

# LIFTEX 2019

## Lifts for evacuation use

Key considerations for building design and  
modernisation planning

15<sup>th</sup> May 2019

Presented by Matt Ryan

(Associate Director @ The Fire Surgery Ltd, CEng)

# Agenda


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- Who am I?
- Fire safety design and lifts
- Evacuation lifts and BS9999
- New and existing buildings
- New approaches – “lifts for evacuation use”
- Challenges – the fire safety and lift industries
- Summary
- Q&A



# Who am I? – The Fire Surgery

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THE FIRE SURGERY

### The Fire Surgery. The Fire and Risk consultancy of choice.

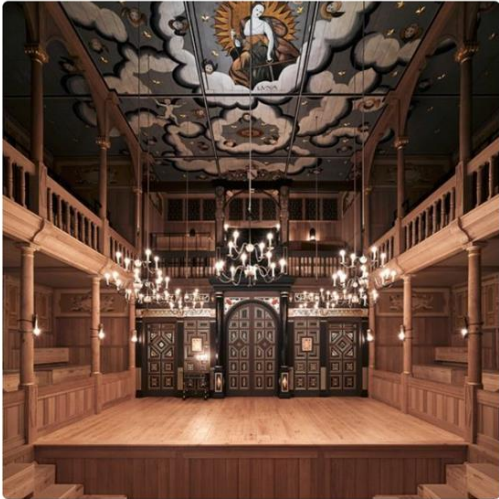
If you are planning a new building or an alteration to an existing building, you will need a fire strategy for your design. If it's unusual, it will benefit from fire engineering.

The Fire Surgery is a truly independent fire engineering design and risk consultancy based in London. We specialise in solving fire safety challenges for all manner of building types and uses; ranging from private residential design to significant mixed use developments.

We have a robust track record of securing Building Regulations approval on unusual or unique projects. We have no commercial conflicts of interest with any other company or organisation involved in the fire safety design, build, and operational occupancy process. Our fire engineers are highly qualified and experienced, and have or are striving to achieve 'Chartered' status with the UK Engineering Council. We actively contribute to the wider fire safety engineering community, and participate on national standards and industry best practice committees (including fire engineering related British Standards, the Smoke Control Association, Institution of Fire Engineers Special Interest Groups, and CIBSE Guide E).

The Fire Surgery Ltd is a proud member of the Fire Industry Association (FIA), and fully supports their guidance on how to procure the right fire engineering services for a project by ensuring competence and independence; further details relating to this guidance can be obtained from the [FIA website](#).


The Fire Surgery will ensure a smooth route through your approvals process be that Building Regulations 2010 for new and refurbished buildings or the Regulatory Reform (Fire Safety) Order 2005 for fire safety in occupied premises.

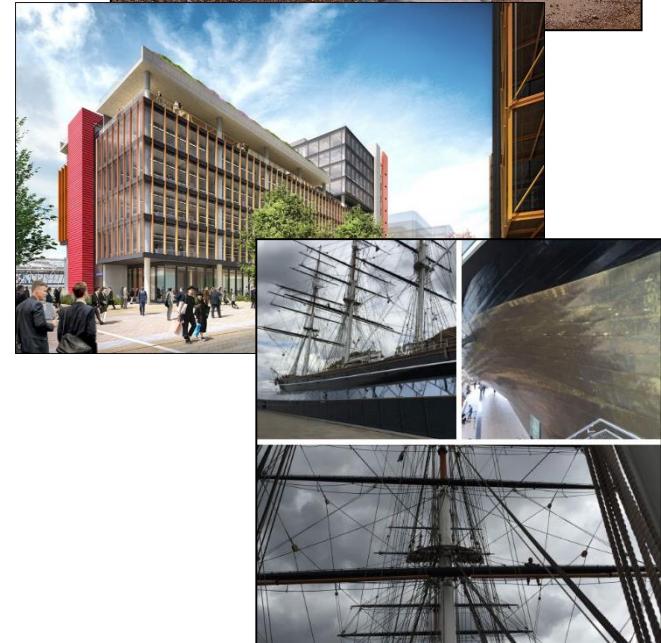
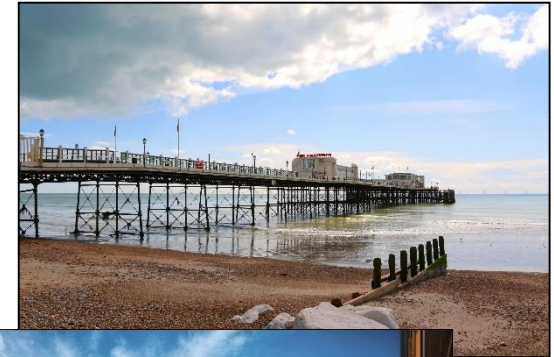


### Professional Affiliations

The Fire Surgery is a proud member of Association of British Theatre

### RECENT NEWS

 Andy presents at SFPE - Developing a Fire Strategy for unusual buildings. ...

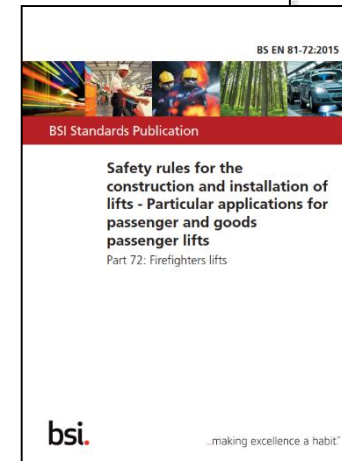
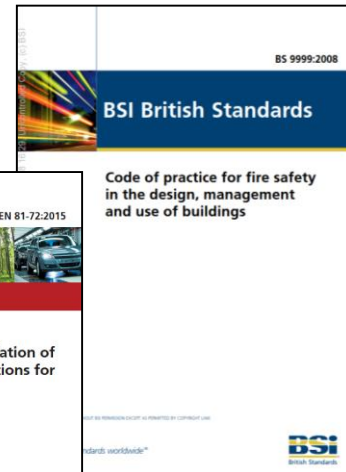


Ref: [www.thefiresurgery.com](http://www.thefiresurgery.com)

References: Worthing Pier – Adur & Worthing Councils, IQL S9 – Rogers Stirk Harbour + Partners, The Cutty Sark – The Fire Surgery Ltd

# Fire safety design and lifts

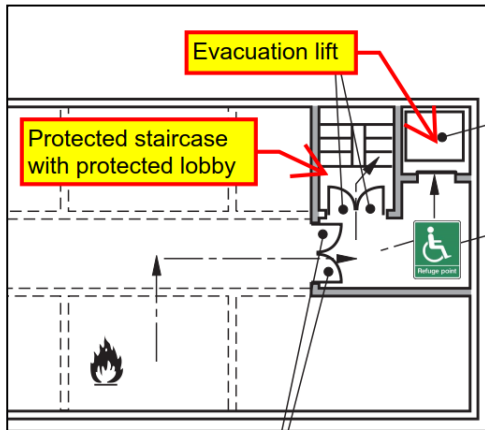
- Common perception – do not use lifts in the event of fire (passenger lifts)
- Improved technology and resilience – lifts becoming more relied upon for fire safety , primarily in high rise buildings but also in some low rise buildings.
- Evacuation lifts and fire fighting lifts; form part of a package of measures implemented in a building (fire strategy).
- Key standards: **BS9999: 2017**, BS EN 81-72, BS EN 81-70, BS8899
- Worth remembering: fire safety design guidance, fire service operational procedures, and technology has significantly changed over the last 30 to 40 years. Currently undergoing an intense period of review due to recent events.



# Evacuation lifts



Source: <http://www.veriserv.co.uk/fire/disabled-refuge-installation-maintenance/>



BS9999: 2017 Annex G

## 3.72.2 evacuation lift

lift used as part of the evacuation sequence for persons with disability and persons requiring assistance, which has appropriate structural, electrical and fire protection and is capable of being taken under control by a trained and authorized person



Protected and resilient installation; designed to be used for evacuation of people in the event of an emergency (fire resisting enclosures, dual power supplies, control logic/ functionality, etc)



Needs to be operated and managed by an authorised person(s), such as a trained member of staff (accounted for in fire risk assessment/ emergency plan)



Traditionally a key feature for buildings occupied by vulnerable groups (e.g. hospitals, care homes).



Key part of emergency plan in conjunction with refuge areas.



Firefighting lifts can be used for evacuation purposes in some cases.

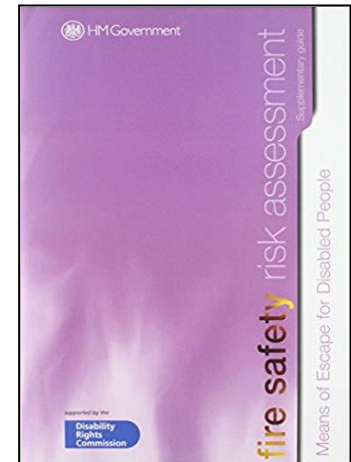
# Changing trends?

- Ageing population and associated challenges; more people potentially need assistance to evacuate a building in the event of an emergency.
- Where evacuation lifts are not provided, building operators/ managers need to implement more resource intensive procedures to help those requiring assistance to escape (e.g. carry-down procedures, specialist equipment, trained staff present at all relevant times, etc). Note: reliance should not be placed on the emergency services.
- We are designing buildings to be more accessible; we must therefore ensure a similar level of egress provisions are provided. Lifts can provide an easier means to assist with this.
- Increased client awareness to the above issues; increased consideration and desire to try and incorporate evacuation lifts into building designs. More awareness of potential long-term and fire risk assessment issues.
- Relevant to both low and high rise buildings, new and existing buildings.
- Residential buildings? (no on site management presence)



Source:

<https://www.evacuationchairs.com.au/volunteers-carrying-wheelchair-down-stairs/>





# New buildings

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➤ Usually easier to incorporate evacuation lifts into the design in terms of space planning/ layouts, and M&E/ infrastructure. Can be integrated from the start.

➤ Usually easier to design and install as 'code compliant' (to BS9999, etc). The off-the-shelf evacuation lift package can be achieved.

➤ Usually a straightforward design – approvals – installation process.

➤ High profile example: the Shard, London (bespoke egress strategy)



Source: <https://www.visitlondon.com/things-to-do/place/23886030-view-from-the-shard>

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# Existing buildings

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- Refurbishments/ extensions.
- Restrictions (spatial, planning, heritage, etc)
- Standards and technology has evolved greatly in recent years; there can be massive difference between historic and modern standard lift installations
- Accommodation of new lifts, and/ or modernising existing lifts present significant challenges.
- Are existing lifts that were installed under older standards appropriate for modernisation? Are they still practical for upgrade/ use?
- Achieving full 'code compliance' may not be possible.
- Applicability of BS8899?





# BS9999: 2017

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Full BS9999: 2017 (BS EN 81-20, BS EN 81-70) evacuation lift compliance is the benchmark standard.



However, BS9999: 2017 also states:

## 45.9 Evacuation using lifts

A lift to be used for the evacuation of disabled people should usually be either an evacuation lift or a firefighters lift, and should be operated under the control of the fire safety manager or a delegated representative, or otherwise by someone trained and authorized in the use of the lift. Evacuation lifts should be provided, constructed and operated in accordance with Annex G.

A lift that is not explicitly designed for evacuation may be used for evacuation, provided that it provides the same functionality as an evacuation lift. If this is to be considered as an option then a suitable risk assessment should be undertaken to evaluate whether the lift meets the recommendations given in Annex G (see also 3.72.2).

In the risk assessment all the features of fire protection in a building should be taken into account.

*NOTE 1 For example, in a building with automatic sprinklers and significant compartmentation or smoke control, a risk assessment might conclude that a non-evacuation lift would be usable in the initial stages of a fire. Likewise, in a very large building, a non-evacuation lift which is remote from a fire in the initial stage might also be usable.*

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# BS9999: 2017

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- ➡ Therefore, subject to a successful risk assessment being completed (BS9999 provides further guidance), a lift that is not an 'evacuation lift' may be used for evacuation purposes. Can potentially apply to many building types.
  - ➡ Holistic approach; building fire strategy/ building fire risk assessment/ building emergency plan.
  - ➡ Subtle difference in terminology between 'evacuation lift' and 'lifts that can be used for evacuation purposes in the event of a fire'.
  - ➡ Currently there seems to be some misalignment between the fire and lift industries on this point in terms of the commissioning/ installation of lifts that are not evacuation lifts, but have been proposed to be used for evacuation purposes (e.g. lifts proposed to have a 'hybrid' of provisions and functionality).
  - ➡ More dialogue needed between lift and fire industries on this issue?
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# Evacuation lifts – different approaches?

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- 🏥 BS9999 guidance relies upon staff assistance to 'drive' the evacuation lift.
  - 🏥 What if trained staff are not present? (which is common in some building types)
  - 🏥 Potential for different approaches to be applied?
    - Self evacuation using an evacuation lift?
    - Remote assistance to 'drive' the evacuation lift?
  - 🏥 Holistic approach critical to integrate such an alternate approach into a building.
  - 🏥 Evacuation lift functionality, control logic, communications, etc need to be considered
  - 🏥 Compatibility between guidance documents? (fire and lift industries)
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# Alternate approach - example

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- ➕ Proposed new public assembly building, with external viewing platform – unstaffed.
  - ➕ ‘Code compliant’ evacuation lift can be provided but no staff to drive it
  - ➕ Proposal to not ground evacuation lift on fire alarm, provide ‘self evacuation’ function, remote communication link
  - ➕ Early stakeholder/ approver engagement
  - ➕ Risk assessment considered:
    - Protected and dual power supplies
    - Fire loading/ fire risk
    - Nature of the space and normal lift access/emergency egress scenarios
    - Link to site management office (24hrs)
    - Other protection measures present (sprinklers, etc)
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# Summary

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- Lifts for evacuation use are becoming increasingly important installations are part of fire strategies for both new and existing buildings
  - Modern evacuation lift design standards are reflecting this; lifts expected to be used in the event of fire are robust and resilient, and can be used with confidence when needed (and if maintained correctly!).
  - Existing building infrastructure and 'code compliance' does not always have to prevent a lift being used for evacuation purposes if the correct BS9999 risk assessed approach is adopted; pragmatic design solutions are achievable for some buildings, even if a lift cannot be deemed a code-compliant evacuation lift. However could there be better dialogue between the fire and lift industries to help facilitate this?
  - There appears to be an increasing need to consider how evacuation lifts can be applied in buildings where there may not be a permanent on-site staff presence.
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**Treating your fire safety concerns**

**[www.thefiresurgery.com](http://www.thefiresurgery.com)**

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