FIRE SERVICES EXAMINATIONS BOARD

STUDY NOTE

EXAMINATION	STATION OFFICERS' EXAMINATION
PAPER	BUSINESS ADMINISTRATION
SUBJECT	PRINCIPLES OF MANAGEMENT
ITEM	STANDARDS OF FIRE COVER
STUDY NOTE No.	3402

INTRODUCTION TO THE STUDY NOTE

This study note has been prepared as the basis of study in connection with the qualifying examinations for promotion.

Candidates will be expected to demonstrate knowledge of the information contained in the study note and understand how it should be applied:

The 'References' made at the end of the Study Note are included for information only and candidates will not be expected to study these as part of the bibliography.

STANDARDS OF FIRE COVER

1. Introduction

The generic fire risk in the brigade area is determined by an evaluation of that risk-using criteria issued by the Home Office.

This study note briefly describes the process of evaluation and its relationship with standards of fire cover.

2. Evaluation and Response

In order to ensure an appropriate response to a fire call, it is necessary to:

(a) Evaluate the fire risk throughout the Brigade area to establish the 'Fire Risk Categorisation' of specific areas in the brigade; and

(b) Set an appropriate response in terms of the numbers of fire appliances that should be sent to a fire in the resultant 'Fire Risk Category ' area; (pre-determined first attendance).

(c) Set the time in which those fire appliances should be in attendance at the fire. (the attendance time).

To ensure that standards are similar throughout the country the 'Fire Risk Categorisation' process is undertaken using a methodology and guidance issued by the Home Office that is similar from brigade to brigade; and

In terms of an appropriate response, the national guidance also specifies the response that should normally be sent to a particular risk category area.

The setting of an appropriate response to a particular risk area is known collectively as 'The Standards of Fire Cover'

3. Risk Categorisation

Establishing the risk categorisation in a brigade area is important because it identifies:

(a) The quality of fire cover required, in the areas affected;

(b) The resources in terms of pumps, (and accordingly, personnel and equipment) that the brigade should normally be provided with in order to be prepared to meet the risk in its area;

(c) In part, the financial support that the brigade should receive to fund the provision of its service, with a view to securing the maximum economy and cost-effectiveness which is commensurate with an adequate level of public protection.

4. Guidance on Determining Risk Categorisation

The aim of the guidance provided from the Home Office is to ensure that brigade areas are categorised accurately, and that while proper regard is paid to local factors that may affect that categorisation, consistent national standards are achieved throughout the country.

Uniformity in categorisation will enable fire authorities to assess more clearly whether they are providing an effective level of fire cover as economically as possible.

It is not practicable to draw up precise rules for the categorisation of risk or for the detailed application of the guidance that follows. Sensible risk assessment must necessarily have close regard to local circumstances; the weight to be attached to these circumstances, against the background of the guidance, is a matter of professional judgement.

The guidance is in three parts.

Part I - Prose Descriptions.

Part II - Formula for Individual Premises.

Part III - Size and Predominance.

5. Part 1: Prose Descriptions

Prose descriptions of different categories of risk provides a starting point for the categorisation process. The intention is that these descriptions should be used to provide an overview of part or the whole of a brigade area with the aim of identifying, in broad terms, different areas of risk. Generally speaking, the risk category of the particular locality under examination will be determined by whichever of the risks outlined in the prose descriptions is thought to predominate.

Category A Risk

Are normally to be found in the largest cities or towns of the country. For an area to be classified as A risk it should be of substantial size and should contain a predominating concentration of properties presenting a high risk of life loss or damage to property in the event of fire. Examples of such areas might include:

(a) Main shopping and business centres, with department stores, shopping malls and multi-storey hotels, and office properties.

(b) Concentrations of theatres, cinemas, clubs, dance halls and other entertainment centres.

(c) Concentrations of high-risk industrial or commercial property.

Category B Risk

Are normally to be found in the larger cities or towns not falling within category A risk. For an area to be classified as B risk it should contain continuously built-up areas of substantial size, with a predominating concentration of property presenting a substantial risk of life loss or damage to property in the event of fire. Examples of such areas might include:

(a) Shopping and business areas, predominantly of multi-storey properties, offering some degree of concentration.

(b) Concentration of hotels and leisure facilities such as occur in the larger holiday resorts.

(c) Concentrations of older multi-storey property offering substantial amounts of residential accommodation.

(d) Industrial or trading estates containing some higher-risk occupancies.

Category C Risk

Are normally to be found in the suburbs of the larger towns and the built-up areas of smaller towns. For an area to be classified as C risk it should contain built-up areas of substantial size, where the risk of life loss or damage to property in the event of fire is usually low, although in certain areas the risk of death or injury may be relatively high. Concentrations of property may vary, but will generally be of limited extent. Examples of such areas might include:

(a) Developments of generally post-war housing, including terraced and multi-storey dwellings, deck access housing and blocks of flats; (see also (special risk).

(b) Areas of older, generally pre-war, detached or terraced multi-storey dwellings, with a predominance of property converted for multiple occupation.

(c) Areas of suburban terraced, semi-detached and detached residential properties.

(d) Mixed low-risk industrial and residential areas.

(e) Industrial or commercial areas of smaller towns where there are few higher-risk occupancies.

Category D Risk

Category D risk includes all areas other than those classed as Remote Rural (see below), not falling within categories A to C.

Remote Rural Risks

Areas may be classified as Remote Rural risks if they are isolated from any centres of population and contain few buildings.

Special Risks

There are certain small areas, whether comprising single buildings or complexes, which need a first attendance over and above that appropriate to the risk, which predominates in the surrounding area. These premises or small areas should be treated as Special Risks, and given an appropriate pre-determined attendance. There are many different types of Special Risks, but some typical examples might include:

(a) Residential premises of substantial size and presenting abnormal risks, such as hospitals or prisons wherever they occur.

(b) Tower blocks, whether residential or commercial in C and D risk areas.

(c) Major petro-chemical or other high-risk industrial plants, wherever they occur.

(d) Airports, wherever they occur.

It is envisaged that brigades will continue to send more than the number of appliances appropriate to an A risk attendance to locations or premises thought to constitute a risk exceeding that in A risk areas.

6. Part II: Formula for Individual Premises

A formula serves as the second stage of the process. The formula is designed to assist brigades in calculating the potential risk category of individual premises and thereby building up a composite picture of the predominating potential risk of an area.

By this means, it should be possible to confirm or refine the boundaries of the risk categories determined from application of the prose descriptions.

Examining particular features of a building in the risk area on a point's tally basis determines the fire rating.

A building that accumulates:

(i) 16 points or above is a potential risk category A.

(ii) 11 to 15 points is a potential risk category B.

(iii) 10 points and below is a potential risk category C.

The features that are examined and awarded points are:

(a) Building Density;

Building density points range from 0 points for a building with an aggregate floor area of less than 371 square metres; to 9 points for a building with an aggregate floor area 18580 square metres and above.

(b) Building Separation

Building separation points range from where a building is 12 metres or less from another building on one side - 2 points; to where a building is 12 metres or less on four sides - 8 points.

A building with covered ways connecting various sections of the building together should be treated as a number of separate buildings.

Terrace property with a common roof space should be treated as one building.

Note: (a) and (b) are mutually exclusive, ie the higher score of the two to be retained.

(c) Building Construction

Building construction points range from buildings of incombustible construction designed to be fire resisting, eg reinforced concrete, protected steel frame - 1 point; to building wholly or almost wholly of timber construction - 5 points.

(d) Number of Storeys;

Points are awarded based on the number of storeys that the building has including floors below ground level. The range here is from 2 points for buildings up to 3 storeys; to 6 points for a building of 7 storeys and above.

(e) Occupancy Rating.

Points are awarded for the type of occupancy in the building. The following examples show the ratings of a small selection in different categories:

(i) Low Occupancy - 1 point
Churches
Small single storey buildings

(ii) Moderate Occupancy - 3 points
Offices
Theatres and other places of public entertainment

(iii) High Occupancy - 5 points
Departmental stores and shopping complexes;
Manufacturing factories;
Hospitals and residential homes for the disabled and children etc.

The formula should not be regarded as providing an automatic decision as to the risk categorisation of a specific area; rather, it should be seen as a detailed guide, which will help standardise and refine the interpretation and application of the prose descriptions.

In applying the formula, it is unlikely to be practicable to seek to differentiate between adjoining areas of less than one-quarter mile or one half-kilometer square.

The potential risk category of a particular square, with a view to building up a composite risk category for an area, should be determined on the basis of whatever risk category predominates among the premises examined within the square.

7. Part III: Size and Predominance

(a) Size of risk category area

There is not an optimum size for a risk category area; the size of an "area" in this context, is dependent on the extent to which the characteristics of an area are appropriate to the prose description, and further defined by reference to the formula.

In practice, most risk category areas comprise a substantial number (usually a minimum of 6) of the quarter mile or half kilometer squares used in the application of the formula.

It may on occasions, however, be necessary for a smaller number of such squares to be categorised as a distinct risk category on their own account.

(b) Application of the formula

It may be helpful to consider the question of size of an area in terms of the two principal ways in which the formula can be applied.

(i) In the first method, the fire authority may wish to apply the formula, map square by map square, to an existing station ground. The aim here is to confirm whether or not the area should continue to be categorised as at present. The boundaries of the "area" are the boundaries of the station ground, and the risk category of the "area" is determined on the basis of the predominating risk;

(ii) A second and more radical approach open to the fire authority is to apply the formula, map square by map square, to a distinct but substantial proportion of the brigade area, without regard to station grounds. The aim here would be to take a new look at how far the existing categorisation of areas reflected the current potential fire risk, with a view to making any necessary modification.

Any change in either the categorisation of distinct areas, or in the size of an "area" as a consequence of adjustment of the boundaries, could well have implications for the optimal location of fire stations, and for the number of appliances located at the station.

In particular, such a review might show that a different disposition of resources would offer a more effective response.

(c) Small risk category areas

As suggested above, in the normal way a risk category area would comprise a substantial number of the quarter mile or half kilometer squares used in applying the formula. In determining the risk category or categories of the area under scrutiny, it will often be found that individual premises, or groups of premises, attract a higher risk grading than the majority of premises in that area.

A typical example would be an industrial estate comprising a number of high-risk occupancies in a broad expanse of D risk territory.

Other examples might include a hypermarket or major shopping complex attracting an A risk classification from the application of the formula in an otherwise predominant C risk area, or a hospital or nursing home in a predominantly D risk area.

In the light of the concept of predominating risk, isolated high risks such as those described above would fall to be treated as Special Risks, as defined in the prose descriptions.

In these circumstances, it will be for the fire authority to determine an appropriate pre-determined attendance for the premises or groups of premises in question.

(d) Predominating risk

When applying the prose descriptions, the predominating risk category of the area under consideration will be dependent on the extent to which the particular characteristics, eg shopping and business areas, suburban property etc, outlined in the prose descriptions are to be found.

When applying the formula, the predominating risk category of a particular quarter mile or half kilometer square will be normally be evident from the points rating of the premises within the square.

Similarly, the potential risk category of any larger area, comprising whatever number of map squares may be under scrutiny, will normally be self-evident, particularly if the squares are colour coded.

Where the predominating risk of an area (or when applying the formula to a particular square) is not self-evident, it may be necessary to have regard to other factors to determine the appropriate risk category. These could include:

Unusual construction features;
Congestion;
Exposure hazards;
Difficulties of access and adequacy of water supplies and;
Contents of the premises.

8. Standards of Fire Cover

In section 2 "Evaluation and Response", having established the 'Fire Risk Categorisation' of specific areas in the brigade, it is then necessary to establish:

(a) An appropriate response in terms of the numbers of fire appliances that should be sent to a fire in the resultant 'Fire Risk Category ' area; (pre-determined first attendance); and

(b) The time in which those fire appliances should be in attendance at the fire. (attendance time).

To ensure that the standards of attendance are similar throughout the country the national guidance specifies these standards which are as follows:

Risk Category	Number of pumps for first attendance	Approximate time limits for attendance (in minutes)		
		1st pump	2nd pump	3rd pump
A	3	5	5	8
B	2	5	8	
C	1	8 -10		
D	1	20		

Brigades may send more than the number of appliances appropriate to an 'A risk attendance' to locations or premises thought to constitute a risk exceeding that in an 'A risk area'.

9. Aerial Appliances

The standards of fire cover as described in the previous sections relate to the weight and speed of response for pumping appliances.

This may need to be supplemented with the attendance of aerial appliances based on the following guidance.

(a) Siting and provision

Predetermined attendances that include aerial appliances are predominantly in A and B risk category areas. However, this does not preclude their attendance in other circumstances as considered necessary.

Examples of risks where an aerial appliance might be considered necessary as part of the initial attendance include one or more of the following:

(i) Premises of more than three floors containing a sleeping risk, eg hotels and hostels.

(ii) Premises of more than three floors that contain a high risk to life, eg hospitals, departmental stores, large schools and office blocks.

(iii) High and mid-rise residential property, eg tenement and multi-storey property.

(iv) Large commercial or manufacturing premises where the fire loading and the potential for fire spread is high.

(v) Historical buildings and congested town centres where the fire loading and the potential for fire spread are high.

(b) Attendance times

Risk category of an area is determined on the basis of the predominant risk as described in the previous sections.

Once determined, the appropriate number of pumping appliances can be deployed to meet the demands that risk will place on the resources of the brigade. It follows then, that where there exists a demonstrable operational need to enhance the normal area pre-determined attendance to provide fire cover to a significant number of risks such as those in paragraph 9(a), consideration could be given to the deployment of an aerial appliance.

As a general principle, the attendance of aerial support should be commensurate with, though not necessarily the same, as the speed of attack provided by pumping appliances in accordance with Standards of Fire Cover, ie. the higher the predominant risk category the faster the initial response time required.

Bearing this in mind, an appropriate method of determining the attendance time for an aerial appliance would seem to be:

(i) A risk areas - 10 minutes.

(ii) B risk areas - 13 minutes.

(iii) C risk areas - 20 minutes.

(iv) D risk and remote rural areas - unspecified.

(c) Crewing

The necessity for suitably trained crews is of paramount importance for the safety of crews and public alike.

Mutual support to adjacent stations and neighbouring brigades should preferably entail the response of fully crewed appliances to offer the skill levels required on individual makes or types of appliance.

Whilst local circumstances together with the Chief Fire Officer's/Firemaster's professional judgement may determine otherwise, it is recommended that at any incident there should be a minimum of two fully trained personnel available, ie. driver/operator and cage operator/OIC.

References

Fire Service Circular 4/1985
Scottish Fire Service Circular 1/1985
Dear Chief Fire Officer Letter 1/1994
Dear Firemaster Letter 4/1994