistent enforcement
- Unsuitable fire risk assessments.
Scope

- Existing purpose-built flats
- Not a design guide
- Includes the flats as well as common parts.
Guidance will be applicable to flats if conversion was carried out in accordance with the then current Building Regulations.

Compartmentation will need to support a ‘stay put’ strategy.

If not, ‘LACoRS Guide’ will be more appropriate.
Scope

- Includes sheltered housing and cluster flats
- Covers flats above commercial premises
- Does not cover HMOs
- Does not cover commercial parts or separate ancillary facilities.
Scope

- Includes owner-occupied, social housing and private rented flats
- Term residents covers all occupants
- Life safety not property protection
- Not operational fire-fighting
- Applicable to England only.
Approach

- General principles only
- Not prescriptive
- Provides benchmarks not rules
- Allows for alternative approaches.
Who is it Aimed At?

Those who manage and give advice on standards in purpose-built blocks of flats including:

- Private rented sector landlords
- Social housing providers
- Residents’ management companies
- ‘Right to manage’ companies
- Managing agents or facility managers
Who is it Aimed At?

- Enforcement officers in local housing authorities
- Enforcement officers in fire and rescue authorities
- Consultants and contractors carrying out fire risk assessments.
Relationship with Other Guidance

- DCLG Sleeping Accommodation Guide
- LACoRS Guide
Relationship with Other Guidance

- Building Regulations Approved Document B
- British Standard 5588 Part 1
- British Standard 9991:2011
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Part A: Safe as Houses? Fire in flats and their impact
Relative Risk

- Proportion of People Living in Flats: 10
- Proportion of Domestic Fire Deaths in Flats: 23
- Proportion of Dwelling Fires in Flats: 25
High rise = high risk?
No greater likelihood of a fatality in a high-rise block than low-rise block
Bungalow more likely to result in a fatality than in high-rise block

Risk?
The risk is in the dwelling not the building

Stay Put policy?
In 2009/10, over 8,000 fires in blocks of flats – only 22 fires required evacuation of 5 or more people by Fire and Rescue Service.
Part B: Fire Safety – How blocks of flats differ from other residences
DESIGN PRINCIPLES

PURPOSE BUILT FLATS AND SHELTERED ACCOMMODATION
Evacuation Strategy

• No requirement for simultaneous evacuation of purpose-built blocks

• ‘Stay put policy’ is different from other buildings

• Residents in flat of origin evacuate and call the Fire Service - all other residents safe to remain in their flats

• Fire and Rescue Service attendance is a factor?
Disabled Evacuation

- Evacuation of disabled residents
- Who is responsible?
- ‘Stay Put’ policy
- Personal Emergency Evacuation Plans?
- Information for Fire and Rescue Service?
Part C:
The law governing fire safety in blocks of flats
Fire Safety Legislation

Legislation applicable to existing flats:

- Regulatory Reform (Fire Safety) Order 2005
- Housing Act 2004
- Building Regulations 2010 (Material Alteration)
Building Regulations

- Need to consider material alterations within flats
- Classic contraventions are internal doors and flat entrance doors
- Powers to require rectification exist for only 12 months
- Regularisation possible.
PREMISES

FIRE SAFETY DUTIES

RESPONSIBLE PERSON

RISK ASSESSMENT

RELEVANT PERSONS

SUITABLE SUFICIENT

GENERAL FIRE PRECAUTIONS
Premises

- Applies to common parts only up to and including flat entrance doors
- Plant rooms, store rooms etc
- Flats are classed as domestic premises and are outside the scope of the Order.
Responsible Person – Article 3

- The Employer
- Person having control of premises includes a person who, by virtue of a contract or tenancy, has an obligation of any extent in relation to
  - Maintenance or repair of premises
  - Maintenance or repair of anything in or on the premises
  - The safety of the premises.
Responsible Person

- Freeholder
- Social and Private Landlords
- Residential Management Company
- Right to Manage Company
- Managing Agent
- If workplace, the Employer
Other Persons Having Control Article 5(3)

• A Wide Range of People with duties under the Order

• Definition Depends on Contracts

• Managing Agent may be RP or may be Other Person

• Contractors - Fire Risk Assessors
Relevant Persons

- Any person who is, or may be, lawfully on the premises
- Any person in the immediate vicinity of the premises and who is at risk from a fire on the premises
- Residents – Visitors – Contractors
- Not fire-fighters on operational duties
The Responsible Person must make a suitable and sufficient assessment of the risks to which relevant persons are exposed for the purpose of identifying the general fire precautions needed to comply with the Order.
General Fire Precautions

- Measures to reduce risk of fire and fire spread
- Means of escape
- Measures for securing that means of escape can be safely and effectively used
- Means for fighting fires
- Means for detecting and giving warning
- Action to be taken in event of fire – training – instruction – procedures.
Risk Assessment

Must record prescribed information if:

- 5 or more employed - Licence applies
- Alterations Notice is in force

Prescribed Information includes:

- Significant findings – measures taken – measures that will be taken (Action Plan) – Any group of relevant persons especially at risk (disabled/vulnerable).
Housing Act 2004

- Housing Health and Safety Rating System

- One of the 29 hazards covered by the HHSRS is fire

- The system is risk based and uses a formula to generate a numerical score which determines the action taken.
Housing Act 2004

- HHSRS is applied to individual dwellings and the common escape routes used by the residents of that dwelling
- Overlap in legislation between the Housing Act and the Fire Safety Order
- Potential for overlap in enforcement
- Useful for enforcement of measures within flats (internal doors, ventilation ducts).
Enforcement

- The Fire Safety Order generally enforced by fire and rescue authorities
- The Housing Act (HHSRS) enforced by local authorities
- Enforcement Protocol.
Fire Safety Order:
- Notice of Deficiencies – Action Plan
- Enforcement Notice – Prohibition Notice
- Alterations Notice.

The Housing Act:
- Improvement Notice – Prohibition Order
- Emergency remedial action.

Building Regulations:
- Rectify unauthorised material alterations
- Regularisation of unauthorised work.
Private Leasehold Flats

- Legal implications:
  - The freehold company may have limited rights of entry and no powers to enforce in leasehold flats
  - In many cases the flat entrance doors will belong to the leaseholder
  - May have to consider action against individual leaseholders.
Part D:

Fire Risk Assessment
Popular Misconceptions

- FRA carried out at design stage
- FRA is carried out as snagging exercise
- FRA needs to be carried out by consultants
- FRA needs to identify all latent defects.
5 STEP APPROACH – DCLG GUIDES

Identify Fire Hazards

Identify People at Risk

Review

Record Plan Inform Instruct Train

Evaluate Remove Reduce Protect from Risk
PAS 79 APPROACH

1. Identify hazards & controls
2. Review
3. Assess management
4. Formulate action plan
5. Assess fire risk
6. Likely consequences of fire
7. Determine fire protection measures
8. Assess likelihood of fire
9. Relevant Information

PAS 79 (Nine Steps)
Fire Risk Assessment – 4 Types

- **Type 1** – Common parts only (non-destructive) survey to satisfy FSO

- **Type 2** – Common parts only (destructive) survey if there are concerns over structural deficiencies and fire spread beyond flat of origin into common areas.
Fire Risk Assessment – 4 Types

- **Type 3** – Common parts and flats (non-destructive) survey that goes beyond scope of FSO

- **Type 4** – Common parts and flats (destructive) survey that goes beyond scope of FSO if there are concerns over fire spread.
COMPETENCE

- Discussed in ACOP under management regulations
- Competence means having sufficient training and experience or knowledge and other qualities
- A competent person in employer’s employment is preferred
- Employer involvement is necessary
- Nomination of others does not absolve employer of responsibility
- External services will be advisory only

(cont.)
• Competence does not necessarily depend on particular skills or qualifications

• Simple situations may require only:
  - An understanding of relevant current best practice
  - An awareness of the limitations of own experience and knowledge
  - Willingness and ability to supplement experience/knowledge, when necessary, by external advice
COMPETENCE

- NEW COMPETENCY CRITERIA FOR FIRE RISK ASSESSORS
- THIRD PARTY CERTIFICATION
- BAFE SCHEME SP205
- UKAS ACCREDITATION
Part E: Managing Fire Risk – Preventing Fires

Fire Hazards
Fire Hazards

Smoking:
- Policy
- Controls
- Signs

Arson:
- Secure Boundaries
- Access Control
- Security CCTV
- External Housekeeping
Fire Hazards

Electrics:
- Good Practices – IET Regulations
- Competent Contractors
- Inspection and Testing fixed installations

Gas:
- Gas Safe Regulations
- Inspection and Testing

Meters and services in stairways
- Generally not a significant risk.
Fire Hazards

Heating and Ventilation Systems:
- Regular maintenance and servicing
- Fuel cut off devices

Lightning:
- BS EN 62305 provides advice
- If fitted regular inspection and testing

Contractors:
- Control of works on site
- Policy – permits to work etc.
Housekeeping

Storage in common areas:

- Refuse
- Recycling
- Prams, bikes

Storage in plant, boiler rooms and service riser cupboards.
Housekeeping

Two alternatives discussed:

- Zero tolerance
- Managed use
Zero Tolerance

- Simple to adopt
- No ambiguity
- Easier to police
- Not risk proportionate
- Penalises those who could manage common parts
- Denies chance to improve living environment.
Managed Use

- Makes block ‘homely’
- Benefits elderly and disabled people
- Removes need for communal stores
- Can be risk specific
- More difficult to adopt
- Scope for misunderstanding
- More difficult to ‘police’.
Housekeeping

Bicycles, Prams etc:
- Good management – security
- Should not pose an obstruction

Mobility Scooters:
- Risk assess in common areas
- Need good management – security
- No charging in common areas.
Part F: Managing Fire Risk – Protection

Fire Safety Measures
Benchmark Standards

- Not reasonable or risk proportionate to apply current standards
- Need to consider and review original design against current benchmark (History)
- Risk assess the need to seek improvements for the safety of residents.
Assessment of Existing Buildings

- **Do building fire precautions meet current standards?**
  - **NO**
  - **YES**

- **Do fire precautions meet standards at time of construction?**
  - **NO**
  - **YES**

- **Identify shortcomings in relation to current standards**

- **Do departures from current standards create significant risk?**
  - **(Fire Risk Assessment)**

- **Upgrade fire precautions**
  - **Prioritize requirements**

- **Identify shortcomings from that standard**

- **Have these been relaxed?**
  - **NO**
  - **YES**

- **Rectify shortcomings**

- **Are there still shortcomings from current standards?**
  - **NO**
  - **YES**

Adequate fire protection
Adequate compartmentation is a basic requirement in all blocks of flats.

Fire separation between flats – between flats and the common parts – between common parts and ancillary accommodation.

Standards have changed over the years – the standard prior to the 1960’s will be different to that of today.
In new purpose-built flats the following should be constructed as compartment floors and walls:

- Every floor between storeys
- Every wall separating a flat from any other part of a building
- Every wall separating a refuse storage chamber
- 60 minutes fire resistance (small converted 30 min)
- Blocks of flats over 30m in height - automatic sprinkler system in the flats.
In principle the risk increase with the height, size and number of flats in a block:

- In 2 to 5 storey blocks – with a limited number of flats - it might be possible to accept 30 minutes fire resistance within the overall risk assessment.

- 6 Storey and above – should be 60 minutes.
Where adequate fire separation can not be met or readily achieved by upgrading, compensatory measures may need to be considered:

- Improving existing MOE
- Improving fire protection to escape routes
- Provision of AFD
- Provision of sprinklers.
The potential for fire spread in both the common parts and within flats should be considered.

- Ventilation ducts, service risers, refuse chutes and flues.
- Fire Dampers - Shunt Ducts
- Fire stopping around services, pipes and cables where they pass through walls and floors.
- Enclosure of shafts or risers in fire resisting structure with fire doors.
Shunt Duct Arrangements

Diagram showing shunt extract ductwork with fire-resisting construction, extract grille with non-return shutter, and minimum values specified in mm.
Fire Spread
Fire Spread
Fire Spread
Means of Escape
Principles – Means of Escape

Considered in two parts:

• From flat of origin into common escape route

• Using common escape route to a place of safety.
Principles – Means of Escape

Escape from flat of origin (not part of Fire Safety Order):

- Safety of residents in their own flats
- Internal flat layout – means of escape
- Provision of smoke/heat alarms.
Common escape routes:

- Safety of residents outside their own flats
- Use of common stairs/balconies
- Fire protection of escape routes.
OPTIONS:

- Flats with a floor not more than 4.5m above ground – similar to a house

- Flats with a floor more than 4.5m above ground:
  - Limited travel distance
  - Protected hall
  - Alternative exit/s.
Flat with Limited Travel

(a) Open-plan flat (bedsitter)

(b) Flat with separate habitable rooms
Flat with Protected Hall

Diagram showing a hallway with a maximum length of 9 metres and a bathroom.
Flat with Hall & Alternative Exit

(a) Flat where all habitable rooms have direct access to an entrance hall
Flat with Alternative Exit
• Most flat designs incorporate limited travel distance or alternative exits

• Protected halls and lobbies with self-closing doors within the flats are seen as an obstacle to older residents.
Common Issues:

- Removal of fire resisting walls
- Fire doors removed or changed
- Self-closing devices removed/disabled
- Bedrooms become inner rooms
- Alternative exits removed or blocked
- Alternative exit via shared balcony
- Excess travel distance
Means of Escape in the Common Parts
Means of Escape

Two options available:

- Protected corridors or lobbies leading to a protected stairway and limit travel distance

- Provide independent alternative escape routes.
Protected Corridor or Lobby

- Corridor or lobby is a protected route with fire resisting walls and doors (includes flat entrance door)
- Stairway is enclosed in fire resisting construction
- Smoke control to protect stairway
- Restrict surface finishes in escape routes.
Single Stairway

- Small purpose built blocks
- Top floor not more than 11m above ground – no more than 3 storeys above ground storey.
- Protected lobby or corridor - limit travel distance (4.5m or 7.5m)
- If only 2 flats per floor - internal hall in flats provides protection to stairway.
Single Stairway

B. Lobby access flats

7.5m max.
More than One Stairway

Figure 9 – Flats served by more than one escape stairway

A. Corridor access without dead ends

30m max.

B. Corridor access with dead ends
The central door may be omitted if maximum travel distance is not more than 15m

7.5m max. 30m max.
Balcony Deck Approach

Figure 10 – Common escape routes in balcony/deck approach blocks

A. Multi-stair building

B. Single stair building

C. Single stair building with an alternative exit from every flat

Note 1: Either external closure 1 or external closure 2 should be fire resisting.
Means of Escape

- External Stairways
- Escape over flat roofs
- Basement stairs
- Stairs serving enclosed car parks, boiler rooms.
Security Locks – Access Systems

- Security locks on all exits should be easily openable without the use of a key

- Security gates and grilles

- Electronic security locks to final exits must fail safe and may require an override control
SHELTERED HOUSING

- Schemes vary in size, complexity and facilities provided
  - Some may have on-site staff, many don’t
- Extra care schemes
- Limitations of residents should be taken into account
MEANS OF ESCAPE

• Provide protected corridors or lobbies leading to a stairway

• Limit travel distance from flat entrance door to a stairway, lobby or corridor door

• Most residents should be capable of escape without outside assistance.
An elderly or disabled resident should not have to travel far in a corridor to reach a place of safety.

7.5 metre travel distance from each dwelling entrance door to a fire door giving access to:

- A protected stairway
- A protected lobby
- A door subdividing a corridor.
TRAVEL DISTANCE

- Cross-corridor doors provide smoke control by limiting the length of the corridors.

- Corridors should be provided with some form of smoke ventilation.

- Travel distance in communal areas and community rooms should be relevant to risk.

- If provided, escape lifts should comply with BS 9999.
PROTECTED CORRIDORS

- Ancillary accommodation such as communal lounges and kitchens should be separated with 30 minutes fire resistance.
- Cupboards containing electric distribution equipment and meters, cleaners and store rooms should be separated with 30 minutes fire resistance.
- Boiler rooms and other high risk rooms should be 60 minutes fire resistance.
DISABLED EVACUATION

- Evacuation of disabled residents
- ‘Stay put’ policy
- Personal emergency evacuation plans
- Information box.
Smoke Control

- Smoke control design has changed over the years

- Current guidance is based on smoke containment to protect the common stairways – smoke dispersal was used in earlier design guides

- Natural or mechanical ventilation of lobbies or corridors is required where they adjoin stairways
Smoke Control

• Natural smoke ventilation in lobby/corridor can be:
  • Permanently open (PV) – Manually openable (OV) – Automatic opening (AOV)

• Current guidance – for single stairway is AOV – multiple stairways is OV’s

• Mechanical ventilation includes pressurisation systems.
Smoke Control

- Protected stairways also require some means to ventilate smoke that may enter the stairway.

- Minimum 1 metre square vent at head of stairway.

- In multiple stairways this can be OV – in single stairway it should be AOV.
Blocks that Do Not Meet Current Design Benchmarks
Common Issues

- Blocks with increased travel distance
- Flats that open direct onto stairways
- Blocks with unsatisfactory smoke control
- Fire resisting doors that do not meet current standards.
Fire Resisting Doors

Options based on risk assessment:

Accept original (notional) fire door

Upgrade the door (upgraded) strips and seals

Replace with FD30S door and frame.
Increased Travel Distance

Single Direction Escape:

Unventilated lobby/corridor
• 4.5m – 6m accepted
• Increases to 7.5m – upgraded doors
• Beyond 7.5 should be ventilated

Ventilated lobby/corridor
• 7.5m to 10m accepted
• 10m to 15m upgraded doors, PV or AOV
• Beyond 15m FD30S doors, AOV
Increased Travel Distance

Escape in two directions lobby or corridor:

- Increase from 30m to 40m accepted
- TD in excess of 40m – replacement FD30S doors, AOV or detection - specialist advice.
Flats Opening Directly onto Stairway

Up to 4 storeys:
- Notional 30 minute doors, OV or windows

5 to 6 storeys:
- Upgraded 30 minute doors, OV windows, internal hall with FR doors to kitchen/lounge

Over 6 storeys:
- FD30S doors, AOV, Internal protected hall, detection.
Unsatisfactory Smoke Control

- Single stair: flats opening directly on to stairs.
  Up to 6 storeys OV, over 6 storeys AOV/PV.

- Single stair: lobby/corridor; up to 6 storeys OV,
  over 6 storeys AOV or PV in lobby/corridor.

- Flats designed on smoke dispersal: consider
  cross corridor doors and OV or PV in corridor.
Options based on risk assessment:

Accept original (notional) fire door.

Upgrade the door (upgraded) strips and seals.

Replace with FD30S door and frame.
Fire Resisting Doors

- Doors must be good fit in frame – 3/4mm gaps
- In good condition no openings (cables, locks)
- Fitted with self-closing device – rising butt hinges should be changed.
Other issues:

- Glazing – in and over the door
- Letterbox
- Spy hole
- Cat flap.
Single stair with doors from flats opening directly onto stairs:

- 4 storeys – Notional 30 minute doors
- 5/6 storeys – Upgraded 30 minute doors
- Over 6 storeys – FD30S doors and frames.
Multiple stairways, lobby/corridor:

- Satisfactory TD, notional 30 minute doors should be acceptable
- Increased TD or unsatisfactory smoke control upgraded 30 minute doors or replacement FD30S and frames.
External balcony or deck access single stairway (dead ends):

- Notional door FD 20 (SC still required)
- Any glazing over 1.1m not required to be FR, FR letterbox not essential

External balcony or deck access multiple stairways or alternative MOE:

- Flat entrance doors not required to be FR.
Refuse and Chute Rooms

Current standard:

- Ideally entered direct from open air, 60 minute FR, not in protected stairways or lobbies

Existing blocks:

- Refuse/bin rooms in stairway or corridor enclose in FR and provide PV
- Refuse chute in stairway or corridor, enclose in FR, provide shutter in bin room and/or sprinklers in bin room.
FIRE SAFETY SIGNS AND NOTICES

Fire door keep shut
Signs and Notices

- Generally no requirement for ‘FIRE EXIT’ signs in single staircase blocks
- ‘FIRE EXIT’ signs required to indicate alternative routes
- Signs on doors
- General fire safety notices.
EMERGENCY ESCAPE LIGHTING
EMERGENCY ESCAPE LIGHTING

- Not required in two storey blocks with good borrowed lighting
- Generally required in the common parts, stairs and corridors of other blocks
- Plant rooms and service rooms
- Required in common areas, stairs, corridors and communal rooms in sheltered accommodation.
FIRE DETECTION AND ALARM SYSTEMS
**TYPES OF SYSTEM**

- **BS 5839: Part 6:2004**
  - British Standard
  - Fire detection and alarm systems for buildings
  - Part 6.

- **BS 5839 - 1**
  - Most commercial premises and workplaces

- **BS 5839: Part 1:2012**
  - British Standard
  - Fire detection and alarm systems for buildings
  - Part 1.

- **BS 5839 - 6**
  - Small sleeping risk premises, HMO’s & domestic premises
CATEGORIES OF SYSTEM

BS 5839 -1

M – manual call points & sounders

L1 – All areas covered

L2 – Escape routes, risk rooms & specific areas

L3 – Escape routes, risk rooms

L4 – Escape routes only

L5 – Specific areas

P1 – Property protection

P2 – Property protection
CATEGORIES OF SYSTEM

BS 5839 -6

LD1

LD2

LD3

GRADES OF SYSTEM

A – Same as BS 5839-1

B – Rarely used

C – Linked to intruder alarm

D – Mains + battery smoke alarm

E – Mains smoke alarm

F – Battery smoke alarm
FIRE DETECTION AND ALARM

• No requirement for a common fire detection and alarm system in general needs purpose-built blocks
• Against the principles of ‘stay put’
• May be required for automatic vents.
Means of Giving Warning in Individual Flats

- Individual flats should be provided with a minimum of a Grade D LD3 system with smoke alarms in the circulation spaces in accordance with BS5839-6.

- There may be a need to upgrade to an LD1 or LD2 system with additional smoke and heat alarms in individual flats as compensation or higher risk groups.

- All alarms should be linked
OBJECTIVES OF FIRE ALARM SYSTEM IN SHELTERED HOUSING

- A) ALERT RESIDENTS TO FIRE IN THEIR OWN FLAT
- B) ALERT F&RS (BUT MINIMIZE FALSE ALARMS)
- C) EARLY WARNING OF A FIRE IN COMMUNAL FACILITIES
SHELTERED ACCOMMODATION

- If no common facilities, no requirement for a common alarm
- If there are common facilities, L4 or L5 system to cover common areas linked to a call centre
- No sounders in flats, not designed for simultaneous evacuation
- Early call facility to Fire & Rescue Service.
SHELTERED ACCOMMODATION

Common alarm should only sound in:

• Common escape routes
• Warden accommodation
• Communal areas or ancillary accommodation

It should not sound in flats – stay put
SHELTERED ACCOMMODATION

- Individual smoke and heat alarms within each flat should be linked
- Smoke alarm in hall, lounge, and smoke alarm or sounder in bedroom
- Heat alarm in kitchen
- Generally these would be linked to a social alarm centre with call back facilities and provision to pass call onto Fire and Rescue Service.
Fire Extinguishers

• Generally no requirement for provision of fire extinguishers in common parts

• Extinguishers required in plant and service rooms

• Required in ancillary accommodation in sheltered accommodation, such as kitchens and laundry rooms.
Fire-Fighting Facilities

Dry and wet rising mains, fire fighting lifts.

No requirement to provide or upgrade facilities in existing blocks.

However, there is a requirement to maintain what is provided.
Part G: Managing Fire Safety

- Person responsible to manage fire safety
- Access to competent advice
- Inspections/visits by staff
- Communication with residents
- Fire safety arrangements
- Testing and maintenance.
Engaging with residents:

- Fire prevention (inc security)
- Action in the event of fire
- What ‘stay put’ means
- Policy on common parts
- Pitfalls of alterations
- How to test smoke alarms
- Use of Residents’ Handbooks.