NHS National Services Scotland

NHSScotland 'Firecode'

Scottish Fire Practice Note 3
Version 3

Escape bed lifts

Health Facilities Scotland
Property and Capital Planning

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Contents

About this publication

This Scottish Fire Practice Note 3 (SFPN 3) Version 3, October 2010, updates and replaces the guidance that was previously issued in NHSScotland Firecode as SFPN 3 Version 2 December 1999. All previous guidance is superseded.

1. Introduction

1.1 This Scottish Fire Practice Note (SFPN) provides general technical guidance for the design and use of escape bed lifts in healthcare buildings. It also provides guidance on the management and organizational arrangements that need to be considered to ensure that escape lifts are used safely and effectively in case of fire.

1.2 It assumes that the structural fire protection and means of escape from the hospital, including the provision of escape lifts, is in accordance with the appropriate NHSScotland Firecode guidance, the 'Non Domestic Technical Handbook for compliance with the Building (Scotland) Regulations 2004', as amended, relevant British or European Standards and any other relevant guidance.

1.3 For the purpose of this SFPN, escape lifts are passenger lifts conforming to;

- the relevant parts of BS EN 81 and other related British and European standards;
- the guidance in this SFPN, and the additional information it contains to ensure that the lift can be safely and effectively used for evacuation.

1.4 The additional features required include a protected electrical power supply with protected standby power supply arrangements and special lift control and communication systems.

1.5 This guidance requires the provision of communication and control facilities that are not normally provided by lift suppliers, but are an essential component of the operational procedure when using the lift for evacuation.

1.6 The guidance requires the appointment of lift wardens to take control of the escape lifts in a fire emergency and supervise and assist the evacuation of occupants. Only members of staff who have received appropriate training may be assigned the role of lift wardens.

1.7 This guidance also incorporates issues related to the use of lifts as part of the evacuation strategy for disabled people in accordance with BS 9999: 2008.

2. Definitions

2.1 Terms used in Scottish Health Technical Memorandum (SHTM) 81 and in this document have the same meaning. The following additional terms are defined for the purpose of this SFPN.

- **car control station:** the push button in the car for the use of passengers;
- **dependent department:** a fire compartment on a storey that is not a ground storey;
- **emergency plan:** a predetermined plan of action to be taken in the event of a given emergency;
- **escape lift:** a passenger lift protected in accordance with the guidance in this SFPN, to enable it to be used to safely transport occupants to the ground or **exit storey,** or **reception floor** in the event of fire;
- **evacuation control point:** the point from which the evacuation of occupants using an escape lift is controlled;
- **evacuation control switch:** a switch to bring the escape lift under immediate evacuation service control;
- **evacuation service:** the operation of a selected escape lift under an agreed system of management and control for the evacuation of occupants in the case of fire;
- **exit storey:** the storey of a building from which suitable direct access to a place of safety outside the building is provided;
- **healthcare building:** a building used primarily for medical diagnosis, treatment or care;
- **healthcare premises:** a building, or part thereof, used primarily for medical diagnosis, treatment or care;
- **lift warden:** a person nominated to undertake duties in relation to the evacuation of occupants in case of fire by means of an escape bed lift installation. There are three types of lift warden each having separate duties, namely lift wardens (floor), lift wardens (control), and lift wardens (car). Their duties are explained in Section 3;
- **landing:** the lobby, or section of the hospital street, from which the lift is entered;
- **machine:** the unit, including the motor or pump which drives and stops the lift;
- **occupant:** staff, patient or visitor;
- **place of safety:** a place where persons are in no danger from fire;
- **reception floor:** the floor in the building to which the escape lift is taken to unload its occupants. There may be more than one reception floor at any

time and the decision as to which reception floor is appropriate will depend on a number of factors including the continued care of patients;

- **registered call:** a call made on a car control station or from a landing push button which is accepted by the lift control equipment. (Note that when a lift is operating under evacuation service, any attempted call on a landing push button is not registered.);
- **temporary waiting space:** a place of temporary safety within a building, protected by suitable means, to provide an area from which there is potential for further escape.

3. Considerations that will influence the provision of escape lifts.

Objectives

3.1 While escape lifts can provide an option for the vertical evacuation of occupants who are unable to use the escape stairs without assistance, those involved in the specification, design and provision of escape lifts should understand fully both the potential merits and the hazard implications of lift evacuation during a fire.

3.2 Those involved in the decision to provide escape lifts should set clear objectives that are realistic, robust and operationally practicable having regard to the escape strategy for the area the lift/s will serve.

3.3 It is unrealistic to believe, and wrong to assume, that the total evacuation of occupants from upper floors of multi-storey buildings can be achieved solely by the use of lifts. Therefore, sufficient escape stairs for the evacuation of all persons in the premises will always be necessary.

3.4 Escape lifts may provide an acceptable solution to a specific evacuation need, such as a requirement for additional vertical escape capacity or reducing evacuation time by providing an additional escape option. The objectives relating to the use of proposed escape lifts should be identified in the fire strategy so that there is no doubt as to the circumstances they are intended to address e.g. escape lift evacuation might be considered as the first choice for those patients for whom mattress evacuation would be likely to cause harm. The fire strategy provides the basis on which the fire procedures for using the lift(s) are based and developed.

3.5 While it is important to set clear objectives for any escape lift provision, it is equally important to ensure that such provision is fully integrated and consistent with the fire strategy for the building as a whole.

3.6 When considering the provision and design of escape lifts it is important also to consider the human resource, management and training implications in relation to their use. The use of escape lifts requires close supervision and a strict operational procedure, and staff delegated to supervise and control the use of a lift to evacuate persons cannot in any circumstances be re-directed to other tasks when the lift is in use for that purpose. A significant number of staff with important key roles is required i.e. on each floor served by the lift, in the lift car(s), at the lift reception floor and additionally to assist and accompany patients. Successful operation of the lift in an emergency will be dependent on the effective co-ordinated action of the relevant staff assigned to these duties.

Fire safety strategies incorporating escape lifts

3.7 Having set the objectives for the provision of escape lifts, a detailed strategy for their use should be developed. The way in which escape lifts are to be used in practice will greatly influence their design and the development of building fire precautions, as well as the infrastructure necessary for their use.

3.8 Because each healthcare building is unique in design, a generic strategy for the use of escape lifts cannot be provided. Indeed, the diversity of circumstances within any one building may result in different strategies being adopted for each floor or occupant group that may require escape lift evacuation. Each application of an escape lift solution should be considered having regard to the particular escape needs it is intended to address.

3.9 This degree of diversity and flexibility in design solution and subsequent operation means that each strategy that involves the use of escape lifts as a component of the evacuation solution will be unique to the area/s of the building it serves.

3.9 The guidance for the development of strategies in this document will apply primarily to new buildings or extensive retrofits in which escape lift provision is being considered as part of the evacuation strategy. However, the guidance provided in this SHTM should also be considered during the periodic review of fire policies and procedures in those premises where there is existing escape lift provision.

3.10 In any case, where escape lifts are provided, the evacuation strategy must recognise and take into account that escape lift evacuation may not be available, for any reason, and include appropriate and sufficient contingency arrangements for that eventuality.

3.11 In any case, where structural changes, changes of use or change in the management or supervisory regime are being considered in an area where escape lifts are a component of the evacuation procedures, the escape strategy and operational procedures for using the escape lifts should be reviewed and revised, in particular, in so far as they may be affected by the proposed changes.

Requirements

3.13 The guidance provided in this SHTM assumes that the building complies with current healthcare building standards, and that the general management of fire risk as a whole is consistent with the mandatory standards contained in SGHD Fire Policy for NHSScotland and the statutory obligations of the Fire (Scotland) Act 2005 and the Fire Safety (Scotland) Regulations 2006.

3.14 The requirements in regard to the provision of escape lifts comprise:

- exit routes, including stair capacity, should meet the requirements of the 'Non-domestic Technical Handbook for compliance with the Building (Scotland) Regulations 2004' as amended, NHSScotland Firecode and other relevant standards;
- the system of fire protection in the building i.e. fire suppression systems, fire compartments etc. will inhibit or contain the growth and/or the spread of fire sufficiently to permit an orderly evacuation;
- lift lobbies shall be accessible to persons unable to descend stairs i.e. having no stepped changes of level between wards, departments and lift lobbies;
- if a group of lifts is not involved in the fire or in the path of smoke flow, the lift lobby shall provide a temporary waiting space of sufficient capacity to permit its occupants to be evacuated by the lifts, taking into account the waiting time during lift travel and the movement of persons through the waiting space;
- the lift system shall be designed to be unaffected by water from sprinklers and fire-fighting so that run-off water will not prevent lift operation;
- the lift(s) shall be designed with a reliable, suitably protected electrical supply and control system in accordance with the standards referred to in this guidance
- there shall be sufficient fire compartments to limit fire spread and maintain the structural stability of the building, and to facilitate progressive horizontal evacuation to other fire compartments in accordance with the evacuation strategy;
- the building shall be designed and built to prevent the vertical spread of fire between floors for sufficient time to protect occupants on floors above the fire and allow their evacuation to other fire compartments in accordance with the escape strategy;
- the potential impact of deliberate fire raising will be considered in the building design and operational management arrangements;
- the evacuation strategy for occupants shall take account of the access requirements for fire fighters so that neither will impede the other.

Considerations

3.15 There is no single strategy that will work for all the occupants in a multi-storey healthcare building. Escape lift evacuation requires dynamic management with pro-active decision-making as an integral part of escape lift control. The ability of those managing the evacuation to make appropriate decisions will largely be dependent on their knowledge of the overall evacuation strategy and pre-planned and practiced procedure for using the escape lift(s).

3.16 The circumstances of a fire incident cannot be fully predicted, and the fire strategy developed for the use of escape lifts should be sufficiently adaptable for the circumstances in which it may be used.

3.17 When developing a fire evacuation strategy that incorporates the use of escape lifts, the factors outlined in paragraphs 3.18 – 3.55 should be considered.

Priority of use

Building occupancy

3.18 Occupants who are unable to descend stairs easily should, wherever possible, be evacuated using the escape lifts provided. Initially, occupants will be evacuated progressively on the same floor level to the compartment next to the lift lobby. A number at a time can then be moved into the lift lobby where they will be evacuated using lifts.

3.19 Occupants who are able to use the stairs with minimal assistance should be allowed to use the escape lifts only if there is sufficient unused capacity and their use of the lifts is not at the expense of occupants who are unable to use the stairs.

3.20 The evacuation of occupants unable to use stairs is the most obvious reason for using lifts in a fire emergency. However, in some circumstances lift evacuation may be appropriate for some occupants who are able to use stairs e.g. those with impaired mobility, are unsteady, slow or otherwise require assistance; subject to the proviso indicated in paragraph 3.19.

3.21 The primary reasons are:

- to make full use of all available egress capacity and complete the evacuation as quickly as possible;
- to reduce congestion on stairways and keep them free from obstruction so that they may be used by firefighters and;
- to avoid lengthy and tiring stair descents in very tall buildings.

3.22 Those occupants with a greater dependency on staff, and particularly those with a critical dependency, should generally be given priority in the use of escape lifts for their evacuation.

Occupant location

3.23 Those located on the fire floor should be given priority to use the escape lifts provided. The second priority should be given to those on floors above the fire and those occupying floors below the level of the fire will generally be given a lower priority for lift evacuation.

Capacity

3.24 The overall capacity of the escape lift will determine the constraints within which it can be used. Generally, a larger capacity will allow greater flexibility over the use of the lifts.

3.25 The capacity of the lifts provided will also determine how the occupants on the floor of the fire and those on the floors above and immediately below the fire can be safely accommodated. Generally, the larger the capacity of the lifts, the less time occupants will require to be accommodated on the floor of the fire or floors likely to be affected.

3.26 When determining lift capacity, consideration should be given to the number of lifts to be designated as fire-fighting lifts (if any). This will increase the ability of firefighters to deploy both equipment and personnel rapidly, but will reduce the available lift capacity for occupant evacuation.

Temporary waiting spaces

3.27 Since the capacity of any escape lift(s) will not be sufficient to accommodate all the occupants who require evacuation at any one time, the temporary waiting space/s provided should be sufficient to accommodate those who may be required to wait for the arrival of the escape lift at their floor level.

3.28 Any temporary waiting spaces provided should take into account:

- the number of occupants likely to be waiting on evacuation by lift;
- the number of occupants reaching escape lifts through progressive horizontal evacuation; and
- the occupant capacity of the escape lifts at that point.

3.29 It is expected that occupants will be directed to use the compartment or sub compartment adjacent to the protected lift lobby or section of hospital street nearest to the lift. Sufficient space should be provided in the protected lift lobby, or section of hospital street, to accommodate all the occupants and the associated equipment that is intended to be transported during the next lift travel.

Time taken to evacuate by lift

3.30 The evacuation flow will never be continuous as there will always be some patients, or others, who have to wait during the descent and return travel of the lift before their evacuation can continue. The evacuation time as a whole is therefore likely to be extended, according to the descent and ascent time of the lift car and the number of journeys it has to make. Where there are a number of escape lifts grouped together the waiting time will be reduced.

3.31 The overall fire strategy for the premises should take into account the time it will take to successfully evacuate using the escape lifts.

3.32 The phases of lift evacuation are described in paragraphs 3.34–3.46.

Phase 1 – initial lift service

3.33 This phase of the lift evacuation includes the time it will take from the initial lift response to the actuation of the fire detection and alarm system, plus the time it will take to bring the lift into evacuation service.

3.34 The length of this phase will be dependent on a number of factors:

- **the location of the lift at the time the fire detection and alarm system is actuated.** This will determine the time it takes for the lift to ascend/descend to the reception floor to allow occupants of the lift to evacuate safely;
- **the location of nominated personnel when they are required to release passengers trapped in an escape lift.** This will determine the time it takes for those nominated to confirm their availability and attend the lift location to assist in the release of any passengers;

  NB: Passengers trapped in a stationary lift during a fire incident would normally be considered 'at risk', and as such their release would, in most foreseeable circumstances, attract an emergency response to release them by Fire and Rescue service personnel. In-house fire response staff would also attend in a supporting role. It is not possible to predict the extent or impact in particular circumstances due to the range and number of possible circumstances that may be encountered.

  Nevertheless, a significant potential exists for staff to be detained due to their attendance at the lift emergency. Consequently, such an event will have an impact on the time it takes to bring any escape lifts into emergency use.
- **the location of the lift warden (control) and the lift warden (car).** This will determine the time it takes for wardens to reach the lift car and control points, actuate the controls to bring the lift into evacuation service, and send the lift to the appropriate floor level;
- **the location of the lift wardens (floor).** This will determine the time taken for the wardens to reach their respective lift lobbies and signal a request for evacuation service;
- **the time for the lift to travel between the reception floor and the appropriate floor for evacuation service.** The time will take into account the fact that the lift will not stop at any floors on its journey to the evacuation floor, and should be empty.

3.35 Some of these activities will occur simultaneously in response to an alarm condition. However, consideration should be given to potential failures, e.g. the failure of a lift warden (floor) to attend at their floor level, since all of the above activities are required to complete phase 1 of the lift evacuation process.

Phase 2 – loading the escape lift

3.36 This phase includes the time it takes to load the lift with the occupant/s being evacuated and any associated equipment. It may also include periods during which the lift is held at the evacuation floor awaiting persons known to require evacuation.

3.37 The time taken for this action will largely be determined by the capacity of the lift, the mix of occupants and the number of support staff available to respond to a lift evacuation. It also assumes that the lift lobby is clear and free of other occupants. If the evacuation of other occupants via a stairway impacts on maintaining clear access to a lift lobby, the use of an alternative stairway should be considered.

Phase 3 – lift travel

3.38 This phase includes the time it takes for the lift to travel between the evacuation floor and the reception floor.

3.39 Although this phase will be relatively short, it will be largely dependent on the lift performance and the number of floors through which the lift has to travel.

3.40 During the development of the evacuation strategy, consideration should be given to the benefit of reducing the lift travel time. This may be done by electing to evacuate to a floor level below the fire, in preference to evacuation to the reception level. This is consistent with the principle of using adjacent compartment/s as places of relative safety for the first stage of evacuating patients and disabled persons. Where this is done, the same principle should apply as that which applies to horizontal evacuation i.e. that further evacuation is possible, by an alternative route (other than by escape lift) from the temporary waiting space. Considerable lift travel time may be saved, and consequently the waiting time for patients in the temporary waiting space on the fire floor, if this method is adopted.

Phase 4 – unloading the escape lift

3.41 This phase includes the time it takes to unload the escape lift at the reception floor.

3.42 Consideration should be given to the management of any potential congestion that may extend this evacuation phase.

3.43 The unloading plan should take into account the clinical priorities of the lift occupants to ensure they can be moved to a safe place without increasing the risk to their well-being. The development of the fire strategy should resolve any potential issues of this type.

Phase 5 – lift return travel

3.44 This phase is the time taken for the lift's return travel between the reception floor and the evacuation floor.

3.45 The length of this phase will largely be determined by the same factors as those in phase 3.

3.46 Phases 2 to 5 are repeated through each cycle of the escape lift operation, and will be the determining activities in the length of time taken to evacuate the occupants from a particular floor level. In practice, it is possible that priorities may change during the evacuation, so that requests for evacuation may be serviced from more than one floor at a time by providing lift evacuation to one floor, then the other.

Capacity of the reception floor

3.47 The larger the capacity of the available escape lifts, the greater the potential for congestion at the reception floor. As occupants evacuated by lift reach the reception floor, sufficient staff should be available to ensure patients are moved quickly away from the escape lift to reduce possible congestion and consequently, the time it takes to unload it.

Alternative provisions if lift evacuation is not viable

3.48 There may be occasions when escape lifts are not available for evacuation, for example, during periods of maintenance. It is possible also that a fire in proximity to the escape lift may threaten the safety of those who might use it, or threaten their access to the lift/s.

3.49 In these circumstances, sufficient alternative escape provisions must be available i.e. escape stairs and sufficient staff to carry out the evacuation. Additional escape lift provision remote from the first lift may be available, subject to the layout and design of the building, to facilitate the evacuation of occupants unable to use the stairs.

3.50 Any escape lift provision must ensure that sufficient vertical escape capacity is available when one or more of the lifts are unavailable.

Stairs and lifts are limited resources

3.51 Occupants on upper floors must use stairways or lifts, or a combination of both, to descend either to a floor where there is a safe area designated as a temporary waiting space (a fire compartment safe from the effects of fire for a defined period), or to an exit to the outside.

3.52 At some time following the start of the evacuation, fire fighters must use stairways or lifts, or a combination of both, to ascend or descend to the 'bridgehead' from which firefighting activities will be conducted.

3.53 As the activities of arriving fire fighters and those evacuating from the affected area are likely to occur concurrently, careful consideration needs to be given to ensuring that the access route/s for fire-fighting personnel do not interfere with the provisions required for the safe evacuation of occupants.

Coordinating and directing the evacuation

3.54 During a fire incident, decisions may need to be taken about the order in which floors will be evacuated. In a large building, the information needed to inform the decision may not be available quickly. It will be necessary to have an effective system of communication to relay information about conditions elsewhere in the building. Anticipating the need for information is vital to the development of procedures and evacuation control tactics. Clearly defined task descriptions are also essential and should form part of the training of team members.

3.55 Specific decision-making and information needs will vary from building to building. Some of the commonly required information can be anticipated, but in any case, a building's particular layout, occupant abilities, disabilities and numbers, and the existing fire safety features should be considered.

4. Physical requirements for escape lifts

Escape lift provision

4.1 Sufficient escape lifts should be provided and sited appropriately to accord with the fire evacuation strategy for the premises, developed with full consideration of the issues outlined in Section 3.

4.2 Where an escape lift is one of a group of lifts within one protected enclosure, all the lifts in the group should be escape lifts in accordance with the standards specified in this SHTM.

4.3 Sufficient escape lifts should be provided, appropriately remote from each other so that should a fire affect one escape lift, sufficient escape lifts will remain available for use to enable the organisation's fire evacuation strategy and procedures to be implemented.

Construction

4.4 The structural layout and constructional details of the escape lift installation should conform to the requirements of this SHTM, BS 9999 and BS EN 81-72: 2003.

4.5 The structural enclosure of the escape lift, or group of lifts, should be a protected shaft at least in accordance with the minimum period of fire safety performance specified in the 'Non Domestic Technical Handbook for compliance with the Building (Scotland) Regulations 2004', as amended.

4.6 If not from the hospital street, access to the escape lift, or group of lifts, should be provided via a protected lobby appropriately sized to facilitate the fire evacuation strategy and protect the lift shaft(s) from potential smoke ingress.

Machine room construction

4.7 The machine (or pump) room, and any power transmission circuit (for example, cabling or hydraulic circuit) between it and the lift should be contained within the same protected shaft as the lift. Failing this, it should be protected against the action of fire for a period not less than that required for the structural fire protection to the lift enclosure.

Escape lift cars

4.8 The car of an escape lift should comply with the relevant requirements of BS EN 60071-1: 2006, BS EN 81-1: 1998, BS EN 81-2: 1998 and BS 9999. The additional recommendations of paragraphs 4.9 to 4.12 should also be met.

4.9 Where the escape lift is intended to evacuate patients on beds, the internal dimensions of the car should be not less than that required to carry the occupied bed and its ancillary equipment, an attendant, and a lift warden. The types of bed to be considered may vary. Some standard car sizes that will accommodate standard King's Fund beds are given in the ergonomic data sheets for bed passenger lifts in Health Building Note 00-04: 'Core elements – circulation and communication spaces'.

4.10 The capacity of each lift in respect of the number of beds, cots, wheelchairs, occupants etc will depend on the requirements of the fire safety strategy in addition to normal operational requirements.

4.11 The rated speed of the lift should be capable of meeting the requirements of the organisation's fire safety strategy, and as a minimum it will run its full travel in not more than one minute when fully loaded.

Note: It should be noted that a primary determinant in regard to evacuation times will be the time it takes to embark and disembark those being evacuated at each end of the journey and not exclusively the travel time of the lift car.

4.12 The car should be clearly and conspicuously marked with a notice complying with the fire-safety sign requirements of BS 5499-1, stating, "ESCAPE LIFT: DO NOT USE FOR GOODS OR REFUSE".

Evacuation control point

4.13 Each escape lift, or group of lifts, should have associated with it an evacuation control point from where a lift warden (control) can bring the lift/s under evacuation service control and organise the vertical evacuation of occupants. The evacuation control point, which will normally be in the exit storey lift landing must be located in a protected lobby, hospital street or protected escape route.

Note: The lift may be used for light goods necessary for the day-to-day running of the ward/s (for example, trolleys containing medical supplies, a library or meals-on-wheels service) provided that such use will have no adverse affect on the implementation of the fire safety strategy and ultimately any evacuation process. In no circumstances should it be used for transporting heavy goods.

5. Services required for escape lifts

Electrical supplies

5.1 Any healthcare organisation's electrical substation, stand-by generator, installation distribution equipment, cabling, or other apparatus supplying the machinery and controls for an escape lift should be protected from fire for a fire safety performance period not less than that specified for the lift enclosure.

5.2 The electrical supply to each escape lift should be from a circuit dedicated to the lift and separate from any other building services as defined by BS 5655-6: 2002, BS 9999: 2008 and other relevant standards.

5.3 Where more than one escape lift is provided in the same protected shaft, they may be fed from the same circuit, provided that it is adequate for this purpose and that a fault occurring in any one lift system will not affect the operation of other lifts in the same group.

5.4 All switchgear controlling electrical supplies to escape lifts should be secured against unauthorised operation and clearly labelled "ESCAPE LIFT: DO NOT SWITCH OFF".

Communications systems

5.5 In addition to the emergency alarm devices defined in BS EN 81-1: 1998, a vandal-resistant two-way speech intercom system should be provided to enable communication between the evacuation control point and each lift landing, the lift car and the machine room, while the lift is under the control of the evacuation switch. All communications should be possible only through the evacuation control point, under the direct control of the lift warden (control) i.e. persons on lift landings, in the lift car or the machine room should not be able to communicate directly with each other.

5.6 Careful consideration should be given to the type of communication system provided, for example the ability to select individual communication paths to each of the landings individually, or as a group. This will be determined by the fire safety strategy.

5.7 In tall buildings with many floors served by lifts it is recommended that, in addition to the intercom provisions, a signalling and indicator system should be provided to indicate that occupants are waiting to be evacuated, and at which landings they are waiting. This should comprise a manually operated signalling device at each landing and an indicator panel at the evacuation control point to show the landings at which persons are waiting. This is recommended because of the potential for confusion and/or delay that may be incurred due to the number of persons who may simultaneously be trying to communicate with the lift warden (control).

5.8 Consideration should be given to providing a direct communication link between the evacuation control points of escape lifts. At times of high demand, such links could prove valuable in transferring occupants horizontally between lifts to relieve congestion, utilise spare capacity and manage expectations.

5.9 Each escape lift should be provided with an indicator system that shows, at each lift landing served by that lift, the availability of that lift for escape purposes.

5.10 On activation of the fire detection and alarm system, and in accordance with the planned procedure for it's operation, the lifts serving those areas near the location of the incident must automatically travel to a predetermined floor and remain there until brought under evacuation control. During this period, the indication at each lift landing served by the lift should signal that the lift is not available for evacuation purposes.

5.11 The indication of availability for escape use should only be signalled when the escape lift has been brought under control of the lift warden (control), who will then determine the escape priority for each floor.

5.12 Should the risk to the safe operation of the lift become unacceptable, or should the lift fail during operation, the lift warden (control) should be able to indicate at each lift landing that the lift is no longer available for evacuation purposes.

5.13 Because of the complexity of the system as a whole, and the inter-reliance of individual system components it is essential that all parties involved in the procurement of an escape lift should be clear as to their role, the operational objectives for the escape lift system, and the operational requirements in relation to the strategic objectives. The specification and objectives should clearly identify the extent of individual responsibilities and roles. Careful consideration must be given to the escape strategy the escape lift will be expected to serve, so that all components are compatible and work collectively together to form a robust escape system, fit for the intended purpose. Communication systems in particular are an operationally critical component of the system and particular care must be taken to ensure that the critical communication pathways are properly designed, adequately protected and thereafter maintained and tested.

Fire detection and alarm system

5.14 The arrangement of alarm devices at or near the evacuation control point, lift landings and machine room should facilitate the use of the communication systems provided. Careful consideration should be given to the provision of low-level sound devices and/or visual alarms as high sound levels in the immediate areas subject to lift control will be significantly detrimental to effective voice communications; essential for the conduct of the evacuation.

5.15 Each evacuation control point should be provided with the means to receive information regarding the detection of fire spread. Such information may prove

invaluable in assessing the ongoing viability of the safe operation of the escape lift(s).

5.16 Information regarding the spread of fire should be clearly and unambiguously displayed at each control point.

5.17 The display of fire detection information may be achieved by the provision of a fire detection repeater panel, together with an outline plan detailing floor plan layouts, compartment boundaries and lift locations. Sufficient information should be provided by the repeater panel to clearly identify the location of a detected fire, when related to the outline plan.

5.18 Where a repeater panel is provided, the panel sounder should activate for two seconds for each new alarm event. Following this, the buzzer should sound for a period of 0.5 seconds every 15 seconds until the fire detection and alarm system is reset.

Lighting

5.19 Lighting of lift cars, landing, machine and pulley rooms should be in accordance with the requirements of BS EN 81-1 and BS EN 81-2.

Ventilation

5.20 Ventilation to the lift car, lift well, and machine room should be in accordance with the requirements of BS EN 81-1 and BS EN 81-2.

Smoke control

5.21 Smoke ventilation of, or pressurisation to, the lift landings should be provided in accordance with BS 9999.

Evacuation control switch

5.22 The escape lift should be provided with an evacuation control switch to enable the lift wardens to obtain immediate control of the lift when a fire alert is raised as defined in the fire safety strategy. The switch should be positioned at the evacuation control point and clearly marked “ESCAPE LIFT”. The switch should be enclosed in a ‘break glass’ box. The operating positions of the switch should be clearly marked “ON” and “OFF”. An exposed key switch should not be used because of the potential for the key switch to be made inoperable due to vandalism.

5.23 Where two or more escape lifts are installed together in one protected shaft, one evacuation control switch should be provided which should cause all the lifts in the shaft to respond as required by this SHTM, the operational procedure and escape strategy.

5.24 On operation of the evacuation control switch, all lift controls and safety devices should remain operative except as specifically recommended to the contrary in this SHTM. In particular, the evacuation control switch should not override the inspection control or stop switch on the car top; nor should it override the stop switches in the pit, the machine room or the pulley room.

5.25 Operation of the evacuation control switch should ensure;

- that the escape lift/s travels without stopping to the exit storey, or to the level of the evacuation control point if different, except where this has already occurred;
- that all landing call buttons and any collective group control system are rendered inoperative;
- that all car preference switches are rendered inoperative;
- that the evacuation communication systems are operative.

5.26 After the lift has parked, with doors open, operation of the evacuation control switch should ensure that the lift is under the sole control of the lift warden (control) at the lift car control station.

Lift car control station

5.27 The following actions, from the lift car control station, should be ensured:

- it should be possible to make a voice call to any selected landing. Registering such a call should cause the doors to close and the lift car to travel to, and stop with the doors remaining closed at the required landing;
- if the car is in motion, it should be possible to register further calls from within the car. The car should stop at the nearest landing in its current direction of travel for which a call is registered. When the car stops, all calls so registered should be automatically cancelled and the car should not depart until a fresh call is registered;
- it is possible to control the opening of the car doors only by the application of constant pressure on the “door open” button or switch. If the button or switch is released before the doors are fully open, the doors should automatically reclose. Once fully open, the doors should remain open until a fresh call is registered on the car control station;
- it should be possible to override automatic door mechanisms, provided to prevent the lift doors closing during normal operation while obstructed, by the application of constant pressure on the “door close” button or switch for a period of not less than 10 seconds or more than 15 seconds. If the button or switch is released before the doors are fully closed, the doors should automatically re-open. Once fully closed, the doors should remain closed until constant pressure is applied to the “door open” button or switch, or the car stops at the landing selected by a fresh call registered on the car control station.

5.28 Effective means should be provided:

- within the lift car to indicate the confirmation of all calls registered on the car control station and;
- both in the car and at the evacuation control point to show the position of the car at any time, whether the car is in motion or at rest.

5.29 If the escape lift is also designated a fire fighter's lift, additional controls that are only operable by fire authority personnel should be provided, in accordance with BS 9999.

Care should be taken in planning such an arrangement, to ensure that the possible conflicting procedural and operational requirements of the Fire and Rescue Service and the need to continue an evacuation service in the interests of patient safety, can be accommodated without significant disruption to either. In this case thorough consultation with the Fire and Rescue Service should be undertaken.

6. Installation and commissioning

6.1 Lifts should be installed in accordance with the procedures, principles and general requirements of SHTM 2024: 'Lifts', supplemented by this SFPN and the relevant British/European standards. Commissioning should be carried out in accordance with the recommendations of BS 5655-10 and the commissioning principles contained in SHTM 2024.

6.2 As well as the normal commissioning checks for lifts, the additional facilities required by this SFPN should be thoroughly checked. In particular, it should be demonstrated that the evacuation control switch and the complete communication system, necessary for the safe operational management of the lift system, all function as explained and required by this SFPN.

Reliability and maintenance

6.3 Due to the status of escape bed lifts as a component of the escape arrangements for the healthcare premises they serve, it is essential that they are maintained in the optimum operational condition.

6.4 Maintenance, testing and repair arrangements, and the resulting outcomes should be fully recorded, to include the name of the person/s conducting the testing, maintenance or repair, the nature of the work carried out, the date and any other relevant information e.g. contingency arrangements if the lift is to be out of commission during the service activity. Additional guidance may be found in SHTM 2024: 'Lifts' which should be referred to in addition to this guidance.

7 Operating escape lifts

Evacuation procedure

7.1 The procedure to be adopted for the safe operation of escape lifts must be consistent with the objectives and requirements of the fire evacuation strategy. The procedural guidance provided in this section recognises that the complex and diverse use/s of healthcare buildings means that no single strategy for the use of escape lifts can be provided to meet the range and diversity of possible applications. It is therefore not possible to provide a generic operating procedure for the use of escape lifts.

7.2 Where escape lifts are a component of the escape strategy for the premises the operational and management arrangements for the operation of the lift in an emergency should be subject to a procedural review to ensure the strategic objectives can be met in all circumstances, including lift breakdown before or during use, servicing and other out of use periods, unavailability of key staff, night and day staffing arrangements etc. Contingency arrangements for such periods and eventualities must form part of the procedures, and the procedural review.

7.3 An escape lift should be designed to the standards described in this SHTM, and operated under the direction and control of lift wardens using an agreed evacuation procedure.

7.4 A sufficient number of lift wardens capable of carrying out the necessary duties should be appointed and trained to assist in the management of any fire evacuation. A procedure should be laid down for ensuring that sufficient lift wardens for the various duties are always available.

7.5 The duties of the lift wardens during an evacuation should be clearly defined and set down in the fire safety strategy for the premises in question.

7.6 Examples are as follows:

- **lift wardens (floor)** – within each dependent department, the duties of lift wardens includes:
    - organising the horizontal evacuation of occupants from the floor to which they are assigned;
    - assessing the need for vertical evacuation from the floor to which they are assigned;
    - making sure that the lift warden (control) at the evacuation control point of the appropriate lift(s) knows that the evacuation service will be required (by using the communication systems).

- **lift wardens (control)** – their duties are:
    - to manage the evacuation control point of each escape lift, or bank of lifts,
    - to operate the evacuation control switch;
    - to prioritise orderly vertical evacuation from the floors served by that lift, or bank of lifts, according to the information provided by the lift wardens (floor) via the communication system.
- **lift wardens (car)** – where deemed necessary, their duties are:
    - to manage each escape lift car;
    - to control the lift car from the car control station in response to instructions from the lift warden at the evacuation control point.
- a procedure should be laid down for ensuring that sufficient qualified staff who are authorised for dealing with failed lifts are always available.

7.7 Fire procedures should not include the isolation of electrical circuits supplying the escape lifts or associated facilities.

8 Out–of–service arrangements

8.1 Any escape lift that is out of service due to breakdown or maintenance is not then available for use should an evacuation be necessary. Where escape bed lifts are a component of the escape arrangements, their provision should be subject to a risk evaluation (assessment) to identify possible hazards and operational (procedural) weaknesses to inform the development of a fire safety strategy for their use. The strategy must take account of hazards related to the non-availability of the lift/s and/or relevant staff necessary for their safe operation. The establishment of alternative evacuation arrangements must be an integral component of the escape strategy for the premises in question.

8.2 The fire safety strategy for the premises should clearly identify the role, management arrangements including training needs, and operational procedures; where the use of escape bed lifts is a component of the escape arrangements; and should form part of the emergency plan.

Section 7, paragraphs 7.1 and 7.2 also refers.

8.3 Where escape bed lifts are a component of the escape arrangements, all staff; not only those directly involved in the use and management of the lifts, must be aware of the procedures for escape, to ensure that they fully understand the method that will be adopted, including the contingency arrangements if the lift/s are unavailable. This will also include such matters as the movement of patients to a temporary waiting space, the importance of closed doors for smoke control, the need to provide patient re-assurance whilst waiting for the lift, the (triage) prioritising of patient escape, the alternative escape procedure for ambulant patients etc. The use of escape lifts must therefore be a component of the general fire safety training they receive.

Release of passengers from failed escape lifts

8.4 The provision for emergency operation of failed lifts and the procedures for releasing passengers should be based on BS 7255 ‘Code of practice for safe working on lifts’, using risk management and manual handling assessments to define the appropriate methods according to the need of the occupants.

8.5 If an escape lift fails during an evacuation, the release of the lift passengers should be undertaken as a matter of urgency in accordance with pre determined procedures. In any case, sufficient authorised and adequately trained personnel should always be available to carry out manual or emergency electrical operation of the lifts. Appropriate management procedures must be in place to ensure that any failure can be responded to quickly and effectively.

Fire drills

8.6 It is essential that, immediately following the commissioning of escape bed lifts a number of fire drills should be held to ensure that all staff directly involved in the control, management and operational use of them, become familiar with the operating principles, procedures and the communication system for their control, as quickly as possible.

8.7 Thereafter, fire drills and training should be undertaken at regular intervals, and should include the use of the lifts, control and communication systems that would be employed in the event of an evacuation. The frequency of fire drills involving all those who may be involved in the operational use of fire evacuation lifts should take account of the safety critical nature of the installation and importance of operational readiness.

8.8 Fire drills should include scenarios where lifts are unavailable, or become unavailable during the course of the evacuation. At such times the procedures for releasing occupants trapped in failed lifts should be practised.

References

Acts and Regulations

Fire (Scotland) Act 2005, as amended

Fire safety (Scotland) Regulations 2006.

Department of Health publications

Health Building Note (HBN) 00-04: Core elements – circulation and communication spaces.

NHSScotland publications

Available from NHS Scotland, Health Facilities Scotland website at; http://www.hfs.scot.nhs.uk/

Scottish Health Technical Memorandum 2024: Lifts.

British Standards

BS 5499-1:2002. Graphical symbols and signs. Safety signs, including fire safety signs. Specification for geometric shapes, colours and layout. British Standards Institution, 2002.

BS 9999:2008. Code of practice for fire safety in the design, management and use of buildings. British Standards Institution, 2008.

BS 5655-1:1986. Lifts and service lifts. Safety rules for the construction and installation of electric lifts. British Standards Institution, 1986.

BS 5655-6:2002. Lifts and service lifts. Code of practice for the selection and installation of new lifts. British Standards Institution, 2002.

BS 5655-10:1986. Lifts and service lifts. Specification for the testing and inspection of electric and hydraulic lifts. British Standards Institution, 1986.

BS 7255: 2001. Code of practice for safe working on lifts. British Standards Institution, 2001.

BS 60071-1:2006. Insulation co-ordination. Definitions, principles and rules**.** British Standards Institution, 2006.

BS EN 81-1:1998. Safety rules for the construction and installation of lifts. Electric lifts. British Standards Institution, 1998.

BS EN 81-2:1998. Safety rules for the construction and installation of lifts. Hydraulic lifts. British Standards Institution, 1998.

BS EN 81-72:2003. Safety rules for the construction and installation of lifts. Particular applications for passenger and goods passenger lifts. Fire-fighters lifts. British Standards Institution, 2003.