In the Line of Fire

Value for Money in the Fire Service - the National Picture
The Audit Commission

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to achieve economy, efficiency

and effectiveness.
# In the Line of Fire

1. **Profile of Today’s Fire Service**

2. **Challenges Facing the Service**

3. **Modernising the National Framework**

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Preface

Auditors appointed by the Audit Commission reviewed the majority of fire brigades in England and Wales in 1985; the findings of the audits were summarised in an Audit Commission occasional paper, published in 1986. There have been no major national reports on the organisation and management of the service since then.

Given this time gap and the level of expenditure, it is appropriate to revisit the service, to reconsider some of the issues identified in the 1986 paper and to focus on some of the more general management issues that have attained a higher profile within the public sector over recent years. The study has taken a fresh look at an important local government service. It has encompassed almost all aspects of the service including the national framework, corporate and strategic management in brigades, the management of operational firefighters and the provision of support services (although the organisation of fire safety inspections was specifically excluded).

The study started in October 1993 and involved in-depth fieldwork in seven brigades (covering all aspects of their work) with shorter visits to eight other brigades to look at specific aspects such as management structure, fleet management, control rooms and the impact of local government reorganisation. The brigades visited are named in Appendix A. A national questionnaire was completed by brigades; this was used to complement the extensive database which the study team compiled from data that brigades routinely provide each year to the Home Office and CIPFA. Consequently, the team has been able to assemble a comprehensive and detailed picture of the service nationally. To provide an international perspective, the team visited Denmark and Sweden, and held meetings with senior officials of the fire services of the USA, Japan and New Zealand.

The study team also carried out a wide-ranging review of the literature on the fire service and benefited from most helpful discussions with representatives from interested bodies such as the Fire Service Inspectorate, the Fire Service College, the local authority associations, the Local Government Management Board, the Home Office, the Chief and Assistant Chief Fire Officers’ Association, the Association of Professional Fire Officers, the Fire Brigades Union, the National Association of Fire Officers, the Retained Firefighters’ Union, and the Fire Protection Association.

The Commission gratefully acknowledges the excellent co-operation it has received from the service in undertaking the work. In particular, it would like to thank the study brigades for their patience and care in responding to the team’s enquiries and requests for information; and to the members of the Advisory Group (Appendix B) who met regularly throughout the study to review progress and provide professional guidance on a range of emerging issues.

The study was conducted by a team of management consultants from Ernst & Young working under the overall direction of the Audit Commission. As with
all of the Commission’s studies, however, responsibility for the conclusions and recommendations rests with the Commission.

This report concentrates on the findings of the study from a national perspective. It is complemented by:

- an Executive Briefing, which summarises the key findings and recommendations for senior fire officers, members and opinion-formers;
- a Management Handbook, which sets out an agenda for change within individual brigades based on the detailed findings of the study research. It identifies opportunities for local improvements within the existing framework;
- an Audit Guide, which helps fire authorities' auditors to work with individual brigades to review their performance locally and identify opportunities for adopting good practices from elsewhere. Auditors will be undertaking these reviews in most brigades in England and Wales during 1995 and preparing reports for their fire authorities.
Summary

The fire service is justifiably proud of its reputation for protecting lives and property. In addition to the core service of responding to fires, brigades provide a range of special services, such as rescues from road traffic accidents, and also undertake fire safety inspections. There are about 900,000 incidents a year in England and Wales, of which about 40 per cent are fires, 40 per cent are false alarms and 20 per cent are special service calls.

Expenditure on the fire service in England and Wales is £1.25 billion a year. It employs 54,500 staff and is organised into 54 brigades, 47 of which are part of county councils, the others being single-function authorities serving metropolitan areas. While each brigade is under the control of a fire authority, performance standards for responding to fires are set nationally. These standards comprise a framework for assigning different geographic areas into risk categories, and attendance standards which define the speed and weight of response for each risk category. Staff conditions of service are also governed by a pervasive and detailed framework determined nationally.

Although the performance of the fire service in the context of these standards is very good, at a wider level there is cause for concern. The overall cost of fire to the economy is some £5 billion a year. The numbers of fires and fire casualties have been rising over the past 10 years and, in this respect, national performance in limiting the consequences of fire compares poorly with, for example, the success achieved in reducing the numbers of fires and fire deaths in the USA.

Although the fire service responds vigorously within the context of the existing national framework to these considerable challenges, a more effective response is constrained by a number of aspects of the framework:

◆ insufficient emphasis is placed on fire prevention;
◆ risk categorisation of geographic areas does not take account of demographic factors or the extent to which risk can change with the time of day or year, nor does it allow for the extent to which fire safety precautions are incorporated in buildings;
◆ the response standards are based on historical precedent rather than recent research;
◆ the national conditions of service can limit the ability of brigades to respond flexibly and rapidly to the changing demands upon them.

In addition, brigades face increasing financial pressures:

◆ the unfunded pension scheme faces a growing contribution from employers. The difference between employee contributions and pension payments is paid by fire authorities and is estimated to absorb 25 per cent of fire service expenditure by 2007;
◆ three out of every four English counties currently fund their brigades above their Standard Spending Assessment (SSA) level, but members may not always be prepared to continue this pattern.
The way forward is to shift the emphasis from cure toward prevention, to update the framework of the service and to increase local discretion. Specifically:

- fire authorities should be given statutory responsibility to promote fire safety – to educate the public about fire, its causes, its dangers and ways to combat it;
- the framework of risk categories and attendance standards should be modified to allow better targeting of scarce resources. A number of specific anomalies in the existing framework should be reviewed. Greater local flexibility should be introduced, though this should be subject to external inspection. Research should be undertaken so that a future framework of risk assessment and standards of response can be based on empirical evidence;
- the conditions of service should be reviewed with the aim of focusing them on core areas, leaving brigades to deal with minor issues locally. Other aspects which should be considered are simplifying the rank structure and introducing more flexibility into shift systems;
- the funding mechanism for brigades should be changed to remove the inequities from the existing SSA formula. Existing perverse incentives which discourage brigades from promoting fire safety should also be removed.

At a local level there are a number of efficiency improvements that could be achieved. In total it is estimated that £67m could be released through taking up local improvement opportunities. These include:

- managing absences more effectively;
- maximising the use of duty time within the existing shift system;
- reducing the very high level of early retirements, which is exacerbating the pensions problem;
- increasing the efficiency of support services by extending the use of non-uniformed staff, increasing financial delegation, and building on the existing foundation of inter-brigade co-operation.

Balancing these savings there would be the resource requirements of fulfilling the new statutory duty of fire safety promotion – possibly up to £20m nationally. The move toward competency-based training in the fire service may also have resource requirements, but these are difficult to quantify.
The modern fire service does much more than put out fires. In 1993 it attended over 900,000 incidents (almost five times as many as in 1953), of which 40 per cent were fires, 40 per cent were false alarms and 20 per cent were special service calls.

Total budgeted expenditure of the 54 fire brigades in England and Wales for 1993/94 was £1.25 billion.

Though run locally, much of the work of the fire service is circumscribed by a national framework of legislation and established practice.
1. The fire service is justifiably proud of its reputation for protecting lives and property from the consequences of fire. It is held in particularly high esteem by the general public. Surveys undertaken by brigades indicate that over 90 per cent of the public are ‘satisfied’ or ‘very satisfied’ with the service provided. This section reviews the services which have earned this reputation, the resources used to provide these services, and the way in which resources are determined and allocated.

The work of the fire service

2. The primary function of the fire service is to be ready to respond to calls at very short notice. However, the modern fire service does much more than put out fires. In 1993 it attended over 900,000 incidents (almost five times as many as in 1953), of which only 40 per cent were fires. The profile of the service’s operational workload has changed considerably since 1953 (Exhibit 1), and since 1971 the service has had statutory obligations in connection with fire safety enforcement:

- the number of fires rose significantly between 1953 and 1993. As a proportion of incidents attended, fires have fallen from 75 per cent to 40 per cent in the period;
- the number of false alarms has risen dramatically and now accounts for approximately 40 per cent of all incidents (compared with 14 per cent in 1953). Disturbingly, more than a third of these are malicious, when the caller knows there to be no fire;
- the number of ‘special service’ incidents (calls to road traffic accidents, lift rescues, water removal, rescue of animals, spillages, etc.) has also risen considerably. In 1953 only 11 per cent of the operational services delivered by brigades (i.e. incidents excluding false alarms) were special services, whereas now they represent almost 30 per cent;
- as well as responding to fires, brigades play a significant role in their

Exhibit 1
Incidents attended by the fire service in England and Wales 1953-93

Attending fires represents a decreasing proportion of fire service workload ...
prevention. They have a statutory responsibility for fire safety inspections of certain buildings. Also, many brigades are placing increasing emphasis on fire safety and community liaison work to reduce the risk of fires occurring.

3. The distribution of incidents varies considerably with the time of day. In a major brigade with some 40 stations, the average number of incidents per hour varied between a peak of 13 in the early evening to only one or two in the early hours of the morning (Exhibit 2). On a number of occasions, of course, the brigade will have been significantly busier than average, though the busiest periods will typically have been during the day or early evening, rather than at night. Analysis of the timing of major incidents showed that those requiring five or more pumps followed a similar pattern to all fires and those requiring 10 or more pumps occurred at an even rate throughout the 24-hour period. There is less variation on a seasonal basis. Typically, fires in buildings occur fairly constantly throughout the year, but grass fires will peak during warm summers in rural areas.

4. Actual attendance at fires and other incidents represents only a small proportion of a firefighter’s time on duty. Analysis in a study brigade indicates this to be in the region of 5 to 10 per cent (an increase on the 3 per cent estimated by the Cunningham Report in 1971). This partly accounts for the capability of the service to attend 55 per cent more incidents than a decade ago, even though staff numbers have not increased.

5. The hazardous nature of the work means that great emphasis is placed on training, which occupies a significant proportion of the time spent on duty when not responding to incidents. Following a number of tragic fires involving the deaths of firefighters, there has been a service-wide move to re-evaluate the type of training given, with emphasis being placed on the development of competency-based frameworks. This should ensure that both whole-time and retained (part-time) firefighters are properly trained for their work.

A pump is a term for a standard fire engine.

Exhibit 2
Distribution of incidents by time of day in one brigade

There are considerable variations in the number of incidents by hour of day ...

Source: West Midlands Fire Service, 1993 (data cover a 35-week period)
work. In addition to the training provided within brigades there is also a national Fire Service College. It provides a wide range of training, including intensive courses for firefighters at key stages in their career in preparation for taking command of a crew, division or a brigade, or moving into fire safety.

The cost of fire

6. Total budgeted expenditure of fire authorities in England and Wales for 1993/94 was £1.25 billion, representing two per cent of local authority expenditure or £24 per head of population. The fire service is financed almost entirely from local and national taxes. Only about two per cent of expenditure is met from income from other sources. The total cost of fire to the country as a whole is, however, far greater than the £1.25 billion spent on the fire service. The total cost is difficult to determine, but estimates can be made of the major components, besides the cost of the fire service (Exhibit 3). The data are not available to allow an estimate of the fire losses prevented by the fire service, which is the measure by which the overall value of the service would be best judged.

### Exhibit 3
**The cost of fire to the country**

The total cost of fire to the country is more than just the cost of the fire service...

<table>
<thead>
<tr>
<th>Cost component</th>
<th>Indicative annual cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fire loss prevention</strong></td>
<td></td>
</tr>
<tr>
<td>Fire Service</td>
<td>£1,250m</td>
</tr>
<tr>
<td>Fire Service College</td>
<td>£14m</td>
</tr>
<tr>
<td>Home Office Fire and Emergency Planning Department</td>
<td>£8m</td>
</tr>
<tr>
<td>Fire protection costs (fire extinguishers, sprinklers, smoke alarms, adherence to fire safety legislation in buildings, etc.)*</td>
<td>£1,100m</td>
</tr>
<tr>
<td>Total</td>
<td>£2,372m</td>
</tr>
<tr>
<td><strong>Fire loss</strong></td>
<td></td>
</tr>
<tr>
<td>Death and injury †</td>
<td>£750m</td>
</tr>
<tr>
<td>Property:</td>
<td></td>
</tr>
<tr>
<td>Commercial claims</td>
<td>£725m</td>
</tr>
<tr>
<td>Domestic claims</td>
<td>£250m</td>
</tr>
<tr>
<td>Under-insurance*</td>
<td>£300m</td>
</tr>
<tr>
<td>Uninsured loss*</td>
<td>£400m</td>
</tr>
<tr>
<td>Crown property</td>
<td>Not known</td>
</tr>
<tr>
<td>Total</td>
<td>£2,425m</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>£4,797m</td>
</tr>
</tbody>
</table>

* Estimated figure
† Based on Department of Transport values for the cost of deaths and injuries

Source: CIPFA, Association of British Insurers, World Fire Statistics Centre
Organisation of the service

7. The service in England and Wales is organised into 54 brigades of which 47 form part of a county council and the remaining seven are stand-alone fire and civil defence authorities covering the metropolitan areas. The eight authorities in Wales are due to be combined to form three new fire authorities as part of the reorganisation of local government in the Principality. The size of brigades varies considerably; for example, the number of whole-time firefighters ranges from 31 in Powys to over 6,300 in London. The service employs 54,500 people altogether, of whom nearly 64 per cent are whole-time firefighters, 23 per cent are retained firefighters, 3 per cent work in control rooms and the remaining 10 per cent are non-uniformed support staff.

8. The service operates from 1,596 fire stations. The number of stations within a brigade varies widely (from eight stations in South Glamorgan to 113 in London). The vehicles deployed on each station vary according to local need, but every station will have at least one pump. Crewing arrangements for pumps also vary. Pumps can be:

- whole-time, with firefighters on duty at all times of the day and night;
- day-crewed, with whole-time firefighters on duty during the day and on call at other times;
- nucleus-crewed, with cover being provided by a mixture of whole-time and retained firefighters;
- retained, with cover being provided at all times by retained firefighters on call. Retained firefighters are members of the service who live or work close to their stations and are on call to respond to incidents. While they are part-time in the sense of usually having another job, the commitment by retained firefighters is substantial, normally entailing 24-hour-a-day availability to respond to calls. They receive an annual retaining fee plus a payment for attending incidents and training sessions;
- there are also six pumps in England and Wales which are staffed by volunteers.

9. Nationally, 37 per cent of pumps have whole-time crews, 6 per cent are day- or nucleus-crewed and 57 per cent retained (Exhibit 4, overleaf). The mixture within individual brigades varies greatly, however, from at one extreme London, where all pumps are whole-time, to rural counties such as Cumbria, Norfolk and Powys, where over 80 per cent of pumps are crewed by retained staff.

In addition, the Isles of Scilly is also a fire authority.
The national framework

10. Though run locally, much of the work of the fire service is circumscribed by a national framework of legislation and established practice. The present national framework can be traced to the Fire Services Acts of 1938 and 1947. The 1938 Act required local authorities to establish brigades and enabled central government to monitor standards through the formation of an Inspectorate. The 1947 Act returned brigades to local authority control after they had been amalgamated to form a national service, and laid down their responsibilities in terms of dealing with fires and providing fire safety advice. It also gave brigades the power, but not the statutory responsibility, to provide special services. In 1971 the Fire Precautions Act gave brigades statutory responsibilities in connection with fire safety inspections of buildings.

Risk categorisation and service standards

11. Each brigade's area is divided into risk categories based on the recommendations of a review of the standards of fire cover conducted in 1985. This national review recommended little change to the standards which had been in place since 1958 and had their roots in work conducted in 1936. Essentially, there are four main categories of risk for which there are recommended attendance standards. There are two further categories for which no attendance standards are set nationally (Exhibit 5).

Exhibit 4
The costs of the four ways of crewing pumps

Costs vary considerably between different types of crewing ...

<table>
<thead>
<tr>
<th>Pump crewing type</th>
<th>Staffing</th>
<th>Risk areas mainly covered (see Exhibit 5)</th>
<th>Number of pumps in England and Wales</th>
<th>Approximate annual staff cost (including pension liability) per pump £000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole-time</td>
<td>Permanent whole-time 4 watches</td>
<td>A, B and C</td>
<td>887</td>
<td>625</td>
</tr>
<tr>
<td>Day-crewed</td>
<td>Day whole-time, night on-call</td>
<td>C and D</td>
<td>125</td>
<td>370</td>
</tr>
<tr>
<td>Nucleus-crewed</td>
<td>Few whole-time plus retained</td>
<td>C and D</td>
<td>18</td>
<td>200</td>
</tr>
<tr>
<td>Retained</td>
<td>Part-time only C, D and Remote Rural</td>
<td></td>
<td>1,378</td>
<td>40</td>
</tr>
</tbody>
</table>

Source: Analysis by study team
Attendance times are specified for the various risk categories (Exhibit 6, overleaf). So, for example, a fire in an A risk area should have two pumps in attendance within five minutes and a third within eight minutes. There are no nationally recommended minimum attendances for Remote Rural or Special Risk areas.

Exhibit 5
Risk categories

The area covered by a brigade is categorised according to risk ...

<table>
<thead>
<tr>
<th>Category</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Category A risk areas are normally to be found in the largest cities or towns. Examples include main shopping and business centres, concentrations of theatres, cinemas and other entertainment centres, or of high-risk industrial property.</td>
</tr>
<tr>
<td>B</td>
<td>Category B risk areas are normally to be found in the larger cities or towns not falling within category A. Examples include smaller-scale shopping and business areas, concentrations of hotels and leisure facilities in large resorts, concentrations of older, multi-storey residential accommodation, and industrial and trading estates with some higher-risk buildings.</td>
</tr>
<tr>
<td>C</td>
<td>Category C risk areas are normally to be found in the suburbs of the larger towns and parts of smaller towns with built-up areas of substantial size. Examples include post-war housing developments such as terraced and multi-storey dwellings, deck access and blocks of flats or areas of suburban terraced, semi-detached and detached residential properties.</td>
</tr>
<tr>
<td>D</td>
<td>Category D risk includes all areas other than Remote Rural not falling within categories A to C.</td>
</tr>
<tr>
<td>Remote Rural</td>
<td>Areas may be classified as Remote Rural if they are isolated from centres of population and contain few buildings.</td>
</tr>
<tr>
<td>Special Risks</td>
<td>A subsidiary risk classification for 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. There are many different types of Special Risks, but some typical examples include hospitals, prisons, airports, tower blocks and major petrochemical plants.</td>
</tr>
</tbody>
</table>

Source: Report of the Joint Committee on Standards of Fire Cover, 1985, HMSO
13. The national guidelines on risk categorisation and response standards carry considerable weight. This is because under Section 19 of the 1947 Act any reduction to a fire brigade’s establishment scheme (whether by way of staff, appliances, or stations) must be approved by the Secretary of State. In practice, approval is not given if this would lead to lower standards of fire cover being provided than those required by the guidelines. In effect, therefore, the guidelines have the status of required minimum standards. Brigades are also subject to an annual review by the Fire Service Inspectorate, on behalf of the Home Secretary. This assesses brigades’ technical competence and performance against these guidelines. The Inspectorate also has a value-for-money remit, and so brigades’ organisation and efficiency will be considered as well.

Cost-drivers, the national framework and local flexibility

14. The categorisation of a brigade area by risk is the key factor in determining resource requirements (Exhibit 7) since it largely determines the fire cover required for each area within a brigade. The fire cover in turn decides the number and location of stations and pumps, and also pumps’ type of crewing, since retained and day-crewed pumps take different times to turn out than whole-time. The national standards also specify minimum crewing levels on pumps. Effectively, therefore, risk categorisation drives the level of operational resources based at stations, which on average account for 70 per cent of the costs of a brigade. In addition, local discretion is further
constrained by comprehensive conditions of service which are agreed nationally, and by minimum specifications for appliances and other items of equipment. Taken together this means that local opportunities to improve value for money and the effectiveness of the fire service are limited in comparison with what could be achieved by reforms of the national framework.

Exhibit 7
Risk categorisation

Risk categorisation is the key cost-driver ...

- Type of building
- Density of development
- Use of property
- Number of appliances
- Time taken to reach incident
- Number of firefighters
- Whole-time or retained

70% of costs
The fire service can be proud of its record in responding to incidents, but the nation has failed to respond as effectively as it could to the challenge of fire. There are too many fires, fire deaths and injuries.

The ability of brigades to maintain their performance is coming under increasing financial pressure.

2 Challenges Facing the Service
Increasing number of fires

15. The high level of public satisfaction with the fire service tends to disguise the fact that the nation has failed to respond as effectively as it could to the challenge of fire. The scale of this challenge should not be underestimated. Specific problems are:

- fires and serious fires (e.g. those involving occupied buildings, injuries, fire spreading to other premises and so on) have gradually increased over the past decade (Exhibit 8);
- similarly, while deaths in the population at large due to fire have declined slightly in recent years, there has been a growth in non-fatal injuries (Exhibit 9).

Exhibit 8
Fires in England and Wales

The number of serious fires is gradually increasing...

Note: ‘Serious fires’ has been used as a term for primary fires, which are those which take place in an occupied building, spread between unoccupied buildings, cause a casualty or require more than five pumps.

Source: UK Fire Statistics, 1993, and Home Office

Exhibit 9
Fire deaths and injuries in England and Wales

Deaths due to fire have declined slightly, but injuries are increasing...

Source: UK Fire Statistics, 1993, and Home Office
16. It is possible to reverse such trends, as experience from abroad illustrates. Comparisons with other countries can be fraught with problems, since many factors such as culture, living standards and the nature of the building stock affect the incidence and consequences of fire. The United States, however, does provide a useful contrast to circumstances in England and Wales. The numbers of fires and fire deaths have historically been high in the United States and fire deaths per capita remain higher than in this country, though reported fire injuries per capita are appreciably lower. The salient point is the difference in trends between the two countries. In the United States in the 1970s, growing concern about the material damage and human misery caused by fire resulted in a sustained national fire safety campaign that set targets for the reduction in the incidence of fires and their effects. Since 1977 fires have fallen by 40 per cent and civilian fire deaths by 37 per cent (Exhibit 10). Although events such as the depopulation of city centres may well have contributed towards this success, the national fire safety campaign appears to have been the decisive factor. Much of the success in the USA has been attributed to fire safety education, extensive use of smoke alarms and also the increasing introduction of commercial and domestic sprinkler systems. Insurance companies have also been closely involved, offering discounts on commercial and domestic insurance premiums where sprinklers are fitted.

17. The fact that there has not been a comparable trend in England and Wales should not be taken as a criticism of the fire service, which combats fire with vigour and dedication. It does, however, suggest that there may be benefits in reviewing the national arrangements which circumscribe the operations of the fire service and place emphasis on fighting rather than preventing fires. Compared with some other countries, England and Wales could do better in their overall response to fire.

Exhibit 10
Fires and civilian fire deaths in the USA

There has been a steady downward trend in the incidence of fire and civilian fire deaths ...

Source: US National Fire Protection Association
Underlying causes

18. The standards of service described in the previous section have been laid down by a number of committees starting with the Riverdale Committee in 1936. This specified a set of risk categories and the speed and weight of response required for each category. This approach was reviewed in 1944, 1958, 1974 and 1985, but changes were limited. While the process of risk categorisation has developed, the categories and response standards have not, with the exception of the introduction of a Remote Rural category for which there are no standards. The types of building in each risk category, and the number of pumps required, have remained unchanged since 1958, despite changes in building construction and developments in firefighting.

19. An effective response to the problems identified above is inhibited by the national framework:

- the emphasis is upon responding to fires rather than preventing them in the first place;
- the approach to risk categorisation takes account primarily of building type and assumes that the level of risk is constant over time. It does not take account of demographic factors, the extent to which risk can change with time of day or time of year or differences in travel times between day and night;
- risk categorisation takes no account of developments in building construction since the implementation of the Fire Precautions Act 1971, particularly improvements in passive fire protection (fire-resistant doors, walls, etc.) and active fire protection such as smoke alarms and automatic sprinklers;
the standards for the speed and weight of response to fires are based on historical precedent rather than an empirical analysis of the effectiveness of different types of response and the safety consequences for the public and for firefighters. They take no account of changes in the technology of firefighting or mobilisation and communications systems;

- local performance is assessed largely in terms of input measures rather than outcomes, such as fire loss or deaths and injuries due to fire;

- the national conditions of service have also remained largely unchanged over many years, and are very detailed and comprehensive in their coverage. It will not be possible to implement the necessary changes in the national framework unless the current terms and conditions are modified.

Funding problems exacerbate the situation

In addition to the constraints imposed upon the fire service by this framework, it is likely that brigades will face increased financial pressure in the medium term. The service is facing a pensions 'time-bomb', which, assuming that total expenditure on the service remains constant in real terms, it is estimated will absorb 25 per cent of total fire service expenditure by 2007. This is the consequence of a substantial increase in staff numbers that followed the changes in shift patterns in 1974 and 1978. A large number of the current staff are expected to retire in the next 10 years. As the pension scheme is not funded the costs of this will fall directly upon fire authorities' annual revenue expenditure.

In addition to this, there is concern that the impending reorganisation of local government may affect the willingness of some fire authorities to spend above their Standard Spending Assessment (SSA). In 1993/94, 31 out of 39 English county fire authorities decided to spend more than the SSA assigned to their brigades in order to meet national standards or to respond to particular local circumstances, but members may not be prepared to continue this pattern. In particular, the setting up of combined fire authorities in some areas following local government reorganisation may lead to a reconsideration of expenditure levels.

Local improvements can be made, but action is needed at a national level

There are local opportunities that can be taken now within the current framework. The locally achievable savings identified by this study are £67m a year. This represents five per cent of the total expenditure on the fire service and is about half the level of savings normally identified by the Commission in a review of this type. In part, this bears testimony to the efforts of the service and the dedicated people who work within it. It also reflects, however, the rigidity of the national framework and the consequent limitations on local management initiatives.

The overall picture is one of failure by the nation to respond to fire, a problem that each year accounts for 600 lives and almost £5 billion. The fire service may be doing things right, but it is constrained from doing the right things and it is not supported in its efforts by a broadly based campaign to combat fire such as that in the USA. The service is inhibited from reacting
effectively to the challenge posed by fire by the limitations of the national framework within which it operates. The problems are likely to be exacerbated by growing financial pressures on brigades (Exhibit 11).

24. Concern is heightened by the inertia surrounding earlier calls for change to address these same problems. Although some progress has been made through local initiatives and there have been some developments at the national level (for instance in the method used to assess risk), several key components of the overall situation remain unchanged (Exhibit 12, overleaf). Continuing inertia will only lead to decline; the time has come to modernise the national framework.

Exhibit 11
Facing the challenge

There are a number of underlying causes of the national problems...
A number of reviews have made common key recommendations which have not been implemented ...

### Exhibit 12

**Major reviews of the fire service**

<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Switch of emphasis from cure to prevention</td>
<td>Change recommended</td>
<td>Change recommended</td>
<td>Change recommended</td>
<td>Change recommended</td>
<td>Change recommended</td>
<td></td>
<td>Some examples of local good practice</td>
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<td></td>
<td>Change discouraged by funding arrangements</td>
</tr>
<tr>
<td>Better use of duty time – more fire prevention work, etc.</td>
<td>Change recommended</td>
<td>Change recommended</td>
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<td></td>
<td></td>
<td>Little change</td>
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<tr>
<td>Exploit economies of scale</td>
<td>Change recommended</td>
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<td>Change recommended</td>
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<td>Some consolidation immediately after Holroyd</td>
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<tr>
<td></td>
<td>Recruit training</td>
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<td>Recruit training</td>
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<td></td>
<td></td>
<td>Little co-operation between brigades currently</td>
</tr>
<tr>
<td>Conditions of service to be reviewed</td>
<td>Change recommended</td>
<td></td>
<td>Change recommended</td>
<td></td>
<td></td>
<td></td>
<td>No major changes made</td>
</tr>
<tr>
<td>Review standards of cover</td>
<td>No change recommended</td>
<td></td>
<td>Change recommended</td>
<td>No change recommended</td>
<td></td>
<td></td>
<td>No changes made</td>
</tr>
<tr>
<td>Need to target efforts on high-risk population sub-groups and building types</td>
<td>Change recommended</td>
<td></td>
<td>Change recommended</td>
<td></td>
<td>Change recommended</td>
<td></td>
<td>Some progress in individual brigades</td>
</tr>
</tbody>
</table>
Brigades are constrained from responding adequately to the problems and pressures they face by the national framework within which they operate.

Firefighting is emphasised rather than fire prevention. Brigades have little scope to depart from the nationally specified approach to assessing fire risk and the standards for responding to fires. The national terms and conditions of service also constrain brigades’ flexibility.

The way forward is to modernise the national framework and to overhaul the mechanisms that are creating financial difficulties.

3 Modernising the National Framework
Placing greater emphasis on fire prevention

25. The main performance standards set for the fire service are input measures, defined in terms of the time taken for an appliance to reach an incident after the alarm has been raised. Fire officers recognise, however, that there is a limit to which even the current excellent performance to these standards can achieve further reductions in deaths, injuries and property losses due to fires. In a sense, attendance by the fire service is a last line of resort in combating fire. Prevention, detection, immediate extinction and containment all serve to combat fire at an earlier stage and hence reduce the damage caused. Each of these objectives needs to be pursued in conjunction with one another to support the service’s firefighting function (Exhibit 13).

Exhibit 13
Approaches to reducing death, injury and property loss due to fire

Firefighting should be the last line of resort in combating fire...
A key factor, over which the service has no direct control, is the length of time taken for a fire to be detected. This time interval has a dramatic effect on the likelihood of death as a result of fire. Fires in dwellings which take more than 30 minutes to be detected are 15 times more likely to result in a fire death than a fire which is detected within 5 minutes (Exhibit 14). This emphasises the benefits of smoke alarms, which reduce the likelihood of a death from a fire from 9 per 1,000 fires to 3 per 1,000 fires, and thus reflects the value of the campaigns by the Home Office and by individual brigades. Similarly, sprinklers are an effective means of combating fire. The water damage caused by sprinklers is not as great as many people fear; it is often possible to repair damp items, rarely burnt ones. Moreover, the probability of a sprinkler being activated in error is 1 in 500,000 per year (source: Loss Prevention Council). Many senior figures in the service are calling for increased use of sprinklers in commercial buildings and also in domestic property, and for their installation to be supported more by reduced insurance premiums.

Even better than detecting fires rapidly is preventing them in the first place. The public have a major part to play by the installation of fire safety measures in their homes, their choice of fire-resistant materials in furniture, care in extinguishing cigarettes and so on. A number of brigades have maintained vigorous publicity campaigns aimed at reducing the incidence of fires. Perhaps the most comprehensive programme of activities has been undertaken by the West Midlands Fire Service. Prompted by the level of deaths and a continuing rise in fire calls, the brigade analysed in detail the incidence of fires and, starting in 1991, has undertaken a wide range of campaigns focused on specific communities at risk (such as people with disabilities, the elderly, and ethnic minorities) and particular causes of fire (such as arson in schools and use of chip pans). Fire deaths and casualties have fallen by over 70 per cent in four years, and the brigade attributes this, at least...
in part, to its programme (Exhibit 15). Examples of other initiatives are given in Box A.

28. In view of the successes which have been achieved it is unfortunate that the existing national arrangements contain disincentives to pursue initiatives that can reduce the incidence and consequences of fires:

- while there is a statutory requirement to undertake fire safety inspections of commercial premises, there is no requirement for brigades to promote fire safety among the general public – this is done on brigades' own initiative. In contrast, brigades' performance in meeting attendance standards for responding to fires is tightly monitored, and their failures are highlighted, by the Fire Service Inspectorate. The consequence can be brigades diverting scarce resources away from preventing fires to dealing with their consequences;

- a significant aspect of the funding arrangements for brigades is that no element of the SSA formula is linked to fire safety in any form, but a significant proportion is linked to the number of fire calls. It is to the credit of the service that much has been done by some brigades to reduce the number of fires and false alarms, despite the financial disincentives of the present SSA formula.

29. In summary, brigades which strive to reduce the likelihood of fire, and the human and material damage it causes, are penalised twice over. First, in that their efforts do not receive any funding allocation. Second, in that if successful their funding may be reduced. As a matter of priority this issue should be addressed at a national level. Funding arrangements should be such that fire authorities are not penalised for reducing the incidence of fires. Moreover, consideration should be given to redressing the imbalance in fire authorities’ responsibilities between firefighting and fire safety, in particular by giving fire authorities a statutory duty to ‘educate the public on fire safety matters’, as recommended in the 1994 report of the interdepartmental review team on fire.
Merseyside has introduced a successful counselling service for youngsters between the ages of four and 11 who have been playing with fire. Some 80 children have been helped by 20 uniformed members of the brigade acting as volunteer counsellors, working with the local social services departments, education welfare officers and educational and clinical psychologists. The brigade has also worked with the local social services departments to develop an educational package for young offenders on referral for charges of arson; the programme has been accepted by the courts as an alternative to a custodial sentence. So far, 20 juveniles have been helped by the scheme and none has re-offended.

London has developed a fire safety curriculum for schools. The three stages of the programme have been designed to cater for the needs of children aged between five and 14 and to tie in with Key Stages 1, 2 and 3 of the National Curriculum. All three stages of the teaching pack Learn not to Burn have now been published and 6,500 copies have been sold.

In Lancashire, malicious false alarms were among the highest of any county brigade, and so an initiative was launched to tackle the problem. The results have been extremely successful; in the division of the brigade where the scheme began, malicious calls were reduced by a total of 20 per cent in a year (see Exhibit below).

Malicious calls in Lancashire

A campaign in one division has reduced malicious calls by 20 per cent over the year...

In Norfolk, each whole-time watch has a proportion of its station area as its ‘patch’. Firefighters undertake various activities, such as placing leaflets in libraries and doctors’ surgeries and setting up stalls outside supermarkets, to increase awareness of fire safety in the community.
safety legislation and enforcement. This should entail taking steps to increase public awareness of:

- the causes and dangers of domestic fires in particular, but also of other situations in which a member of the public is likely to encounter fire;
- measures that can be taken to reduce the danger of fire, such as installing and maintaining smoke alarms; and
- how to respond if there is a fire.

30. Devoting additional resources to this will obviously have a cost, though compared with the benefits of reduced death, injury and property damage this cost is small. The West Midlands Fire Service, cited above as an example of good practice, spends in the region of £1m a year on fire safety promotion. About half of this is the cost of campaigns, the rest being the cost of staff and associated overheads. This is equivalent to 40p a head for the population covered. Extrapolating this to a national level gives an indicative annual expenditure of £20m for England and Wales. Given that brigades already devote resources to this important work, not all of this amount would be new expenditure. In time, fire safety promotion efforts should lead to a reduction in the number of fire calls, but this reduction would have to be very substantial before fire cover requirements would reduce. Therefore, some additional resources are likely to be required at least in the short and medium term.

31. Chapter 2 has already drawn attention to the fact that the framework for determining risk categorisation and assigning fire cover has changed little since its original development. Having its roots in the work of the Riverdale Committee in 1936, the framework is still heavily influenced by pre-war concerns about fire storms and area conflagration. The principle that there should be a national standard to ensure that there is an adequate service across the country is sound. The existing framework falls short of this ideal, however, because:

- risk categorisation does not take sufficient account of key factors which affect the level of risk, such as demography and the fire precautions installed in buildings such as fire barriers and sprinklers;
- the standards for the speed and weight of response to fires do not reflect the changes in the way in which fires are fought. They are based on historical precedent rather than up-to-date research and analysis;
- the framework is insufficiently flexible. Risk categories are too broad to cater for local variations, and their application too rigid to allow fire authorities to tailor resources to local need. It is not possible to shift resources from one area if this would result in attendance times being even slightly longer than the standard, despite the fact that this could allow resources to be reallocated to an area of demonstrably greater need.
Risk categorisation

The risk categories in use were originally developed in 1958, and have been modified only a little since then. As a consequence they do not take account of the extent of fire safety measures now incorporated into modern commercial buildings which still fall into the higher-risk categories. Nor is any allowance made for demographic and other factors which can have a considerable influence on risk (Box B, overleaf). The risk categorisation does not reflect the fact that risk can vary with time: for example, falling in a commercial centre at night or increasing over holiday periods in a resort. Finally, the risk categories are not based on the incidence of fires or the probability of fire deaths. The probability of death in a fire is 40 per cent higher in C risk than in A risk (Exhibit 16).

Exhibit 16
Fatalities and serious fires (except car fires) by risk category

The probability of a fatality in a serious fire is 40 per cent higher in C risk than in A risk ...

Note: Serious fires are primary fires as defined by the Home Office; car fires are excluded from this analysis as they are not dependent on the risk area.

<table>
<thead>
<tr>
<th>Risk areas</th>
<th>Fatalities per 1,000 serious fires</th>
<th>Percentage of total serious fires that occur in each category</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Risk</td>
<td>2.6</td>
<td>5%</td>
</tr>
<tr>
<td>B Risk</td>
<td>3.8</td>
<td>20%</td>
</tr>
<tr>
<td>C Risk</td>
<td>3.6</td>
<td>54%</td>
</tr>
<tr>
<td>D Risk</td>
<td>2.2</td>
<td>16%</td>
</tr>
<tr>
<td>Other Risk/Unknown</td>
<td>7.7</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>3.6</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Analysis of Home Office fire statistics for England and Wales, 1991
Around 600 people die as a result of fire each year in England and Wales. However, the risk is by no means evenly distributed across the population. In particular:

- Death rates from fire are consistently higher amongst the elderly and young children. For example, in 1991, fatal casualties per million population in England and Wales averaged 13, but for under-four-year-olds were 19, for 65-79-year-olds were 16, and for over-80-year-olds were 61 per million.

- There is a strong link between the presence of children in the household and the incidence of fires. The British Crime Survey in 1988 showed that the percentage of households reporting fires increased with the number of children:

<table>
<thead>
<tr>
<th>Proportion of households reporting fires in 1987</th>
<th>%</th>
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<tbody>
<tr>
<td>No children</td>
<td>2.2</td>
</tr>
<tr>
<td>1 child</td>
<td>4.6</td>
</tr>
<tr>
<td>2 children</td>
<td>5.6</td>
</tr>
<tr>
<td>3 or more children</td>
<td>7.4</td>
</tr>
<tr>
<td>All households</td>
<td>3.3</td>
</tr>
</tbody>
</table>


- The risk of death from fire in multi-occupancy dwellings is generally accepted to be many times higher than in other dwellings (Death Trap Housing, National Consumer Council, 1991, quotes 10 times higher, but a precise figure is difficult to determine). A quarter of all fire deaths in 1992 occurred in dwellings in multiple occupation.

- Death rates are considerably higher in Scotland than the rest of the UK (and have been for many years):

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<tbody>
<tr>
<td>England and Wales</td>
<td>15</td>
<td>15</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Scotland</td>
<td>21</td>
<td>25</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>15</td>
<td>18</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>UK average</td>
<td>16</td>
<td>16</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

Source: Fire Statistics, United Kingdom, 1992, Home Office

These research findings highlight the importance of and scope for well-focused education and publicity campaigns targeting specific population sub-groups (particularly the elderly, children and those in poor housing) and specific issues (such as the value of smoke detectors and providing information on common causes of fire).
Responding to fires

33. The merits of the existing standards for speed and weight of response were considered by the Joint Committee of the Central Fire Brigades Advisory Councils in a review of the standards of fire cover in 1985. On balance, it was decided to make no changes. There remains, however, a lack of empirical justification for both the standards and the underlying approach to managing the consequences of fire. The need for further review was recognised by the 1985 report, which supported a feasibility study of the scope for developing credible and properly validated relationships between life and property losses and attendance times (paragraph 10.18). In addition, it concluded that the potential for a cost-benefit approach to the determination of the standards of fire cover should be kept under review (paragraph 10.20).

34. The current framework of standards assumes aspects of the weight of response, such as the specification of a pump and its crewing needs, which have not been recently reassessed. Available data, however, suggest that there are grounds for reviewing the standards. For instance, of 107,437 fires recorded in occupied buildings in the UK in 1992, nearly 30 per cent were extinguished without the use of any firefighting (Exhibit 17). A further 12 per cent did not require a hose and 48 per cent were put out with a hose. There were 11,000 fires which required one or more main jets to be used, of which some 1,700 (2 per cent of the total) required three or more main jets (a standard pump carries two hose-reel jets and two or four main jets).

35. The equipment needed to deal with fires in occupied buildings is, therefore, usually comparatively limited. It is common practice, however, for brigades to send two appliances to property fires, even in C and D risk areas where the standards of fire cover require only one pump. This is because, while the equipment carried by one pump may be more than sufficient to deal with a fire, the number of firefighters may not be adequate. On attending a typical house fire, for example, two members of the crew will don breathing apparatus and enter the building. A further firefighter will have responsibility for monitoring the firefighters within the building to ensure that they are operating safely and within the capacity of the breathing apparatus. A fourth crew member will be responsible for operating the pump, and the crew commander will have responsibility for managing the operation and for maintaining radio contact with the control room as necessary. A crew of five is thus fully stretched and would not be well-placed to deal with further demands such as attacking the fire from two points, rescuing individuals from a number of rooms or identifying additional supplies of water. In some senses, therefore, the second appliance functions primarily as a personnel carrier.

36. There would, therefore, appear to be grounds for reconsidering the appliances and the number of firefighters required to operate safely and effectively at a fire. Questions raised, but unanswerable without further research, include whether many fires would be better dealt with by sending one appliance with a crew of six rather than by sending two appliances arriving one after the other with a total crew of nine. Similarly, in congested areas...
where the size of current standard pumps inhibits access there may be merit in moving away from the existing standard pumps in some circumstances to smaller vehicles holding less equipment. Clearly, these questions can be decided only with the aid of scientific experiment and practical experience, but there appear to be grounds for a thorough review.

37. The 1985 Report of the Joint Committee on Standards of Fire Cover identified these issues but did not recommend fundamental changes to the standards of fire cover without further research. Given the growing pressures on brigades, there is now a pressing need to undertake research into the most effective way of dealing with fires. Brigades’ response to fires can then be based on clear evidence and analysis, and increasingly scarce resources allocated to areas of greatest need.

38. A further aspect of the standards of cover unchanged by the review is that there should be a crew of five on the first appliance sent to an incident in 75 per cent of cases, but that this may drop to four on the other occasions. The underlying logic of this rule is open to question, particularly as it does not differentiate between types of fire. In practice, many brigades aim to have a crew of five on the first appliance more often than this, and according to inspectors’ reports of brigades, average performance across the service is in the region of 85 per cent. As the rule stands, however, there is concern that 75 per cent is too low a minimum, particularly given the problems of dealing with property fires with fewer than a crew of five.

39. The framework of risk categories and associated attendance standards provides an essential foundation upon which brigades can base their resource allocation. Though originally described as guidelines, the standards have become a set of prescribed minima, and fire authorities are not permitted by the Home Office to make changes to the status of stations or to decrease the brigade establishment if this would be likely to result in attendance standards not being met. However, an authority can exceed the standards if it wishes and has the resources to do so. The fact that 65 per cent of brigades invariably send two appliances to property fires in C and D risk areas is an example of this freedom.

40. As resources become increasingly constrained, however, it will become more difficult to respond to areas of greater need without reallocating resources from areas where the actual need is not as great as the existing risk categorisation suggests. Discussions with professionals in the fire service have indicated that there may be examples of this occurring in A and C risk areas. There is a widespread recognition within the service that the C risk category includes a very wide spectrum of fire risk, ranging from high-risk urban areas to much lower-risk rural areas. This is because the category is defined on the basis of building size, use and density, taking no account of the quality of construction or socio-demographic factors which significantly influence fire risk. The prose description of C risk shows the range of actual risk possible within the category: ‘C risk 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’
As a consequence in some C risk areas there will tend to be over-provision, and in others under-provision.

41. In contrast, a number of senior fire officers are of the opinion that the recommended minimum weight of response in A risk is in some cases excessive. This is particularly so at night in many A risk city-centre areas when there are far fewer people than during the day, and consequently both less risk of fire occurring and fewer people at risk in the case of a fire. Moreover, A risk areas tend to contain the very buildings that are best protected by the precautions required under fire safety legislation, in contrast to C risk areas where few buildings are covered by fire safety legislation. The current arrangements inhibit senior fire officers and fire authorities from using their available resources flexibly to respond to these local variations in need.

Developing the framework

42. There are, therefore, three areas where the existing framework is subject to a number of limitations:
- standards of speed and weight of response are not based on recent empirical analysis, and evidence of the way fires are actually fought suggests there are grounds for review;
- risk categorisation does not take account of many factors that affect risk, such as demography and the extent of fire precautions;
- the framework is not sufficiently flexible to take into account local variations in risk.

A research-based approach to fire cover

43. There should be a national research programme to look at the costs and effectiveness of different response strategies, the speed and numbers with which the fire service arrives, their vehicles and equipment and health and safety issues. Ideally, the research programme should not take for granted aspects of the current standards of fire cover, such as specifications of the size and equipment of pumps and their crewing levels. In particular, the 75 per cent rule (paragraph 38) should be reviewed at the same time and a less arbitrary guideline determined. There would be merit in broadening the study to include the costs and effectiveness of other means of combating fire, whether through fire prevention, fire detection, fire containment or firefighting. This is because the nature of response to a given incident depends upon the time taken to detect a fire and what measures are in place to extinguish or contain it before the fire service arrives.

44. A similar exercise has recently been undertaken in Sweden based on the notion of ‘reasonable risk at reasonable cost’. This assessed the cost-effectiveness of nine different responses to fire. The study made use of data derived from experiments and existing sources. Although the conclusions of the study cannot be applied to England and Wales, because building materials, planning regulations, heating appliances, etc. differ from those in Sweden, it does show that such a study is feasible and valuable.
45. The results of a national research programme could be used to decide on:

- revised national guidelines as to speed and weight of response;
- the crewing levels needed to tackle fires safely;
- the relative balance of resources to be devoted to firefighting as opposed to fire safety; and
- the mix between local and national effort to be put into fire safety promotion.

Developing new approaches to assessing risk

46. In the longer term the approach to assessing risk and allocating fire cover should be reconsidered. An alternative approach building on national standards of fire cover would be to formulate risk management plans (Exhibit 18) which:

- analyse fire risk in a brigade's area, taking local circumstances into account better than is possible in an assessment based on broad categories;
- focus upon outcome objectives such as percentage of property value saved after fires; the proportion of houses where smoke alarms or even sprinklers are installed; and the incidence of fires;
- place equal priority on fire safety and firefighting as a means of achieving objectives;
- assess risk to firefighters, as well as the public.
47. It may be appropriate to base the assessment of risk that forms the first part of a risk management plan on the approach that has been developed by the Health and Safety Executive. This follows three stages:
- identification of a hazard (i.e. something that might cause harm);
- assessment of the likelihood of risk arising from that particular hazard; and
- appraisal of the extent of the risk, the number of people who might be affected and the severity of harm that might arise.

48. Risk management plans are used in some other countries. For example, in Sweden, although there are guidelines on fire cover, most attention is focused on an annual fire and rescue plan. This assesses the risk in a brigade’s area and details the response to be made to each likely accident or disaster (road traffic accidents, fires, chemical incidents, plane crashes, etc.). The plan specifies how the necessary personnel and equipment are to be deployed, kept in readiness and mobilised for the hazards identified.

49. This shift in the methodology and responsibility for risk assessment needs to be accompanied by a shift in the focus of the Inspectorate to monitor outcomes (such as reductions in casualties, property loss and fires, increasing public awareness of fire safety issues, and, perhaps, rescues made), as well as the achievement of attendance standards. Brigades, of course, continue to monitor and report attendance times for management information purposes, but these would cease to be regarded as the primary indicator of performance. In New Zealand, local fire departments are accountable to the national fire service for their performance against service level agreements. These specify target outcomes such as the percentage of house fires where more than 95 per cent of the building is saved; the proportion of houses fitted with smoke alarms; and the number of local children who have gone through a fire education programme similar to those developed by some brigades in this country.

The need for greater flexibility

50. In addition to these long-term developments, there are a number of changes which could be instituted in the short term. Greater discretion should be allowed to fire authorities to deviate from the existing standards of fire cover. This would include the flexibility to provide cover at marginally below the standards if it could be shown that the resources this freed could be used to achieve a greater reduction in loss of life or property elsewhere within the brigade area. Clearly such deviations should be small in scale and would be allowed only if a rigorous analysis of the risks, costs and benefits showed benefits to the population as a whole. The decision to deviate from national standards would be the responsibility of the local fire authority, though subject to external review. The Fire Service Inspectorate might undertake such a review, though its resources would need to be reassessed to ensure that it could carry out the role effectively.

51. National guidelines on risk assessment and fire cover are applied more flexibly in some countries, for example in Denmark and Sweden. Indeed,
there is a commonsense argument that assessing local fire risk and fire cover is too complex a problem to be addressed by rigid adherence to a national system that divides the whole country into fire risk categories with a set response for each. The use of specific attendances goes some way to providing the necessary flexibility. These are set by local chief fire officers and lay down standard responses to incidents at special risks (schools, hospitals, oil refineries, etc.) that are usually higher than those required for the surrounding risk area. Even so, greater flexibility is still desirable.

52. Flexibility could take the form of allowing attendance times for certain so-called rural C risk areas to be extended marginally, making it possible for cover to be provided by day-crewed or retained pumps rather than whole-time pumps. The resources released could be devoted to enhancing fire cover in urban C risk areas. Flexibility could also include fire cover for some A risk areas being varied with the time of day to reflect changes in the level of actual risk, again freeing resources for other areas. These would deal with the apparent anomalies in the existing standards.

Modernising conditions of service

53. Terms and conditions of employment are determined by the National Joint Council for Local Authority Fire Brigades and are laid down in the Scheme of Conditions of Service, generally known as the ‘Grey Book’. There are considerable benefits in establishing core conditions of service at a national level:

◆ safe and secure working conditions can be guaranteed;
◆ the risk of local manipulation of fundamental working arrangements by local employers or unions is reduced;
◆ both employers and employees can plan against a secure background;
◆ it is more efficient to conduct certain negotiations at a national level rather than locally, to avoid duplication of effort and to make use of specialist expertise.

54. The existing arrangements do offer these benefits. They also have, however, a number of drawbacks:

◆ they fail to address more fundamental areas, such as the roles and responsibilities of firefighters;
◆ at the same time they deal in detail with many comparatively minor aspects of working conditions, such as uniform allowances. This, combined with extensive appeals procedures, can have the result that making small changes to minor components of the conditions of service is a significant burden for brigades. Thus examples of good practice, such as brigades moving away from automatic issue of replacement uniform, are matched by cases of extended disputes on the same issue;
◆ they are outdated in some areas, such as rank structure. The ‘Grey Book’ provisions were devised prior to the reductions in working hours in the 1970s and so do not reflect the consequent increase in the number of staff for whom managers now have responsibility. Nor do they reflect the move
away from having territorial divisions in many brigades and the current levels of delegation of resource management;

- the existing conditions of service prevent some of the flexibilities recommended above. ‘The shift rota shall be designed so as to provide as nearly as possible that the number of firefighters normally available for duty from time to time is constant’ (Scheme of Conditions of Service, section II, part 1, paragraph 2) — a similar provision applies to control room staffing. This would not permit firefighters being moved between stations in response to variations in risk during the day and night. Nor does it allow brigades even to consider varying the staffing of control rooms in line with changes in typical workload. The composite effect is that the existing codification of the conditions of service can inhibit brigades’ ability to meet the changing demands upon them.

55. There are examples in other countries where more flexible terms and conditions of employment are used. One instance is Falck, the private company that provides the fire service in 60 per cent of Danish municipalities. Arrangements include:

- 20 per cent of staff are employed on a special contract, which means that they report to any station in the area depending on daily need;
- field staff are employed to work 8-, 12- or 24-hour shifts. All three shifts may be used on the same station.

These flexible terms and conditions enable staff to be assigned where they are required according to a daily staffing plan based on estimates of demand for services. The Falck example illustrates how flexible terms and conditions can enable resources to be deployed where they are needed, but there is no implication intended that any specific aspect of Falck’s terms and conditions should necessarily be adopted.

56. If the fire service is going to develop, any review of the national framework must also encompass the conditions of service. Consequently, the National Joint Council (NJC) should undertake a comprehensive review of conditions of service. There are a number of specific points which should be addressed:

- there should be more flexibility in the use of shift systems to allow variable crewing, where this can be shown to be justified;
- the rank and associated pay structures should be reviewed to enable them to reflect the range of roles and responsibilities in the modern fire service and to reward performance in ways other than through promotion;
- the scope of the conditions of service should be reviewed with the aim of focusing on core issues such as pay, total hours of work, overall rank structure and basic leave entitlement. They should not encroach on operational matters.
The pensions time-bomb

57. The fire service pension scheme is open to all whole-time staff ‘who are or who may be required to engage in firefighting’ (non-uniformed and control staff are part of the local government superannuation scheme). The scheme was established by the 1947 Fire Services Act and, like the police pension scheme, is not funded. Fire authorities are responsible for making payments to pensioners out of their revenue budgets, but receive a contribution of 11 per cent of salary from currently serving members of the scheme. In unfunded schemes where staff numbers remain constant, contributions initially exceed payments by the employer and there is a surplus; this is followed by a period when payments by the employer increase, before the rate of increase levels out and the employer’s payments remain broadly constant.

58. Expenditure on fire service pensions is not following this pattern, for two reasons. Firstly, the ‘levelling out’ effect described above was offset in the 1970s by a significant increase in the number of firefighters, recruited following two changes to the shift system (moving from a 56-hour week, first to a 48-hour week and then to 42). Having initially generated a contribution surplus, these employees are now beginning to retire, causing employers’ pensions payments to increase. A leap in lump sum and pensions payments is due to occur when the first wave of 1970s recruits reaches average retirement age around 2000. Secondly, longer life expectancy and high levels of ill-health retirement (for which enhanced provision exists within the scheme) are causing the overall level of pensions payments to rise. As a result of these factors, the proportion of expenditure on the fire service consumed by pensions increased from 7 per cent in 1983 to 11 per cent in 1993 (£138m per year). Assuming that total expenditure on the fire service remains constant in real terms, the figure is projected to increase still further, to 25 per cent by 2007 (Exhibit 19). Although the service has been able to cope with the current level of pensions costs, there is a real danger that the projected further increase will eat into the ‘front line’ of brigades’ operations.

59. There is a compelling need to address this problem at a national level. A possibility would be to alter the SSA formula to include a factor for pensions. This is desirable because the burden is not borne equally by all fire authorities. Every brigade has an establishment and pension roll with a distinct profile. In general, the problem is especially acute in the metropolitan authorities, where most stations are crewed by whole-time firefighters who are members of the scheme, rather than retained firefighters who are not. Even so, it would be difficult to devise an SSA mechanism that would distinguish between authorities that manage the problem well and those that do not. In addition, the overall level of funding for the fire service should be addressed, not least so that fire authorities can plan effectively for the rapid increase in employers’ contributions projected for 1999 to 2002. This is a compelling issue as fire authorities have long-term resource planning horizons; 70 per cent of their costs are operational resources deployed in a web of stations that cannot be altered quickly.

60. Although the problems surrounding the firefighters’ pension scheme need to be addressed at the national level, robust local management of early
retirements and the use of occupational health schemes can have a significant impact (see paragraphs 85 to 88 and the Management Handbook).

61. In the longer term, consideration should be given to fundamental changes to the pension scheme. Issues that need to be addressed are the financing, management and terms of the scheme. The high level of contributions required by the authorities is ultimately due to the terms of the scheme itself, such as the accruals rate (the years of service needed to obtain a given pension entitlement). Moreover, there are a number of perverse incentives at present; for example, after accruing maximum reckonable service a firefighter continues to pay 11 per cent of salary into the scheme but receives no further benefit (except if he or she obtains a pay rise and hence an increase in pensionable pay). An inter-departmental working group (with representatives from the Home Office, Scottish Office, Northern Ireland Office and Treasury) is currently reviewing the terms of the scheme with a view to improving arrangements within the existing scheme and possibly formulating a revised scheme for new entrants to the service. This is a fairly pressing matter, as the wave of retirements due in 1999-2002 will require a balancing influx of recruits who will be entitled to join whatever pension scheme is in place.

Improving funding arrangements

62. There is widespread concern as to whether the existing fire SSA formula is appropriate. There are two main criticisms:

◆ there is inequitable distribution of resources, because the formula does not sufficiently mirror the costs of providing the service;
◆ there are perverse incentives in the formula that undermine the purpose of the grant it distributes – to decrease the harm caused by fire to property and people.
63. Since 1990/91 Standard Spending Assessments have been used to distribute Revenue Support Grant. ‘An SSA represents the Government’s view of the amount of revenue expenditure which it would be appropriate for an authority to incur to provide a standard level of services consistent with the Secretary of State’s view of the appropriate amount of revenue expenditure for all authorities’ (Standard Spending Assessments Background and Underlying Methodology, Department of the Environment, 1990). English counties are free to spend more than SSA on their fire service if they are prepared to fund the increased expenditure; or to spend less than SSA provided that they satisfy the Home Secretary and the Inspectorate that adequate measures are in place for firefighting. Metropolitan authorities, however, are joint boards with precepting powers, and are subject to capping levels imposed by central government which prevent them from spending significantly above SSA.

64. All rural counties spend more than SSA and some over 40 per cent more (Exhibit 20). This fact would suggest that the decision to spend above SSA is driven not just by local democratic choice, but sometimes by underlying need. It is questionable whether authority members will always be prepared to support spending above SSA, and the setting up of combined fire authorities in some areas following local government reorganisation may be a catalyst for reviewing expenditure levels.

65. The cause of the current inequitable distribution is that the formula does not closely mirror the costs of providing fire cover, which typically comprise 70 per cent of a fire authority’s total costs. Although the client group (resident population) is included in the formula (Exhibit 21), the measures

**Exhibit 20**

**Variance between SSA and budget**

Most brigades spend in excess of SSA ...

Source: Hansard, 4 February 1994. (Figures are for England 1993/94)
used to reflect the cost of providing fire cover (population density, fires and false alarm calls, and A risk area) are at best proxies. For instance, the value of including the number of fires is dubious, since, except in rural areas covered by retained stations, this has but a small marginal impact on costs.

66. The second criticism of the formula is that it contains incentives that undermine the purpose of the grant it is used to distribute – to reduce the harm caused by fire to people and property. Because a fire authority’s SSA is linked to the number of fires and false alarms to which it responds, every fire or false alarm which it prevents results in a reduction in the grant received from central government of £476.58, compared with the marginal cost of responding to a typical incident of around £100. In effect brigades are penalised for their success in reducing fires and false alarms.

67. This is not the only disincentive to using resources effectively. The formula has already been criticised by the Commission for containing a perverse incentive. Downgrading an area from A risk to B risk leads to a reduction in SSA of £619.58 per hectare. The operational savings achieved, however, may be less than the reduction in SSA. Consequently, it is possible to envisage instances where there is an incentive to categorise risk according to the disposition of existing resources, rather than using risk categories to determine the resources needed. Because of such incentives, any direct link between SSA and risk categorisation will, despite the role of the Inspectorate, always cast doubt on the validity of risk categorisation.

Exhibit 21
Composition of SSA formula for 1994/95

The measures used to reflect the cost of fire cover are at best proxies...

<table>
<thead>
<tr>
<th>Factor</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident population</td>
<td>£9.78 per capita</td>
</tr>
<tr>
<td>Population density</td>
<td>Value dependent on weighted density factor</td>
</tr>
<tr>
<td>Fire and false alarm calls</td>
<td>£476.58 per fire or false alarm call</td>
</tr>
<tr>
<td>A risk area</td>
<td>£619.58 per hectare of A risk</td>
</tr>
</tbody>
</table>

Source: Local Government Finance Report (England), 1994-95, HMSO
68. The Department of the Environment and the Home Office have been considering a revised approach. There is a need for a formula that:

- does not penalise fire authorities for providing an improved service by reducing the incidence of fires and false alarms;
- is stable and predictable so that fire authorities can plan effectively;
- is based on reliable data which, as far as possible, are not open to manipulation by grant recipients;
- reflects underlying need, i.e. mirrors both the size and needs of the client group;
- takes account of the cost of providing the service in areas with different physical features and patterns of population distribution.

69. An approach with initial appeal is to link a large proportion of the funding directly to the number of stations or appliances, since these account for around 70 per cent of the cost of the service. However, if authorities were to be given funding for every station or appliance, this would create a disincentive to change fire cover in a way that would adversely affect funding and an incentive for authorities to overstate their cover requirements. One way around these difficulties would be to give the Fire Service Inspectorate (FSI) an arbitration role in the number of appliances that are needed to maintain standards of fire cover and so should attract SSA funding. However, this would be an exacting task for the Inspectorate given its current resources. Moreover, it would be open to the criticism that it would substantially increase the level of central government influence over the service, raising questions similar to those asked by the Audit Commission in relation to police funding.1

70. As an alternative to basing SSA on the number of stations or appliances, efforts could be made to improve the existing formula-based approach. A preliminary evaluation of the type of indicators that could be included in an improved formula suggests that:

- population should be an indicator;
- factors such as population sparsity and settlement patterns should be included to reflect the differing costs of service provision in different areas;
- there is a good case for a socio-demographic factor to be included (supported by research into the links between socio-economic conditions, housing, age and fire risk);
- it might be necessary to include an element related to property. However, if property were represented in the formula by fire risk categorisation, then the formula would run into a similar objection to that raised above to the inclusion of the number of stations or appliances. The indicator would be open to manipulation by fire authorities, unless it were closely ‘audited’ by the Fire Service Inspectorate, and would provide an in-built incentive not to change risk categorisation in a way that adversely affected funding;
- the number of fires and false alarm calls is not an appropriate indicator.

The benefits of reform

71. Some of the recommendations set out in this section (Exhibit 22) would require a major cultural change to the service, which has operated within the existing framework for many years. However, the potential benefits (Box C, overleaf) justify such fundamental reforms.

### Exhibit 22
**Facing the challenge**

There are solutions to each problem...

<table>
<thead>
<tr>
<th>Problems</th>
<th>Causes</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ineffective national response to the challenge of fire:</td>
<td>Emphasis on firefighting rather than fire safety promotion</td>
<td>Shift of emphasis from cure towards prevention - statutory responsibility for fire safety promotion and move to outcome measures of performance</td>
</tr>
<tr>
<td>- Total fires not decreasing</td>
<td>Rigid framework for determining fire cover provision resulting in inflexible allocation of resources</td>
<td>Immediate research to identify the causes of fires and the effect of different speeds and weights of response</td>
</tr>
<tr>
<td>- Serious fires increasing</td>
<td>Absence of demography, temporal factors and frequency of fires in categorisation of risk</td>
<td>Review to determine new approach to risk assessment taking into account variations in risk over time</td>
</tr>
<tr>
<td>- Fire deaths high</td>
<td>Approach to risk categorisation and fire cover provision based on historical precedent rather than empirical analysis</td>
<td>Short-term changes to risk categorisation to increase local flexibility and respond to specific anomalies</td>
</tr>
<tr>
<td>- Fire injuries increasing</td>
<td>Perverse incentives in funding arrangements</td>
<td>Brigades to prepare local fire risk management plans based on assessment of local risk</td>
</tr>
<tr>
<td>Fire service facing growing financial problems</td>
<td>Increasing employers’ contributions to pension costs</td>
<td>Strengthened role for FSI in reviewing local risk assessment</td>
</tr>
<tr>
<td></td>
<td>Inadequate SSA formula</td>
<td>Review of conditions of service</td>
</tr>
<tr>
<td></td>
<td>Insufficient inter-brigade co-operation adding to the cost of support services</td>
<td>Resolve pension funding</td>
</tr>
<tr>
<td></td>
<td>Variations in effectiveness of resource management at a local level</td>
<td>New SSA formula to be developed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Local improvement opportunities to make better use of available resources</td>
</tr>
</tbody>
</table>
It is difficult to assign financial benefits to the reforms proposed in this report, for two reasons:

- much of the benefit will derive from resources being better targeted on need. Thus many of the benefits are likely to be improvements in service rather than cost savings;
- a number of the changes proposed will need to be validated by further research to ensure that they will deliver the benefits expected.

Notwithstanding these caveats, this box aims to illustrate the scale of the possible benefits by taking a number of examples and attempting to estimate the improvement opportunities.

**Sending one appliance with a crew of six, rather than one with five and one with four**

Brigades send two appliances to many fires because of the risk of a crew of five being insufficient to deal with the fire safely and effectively. The second appliance thus serves, to some extent, as a personnel carrier rather than a pumping appliance. It may therefore be possible to respond adequately to many fires by upgrading the crewing of the first appliance to six and dispensing with the second pump.

This would lead to a saving of three posts per watch. The total number, allowing for four watches and typical levels of leave and other absences, is 17 staff. At a cost of £20,000 per firefighter, this leads to £350,000 a year being freed for reallocation from a two-pump station.

It is difficult to extrapolate the potential savings on a national basis. However, some idea of the magnitude of the resources involved can be gained by estimating the number of stations with two pumps from CIPFA information on stations serving B risk areas. There are 191 of these in England and Wales. Assuming that this change could be made in half of these stations, the amount of resources freed for reallocation would be £33m.

**Reducing staffing of A risk stations at night**

The incidence of fires varies markedly with the time of day. In an A risk city centre, it may well be that the risk at night drops owing to the fire precautions inherent in modern commercial buildings and the fact that the use of these buildings is limited at night. It may be possible to reduce the fire cover at night during the quieter periods. This would be facilitated by the fact that travel times at night are substantially reduced, making it easier to bring extra resources into the city centre if they are required.

An A risk station with two pumps typically needs a total of 52 crew. If one pump was staffed for half the day only, it should be possible to run the station with a staff of 39, a saving of 13 (i.e. 25% of the total). Allowing for a staff cost of £20,000 per firefighter this would lead to £260,000 a year being freed for reallocation.

There are 52 stations serving A risk areas in England and Wales. Assuming that this approach could be applied across the board, this analysis indicates that overall £13.5m could be made available.

**Devoting resources to fire safety promotion**

West Midlands has already been cited as an example of the value of concerted efforts on fire safety promotion. The annual budget for this is in the region of £1m — significantly less than the salary cost of crewing two whole-time pumps. The average reduction in deaths and injuries achieved in the brigade area had a value of £15m a year, based on the values attributed to deaths and injuries in Department of Transport cost-benefit analysis. This makes a strong case for spending on fire safety promotion.
72. The long-term objective of the reforms would be to create a ‘virtuous’ circle (Exhibit 23). The starting point would be a programme of research into fire risk assessment and response strategies. This would provide the basis for a more balanced national framework which would specify broad codes of minimum standards of fire cover and employment conditions and a set of output measures against which to monitor overall performance. A more effective and efficient use of resources should result. For example:

- it would encourage a shift in emphasis from cure to prevention, tackling the causes of fire rather than just dealing with the consequences. By creating greater public awareness of the risk of fire and, specifically, encouraging more widespread use of fire safety devices, such measures would reduce the risk of fire;

- it would allow individual brigades greater flexibility to tailor their services to local needs and to manage their resources to best effect.

73. Steps such as those outlined in this section can be expected to reduce the number of fires and resultant loss of life and property. The virtuous circle is completed by the beneficial consequences that the reduced risk will have in controlling the demand for firefighting resources. Such scenarios are, of course, much easier to set down on paper than to achieve in practice. But these are not wholly new suggestions; reports over the last 25 years have made similar recommendations; and the underlying philosophy has the support of senior fire service professionals. When taken together, these changes could achieve a major realignment in the approach of the fire service in this country, changing the emphasis so that a better balance is achieved between fire prevention and cure and allowing fire authorities to adapt their services to reflect local needs. It will then be the responsibility of fire authorities and their

Exhibit 23
A virtuous circle

Modernising the national framework could facilitate better use of resources and so reduce the risk and consequences of fire...
chief officers to take the service forward and improve the use of available resources.

74. These are not changes which can be made immediately. They require significant further research and more intensive use of the operational data available to individual brigades in planning response strategies. However, there are a number of opportunities open now to brigades to improve the efficiency and effectiveness of operations. These build on the foundation of current good management within the service and can be achieved within the existing national framework. These value-for-money opportunities form the subject of Chapter 4.
Operational firefighting resources account for 70 per cent of fire service expenditure. Maximising their effectiveness is the key to achieving good value for money. Improvement opportunities include managing sickness absence, limiting stand-down time, managing early retirements and limiting work-related accidents.

There are further opportunities to be realised from reviewing management and support costs, and from encouraging inter-brigade collaboration on control rooms and recruit training.

4 Seizing Local Improvement Opportunities
75. The Commission has seen many examples of good management practice during the study. Fire authorities and brigades now need to adopt these more widely. This section starts by looking at the key area of managing operational resources. It then goes on to look at managing support services and at some of the opportunities for increasing co-operation between brigades. More detailed information on these and other local improvement opportunities is contained in the Management Handbook.

Maximising operational effectiveness - managing firefighting resources

76. Operational firefighting resources account for more than 70 per cent of fire service expenditure and are used for delivering front-line services. Maximising their effectiveness is, therefore, the key to achieving good value for money from the fire service. This chapter considers the strategic aspects of resource management, looking in particular at how brigades allocate and deploy resources, use operational duty time and manage sickness.

Resource allocation and deployment

77. The key to deciding the number and location of operational resources is risk categorisation, which determines the location and staffing of stations and pumps. Brigades have reviewed their risk categorisation since the most recent guidance in 1985. Nationally there has been a substantial downgrading of risk, particularly in the higher categories (Exhibit 24).

78. Although risk has been downgraded, this has not been reflected nationally in the number of stations or their crewing systems, which are relatively static (Exhibit 25). Despite the fact that D risk and Remote Rural areas have increased, the number of retained pumps, which typically cover such areas, has declined; conversely although A, B and C risk areas have decreased, whole-time appliances, which usually cover these areas, have increased (Exhibit 26). Whole-time strength (the number of firefighters actually employed rather than authorised) has risen slightly from 34,473 in 1983 to 34,726 in 1993, and retained strength has fallen slightly from 13,327 in 1983 to 12,631 in 1993.

<table>
<thead>
<tr>
<th>Risk category</th>
<th>Percentage of national area within risk categories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1983</td>
</tr>
<tr>
<td>A</td>
<td>0.4%</td>
</tr>
<tr>
<td>B</td>
<td>3.5%</td>
</tr>
<tr>
<td>C</td>
<td>13.9%</td>
</tr>
<tr>
<td>D</td>
<td>82.2%</td>
</tr>
<tr>
<td>Remote Rural</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: CIPFA statistics
There are various explanations for this apparent lack of change in crewing systems to match changes in risk categorisation:

◆ first, a lengthy consultation process is required before a station may be closed and there is often substantial local opposition to closing a fire station;
◆ constraints on capital expenditure can prevent a new station being built to replace two badly sited ones even though the year-on-year savings justify the investment; and
◆ the increase in the number of incidents that has occurred (Exhibit 1, page 8) means that, even though the risk categories of the area covered by a station may have been downgraded, the station may in fact be busier and its crewing system remain unchanged.

79. The number of fires dealt with by stations of each type (i.e. whole-time, day-crewed, nucleus-crewed and retained) varies considerably (Exhibit 27, overleaf). For example, the quietest 10 per cent of stations with one whole-time pump deal with a similar number of incidents a year as the busiest 10 per cent of day-crewed stations. In some cases, at disproportionate cost, stations are made whole-time to cover for a comparatively small area of risk, with low likelihood of incidents. Brigades should ensure that they review these situations carefully to assess accurately both the level of risk and the cost.

### Exhibit 25
Station openings, closures and crewing changes

The deployment of stations and crewing arrangements are relatively static ...

<table>
<thead>
<tr>
<th>Year</th>
<th>Openings</th>
<th>Closures</th>
<th>Crewing changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>1988</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>1989</td>
<td>8</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>1990</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>1991</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>1992</td>
<td>1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1993</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Home Office

### Exhibit 26
Stations by type of crewing

There has been a small shift from retained toward whole-time crewing ...

<table>
<thead>
<tr>
<th>Station crewing system</th>
<th>1983</th>
<th>1993</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percentage of total</td>
</tr>
<tr>
<td>Whole-time</td>
<td>582</td>
<td>36.4%</td>
</tr>
<tr>
<td>Day-crewed and nucleus-crewed</td>
<td>134</td>
<td>8.4%</td>
</tr>
<tr>
<td>Retained</td>
<td>881</td>
<td>55.2%</td>
</tr>
<tr>
<td>Total</td>
<td>1,597</td>
<td></td>
</tr>
</tbody>
</table>

Source: Home Office

There are various explanations for this apparent lack of change in crewing systems to match changes in risk categorisation:

◆ first, a lengthy consultation process is required before a station may be closed and there is often substantial local opposition to closing a fire station;
◆ constraints on capital expenditure can prevent a new station being built to replace two badly sited ones even though the year-on-year savings justify the investment; and
◆ the increase in the number of incidents that has occurred (Exhibit 1, page 8) means that, even though the risk categories of the area covered by a station may have been downgraded, the station may in fact be busier and its crewing system remain unchanged.
associated with providing different levels of cover. Whilst the national standards need to be reviewed to make brigades’ flexibility in such cases more explicit, failure to evaluate such instances will allow fire cover provision to become out of step with actual risk. Amongst other consequences, differences will be perpetuated in the level of fire risk to which different sections of the population are exposed. The study team was told of a number of instances where stations could have their crewing system changed to a less expensive arrangement or a station could be closed while still meeting the standards of fire cover.

80. There are substantial differences in the way whole-time pumps are staffed. In some brigades most whole-time pumps have riding station officers (with assistant divisional officers as station commanders), whereas many brigades do not have staff above the rank of sub-officer riding on pumps. A comparison of neighbouring semi-rural brigades covering similar risk categories shows that in one brigade almost half its pumps have riding station officers, whilst its neighbours have none. Nationally, 83 per cent of station officers deployed on stations act not as station commanders, but as riding station officers in charge of a crew or a watch. The view of brigades with more senior staff riding on pumps is that they are there in case there is a large or difficult fire – but such fires are relatively few and far between. Other brigades have recognised this situation and choose to summon a more senior officer to an incident as and when required without having the senior officer as a permanent member of the crew.
Managing sickness

81. Sickness rates vary considerably both between brigades and between divisions and stations within brigades. The national average sickness level (not including light duties) is 11 shifts per rider, equivalent to 7.3 per cent of shifts available after leave. There is a wide range between brigades from 15.9 shifts to 5.2 shifts, with a brigade average of 9.3 shifts (Exhibit 28). The rates in the fire service are generally high in comparison with the public sector average of 3.9 per cent and the average for all manual workers of 5.2 per cent. This is explained in part by the hazardous nature of the work and some special needs in respect of fitness. For example, a sprained ankle or broken finger would prevent a firefighter from undertaking operational duties. However, reducing sickness rates in all brigades to the level of the lower quartile would save £17m a year nationally.

82. Some brigades are making strenuous efforts to reduce their sickness rates and are achieving excellent results. Wiltshire, for example, reduced the rate from 15 shifts (excluding light duties) in 1989 to 6 shifts in 1992. All brigades need to introduce a comprehensive sickness management plan with clear commitment from top management, members and staff-side representatives. The plan needs to be supported by a range of systems and procedures, including management information to monitor performance and patterns, specialist training for line managers and welfare provision in the form of occupational health staff. These reflect the key principles for the successful management of absence identified in the Commission’s 1993 publication Get Well Soon.

Managing leave

83. The amount of leave for operational staff is laid down in the national conditions of service. The way in which the leave allowance is combined with...
days off under the shift system is, however, subject to local interpretation. A number of authorities also grant additional leave as a matter of policy. In addition, staff may be granted extra leave as a result of attending a residential course, on compassionate grounds and for a variety of other reasons. Leave for these miscellaneous reasons is usually described as ‘other absences’.

Consequently, the amount of leave for operational staff can vary significantly between brigades from 35.5 shifts a year to 26.9 shifts a year (Exhibit 29). Because extra staff have to be employed, granting additional leave has a significant cost. Each day of leave costs a fire authority £170 per rider. Bringing all brigades down to the level of the lower quartile would lead to savings of £8m per year.

Dealing with early retirements

Firefighting is a hazardous occupation and accidents at work are an important concern. Brigades need to take steps to reduce the impact of these by monitoring incidents, identifying common causes and providing appropriate equipment, clothing and training. In the West Midlands Fire Service, for example, analysis of injury data revealed that a large number of hand injuries were taking place during training and attending incidents. The issue of a higher-quality glove has resulted in a reduction in hand injuries from 90 in 1990 to 26 in 1993. Similar analysis has led the brigade to prohibit informal games of volleyball, which were causing a number of injuries during physical training periods - other brigades have banned volleyball altogether. As a consequence of this proactive approach to managing injuries, West Midlands has reduced accidents by a quarter between 1990 and 1993.

There is a particular problem in respect of early retirement due to injury on duty or other ill-health causes. Between 1985 and 1992 only 29 per cent of firefighters retired ordinarily, whereas 71 per cent retired early, of whom 22...
per cent retired due to injury on duty and 49 per cent on the grounds of other ill-health. The problem is particularly acute in some brigades. For example, in four brigades more than 90 per cent of all retirements in this period occurred early due to injury or other ill-health. This not only results in a premature loss of highly skilled staff, but also imposes large financial penalties on the authorities.

87. Of particular concern is the number of occasions on which early retirements on medical or injury grounds appear to coincide with the times when, under the terms of the pension scheme, early retirement is particularly beneficial. After 15 years’ service the provisions of the scheme allow for an increase in the pension payable for injuries, and firefighters receive a pay enhancement, thus qualifying for increased benefits; and 26.5 years’ service is the earliest point at which the full pension benefit is available under the terms for ill-health retirement (Exhibit 30).

88. The costs of these early retirements are substantial and exacerbate the problems with the pension scheme discussed in the previous chapter. There are, however, a number of options open to fire authorities to contain the costs of early retirements, for instance:

- limiting the risk of accidents in the first place;
- the careful application of medical and fitness standards;
- the greater use of occupational health schemes, extended to provide specialist treatment and rehabilitation;
- firm management control over ill-health retirements.

Making best use of duty time

89. Staffing is constant in whole-time stations, though the demands on the service vary considerably with the time of day (Exhibit 2, page 9). The

Exhibit 30
Ill-health retirements by length of service as a proportion of all retirements

The pattern of retirements gives cause for concern ...
previous chapter has argued for greater flexibility in this area, but in the meantime there is much that brigades can do to maximise the use of their operational resources. Change-overs between shifts are at 0900 hours and 1800 hours, the latter coinciding with the period of peak demand. An improvement would be to bring forward the change-over times by, say, two hours, to 0700 hours and 1600 hours, or by one hour to 0800 hours and 1700 hours. This would:

- avoid the change-over occurring in the middle of the evening peak time for calls;
- allow more time for useful activity before stand-down on the night shift without sacrificing any productive time in the morning.

This is an issue on which individual brigades could take the initiative within the existing national framework.

90. A further opportunity for action at a brigade level is in the area of stand-down time. This is the period when, other than responding to emergency calls, firefighters are not required to undertake active duties. The national conditions of service specify the stand-down period as starting at midnight, with staff parading for work at 7.00 a.m. In many brigades, however, the amount of stand-down time exceeds this standard seven hours a night (equivalent to 29 per cent of time on duty). Some brigades allow stand-down on day shifts, and most brigades allow watch officers to exercise their discretion by standing down watches early if essential tasks have been performed. Official stand-downs vary considerably (Exhibit 31).

91. Extended stand-down times shorten the length of the working day, and there is a consequent cost. Operational staff based on stations will have less time to perform tasks such as hydrant inspections and fire safety work. Ultimately, dedicated staff must be deployed instead, or the tasks will not be done. In addition, opportunities to train are lost. This is not to say that fire safety work or hydrant inspections should necessarily be conducted at 11 p.m., but other tasks that can be performed late in the evening can be scheduled accordingly.

92. Station-based operational staff are very well placed to undertake fire safety promotion work. The combination of their professional experience and the high public regard they enjoy should enable them to convey a powerful fire safety message to members of the public. The initiative by Norfolk (Box A, page 27) of allocating part of station areas to whole-time watches for the purpose of fire safety promotion is an excellent example of this.
Ensuring that the objectives of support services are properly articulated and that their reporting lines are clear is an imperative for all organisations. The extension of compulsory competitive tendering (CCT) to white-collar services and the impending reorganisation of local government in non-metropolitan areas serve to heighten the importance of these issues for brigades.

Roles, responsibilities and relationships

In common with the approach in most organisations today, fire brigades are devolving management responsibilities to local commanders. In spite of this, however, users of support services (whether they are provided by the brigade or the local authority) are still generally regarded as ‘recipients’ rather than ‘customers’.

A proven approach to clarifying responsibilities and relationships is to introduce quasi-contractual arrangements, in the form of service level agreements (SLAs). Whilst SLAs are quite common in the fire service, 28 per cent of fire brigades surveyed were not able to negotiate the cost of SLAs and the services supplied. All brigades should have the flexibility to do this. Where they do not, the situation falls far short of the level of user control identified as good practice in the Commission’s 1994 publication, Behind Closed Doors.

Management structures in brigades have traditionally been hierarchical, but some brigades are now flattening their structures to improve communications and reduce management costs. Other brigades, while deciding that a divisional structure is necessary because, for example, of the size of the area covered by the brigade, are still delegating considerable responsibility down to station level. Clearly, solutions need to be tailored to local circumstances, but there should be a systematic approach. Advice on these issues and performance management is provided in the Audit Commission’s 1995 official stand-down time as a percentage of time on duty for about half the brigades exceed the stand-down time set out in the ‘Grey Book’...
reports, Paying the Piper and Calling the Tune. Of particular interest is the finding that good communication has a major impact on staff attitudes.

97. Management costs are a significant part of brigade budgets, some £130m or 10 per cent of expenditure nationally. They vary widely between brigades - moving all brigades to the performance of the most efficient quarter would save some £29m a year nationally. Brigades may be constrained from realising these savings unless authorities review their policies on delegation and the provision of central support services. Authorities and brigades should, therefore, work together to:

- define clearly the roles and responsibilities of all staff and ensure that they are well understood;
- recognise that relationships between units are particularly important. SLAs and market testing can be useful disciplines in sharpening these if used properly;
- review their management costs with a view to reducing them to the level of the most efficient quarter of brigades.

Matching skills to role needs

98. A further, important aspect in ensuring that support functions are efficient is to analyse the competency requirements of roles and to match staff skills to these requirements. A number of brigades, such as London and West Yorkshire, have developed comprehensive analyses of the requirements of different roles. The Fire Service College is also involved in this initiative. Many other brigades are currently developing competency frameworks for posts. The exercise would be facilitated by greater co-operation at a working level between brigades.

99. As part of a review of role requirements, brigades should examine critically the extent to which activities require the specialist skills of uniformed firefighters; non-uniformed staff already make an important contribution to the fire service and constitute some 10 per cent of all staff. This is important not only because there are cost savings from the use of non-uniformed staff (particularly from reduced training and pension costs), but because it also enables recruitment of suitably qualified staff in key areas such as information technology, personnel and management training and it releases fire officers to concentrate on their own specialist areas, which are becoming increasingly technical. There is scope to use more non-uniformed staff (Exhibit 32).

100. Unlike the police service, the fire service does not have a commonly recognised checklist of the functions that could be provided effectively by non-uniformed staff, or even clear criteria to determine whether posts require operational skills and experience. The criteria should be that uniformed personnel are used only where operational experience is required or where operational uniformed staff have the time available. The only caveat to this should be that brigades need to have a minimum number of senior officers available to provide cover for major incidents.
Inter-brigade collaboration as a means of increasing support function efficiency

101. Collaboration between brigades on operational matters is excellent, with clear and effective arrangements for sharing workload at brigade borders and for standby moves and make-ups in the event of major incidents. However, arrangements for co-operating in administrative and support areas are more limited and these areas offer an opportunity for brigades to build on their success in operational matters.

Control rooms

102. Each brigade in England and Wales has its own control room. Collaboration between brigades in respect of control room activities is limited to providing emergency cover. The need to have a minimum of two people on duty at any one time means that, irrespective of how few calls a brigade receives, the minimum number of control staff will be in the range of 15 to 20. If brigades were to amalgamate control rooms, then substantial savings could be achieved, in the region of £13m a year. Without this step existing arrangements contain substantial inefficiencies due to lost economies of scale.

103. There is reluctance within much of the service to take such a step, particularly as many brigades have recently renewed, or are renewing, their control systems. The fact that many brigades will have updated systems does allow a less fundamental form of collaboration. By sharing databases it would...
be possible for smaller brigades to close their control rooms at night, with the work being absorbed in the surplus capacity of other brigades.

104. Another way of achieving economies of scale that could be considered is the combining of fire and ambulance control rooms, as happens in several other countries. For instance, Falck, a private company that in many parts of Denmark provides both fire and ambulance services, controls and mobilises fire and ambulance services in the same control rooms; whilst in Sweden a single national organisation, SOS Alarmering, has for many years successfully answered all 90000 (i.e. 999) calls and mobilised fire and ambulance services. Economies of scale exist not just in the staff and equipment used to answer calls, but in the development of new systems, such as Geographic Information Systems and control consoles. Practices from overseas cannot always be applied in the UK, but the examples suggest that control rooms are the main area where greater collaboration between emergency services might be considered.

Recruit training

105. The need for brigades to collaborate more on recruit training was raised by the Holroyd Report in 1970. It has been raised by a number of subsequent reports including the Audit Commission Occasional Paper in 1986, but there is still considerable scope for brigades to increase their co-operation in this area. Analysis of information collected during the study suggests that the national capacity for recruit training is approximately twice the amount required. In addition to this waste of resources, training is likely to be of a lower quality than it could be, particularly in the smaller brigades which undertake recruit training on their own.

Seizing local improvement opportunities

106. This chapter has illustrated that, although reform of the national framework is crucial to secure an effective response to fire, there are opportunities within the current national framework to improve the use of resources (Box D). The resources freed by the application of these initiatives are estimated to be £67m (Exhibit 33, overleaf). There are also other areas where it may be possible to release further resources, but it is not possible at this stage to quantify their value. Not all will be available as cash savings; for example, in some cases the resource freed will be the time of operational staff available for valuable work such as fire safety promotion, fire safety and hydrant inspections or training. In addition, a proportion of the resources freed could be devoted to meeting the requirements of a statutory duty to undertake fire safety promotion. The growing emphasis on competency-based training for firefighters may also have a cost. The Management Handbook will assist brigades in identifying examples of good practice that will increase the efficiency and effectiveness of the services delivered.
Box D
Summary of areas where there may be opportunities for better utilisation of resources

Operational Resources
- Ensuring station crewing is reviewed following changes in risk categorisation.
- Managing sickness in line with good practice.
- Limiting work-related accidents.
- Managing early retirements.
- Making effective arrangements for moving staff between stations to cover any shortfalls.
- Limiting stand-down time.
- Use of operational staff to do fire safety and hydrant inspections and fire safety promotion.
- Limiting leave for shift staff to 30 shifts a year.
- Reviewing Flexible Duty (on-call) arrangements for senior staff to ensure that the most effective use is made of their time.

Management and Support Services
- Delegating responsibility for financial management.
- Bringing inter-rank ratios in line with typical practice.
- Increasing the use of non-uniformed staff.
- Establishing effective service level agreements.

Training and Personnel Management
- Introducing a training plan based on competencies.
- Maximising the utilisation of training facilities.

Control Rooms
- Matching control room staffing more closely with workload.
- Maximising the effective use of control staff time.
- Sharing control room facilities with other brigades.

Vehicles
- Bringing levels of reserve vehicles in line with good practice.
- Bringing number of service visits in line with good practice.
- Using fleet information systems to monitor repair and maintenance costs of individual vehicles.

Purchasing
- Co-operating with other brigades and organisations to purchase equipment and goods.
- Setting stock levels in line with usage.
- Bringing costs of uniforms and equipment in line with good practice.
### Quantifiable opportunities

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<th>Value p.a</th>
<th>Comments</th>
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<td>Sickness</td>
<td>£17m</td>
<td>The extent to which this is realisable as a cash saving will depend on the extent to which a reduction in sickness levels in brigades will enable them to maintain crewing levels with fewer staff on a station. It is estimated that at least £10m will fall into this category. The remaining improvement opportunities will depend on the extent to which the greater availability of operational staff can be used to undertake additional training or non-operational productive work such as hydrant and fire safety inspections or fire safety promotion.</td>
</tr>
<tr>
<td>Leave</td>
<td>£8m</td>
<td>The same comments apply as for sickness. As the difference between upper and lower quartiles is smaller for leave than for sickness, the realisable savings are likely to be small.</td>
</tr>
<tr>
<td>Management structures</td>
<td>£29m</td>
<td>Savings will be achieved by slimming down management structures, and will be contingent on the rate at which this can be achieved.</td>
</tr>
<tr>
<td>Control rooms</td>
<td>£13m</td>
<td>Saving is contingent upon steps being taken to amalgamate control rooms. It is estimated that smaller brigades relying on other brigades at night could achieve savings of about £3m.</td>
</tr>
</tbody>
</table>

### Non-quantifiable opportunities

<table>
<thead>
<tr>
<th>Area</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>Stand-down times</td>
<td>Brigades limiting their stand-down time would release more time for work such as fire safety inspections by operational staff. The extent of realisable savings is likely to be small, resulting from cases where there can be a reduction in non-operational posts.</td>
</tr>
<tr>
<td>Early retirements</td>
<td>The savings achievable from more effective management of early retirements are difficult to quantify but will include the deferment of paying lump sums until normal retirement age and the retention of the services of skilled and experienced employees.</td>
</tr>
<tr>
<td>Purchasing</td>
<td>It is difficult to predict the likely benefits of greater collaboration in purchasing. For the purpose of illustration, however, given that expenditure on goods and services by the fire service nationally is about £120m a year, a 2 per cent reduction in prices from improved purchasing would free some £2.4m a year.</td>
</tr>
<tr>
<td>Changing the crewing of stations or closing stations</td>
<td>Reviews of fire cover requirements can have a significant impact on cost. Changing the crewing of a station from whole-time to day-crewed can save over £250,000 a year. The annual saving in closing a station ranges from £625,000 for a whole-time station to £370,000 for a day-crewed station and £40,000 for a retained station.</td>
</tr>
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</table>
The way forward is to modernise the national framework. This will require the concerted co-operation of national organisations, supported by the efforts of local authorities and chief fire officers.

The agenda for change is substantial and demanding.
107. Fire continues to present a considerable challenge to the country as a whole. The number of people who die because of fire is too high, and the incidence of fires and injuries owing to fire continues to rise. Despite the scale of the problem, there has been no nationally co-ordinated response. Many of the specific problems, causes and solutions identified in this report have been similarly identified in previous national reviews, but little change has resulted. Moreover, mounting financial pressures on fire authorities, not least the growth in the cost of pensions, are likely to exacerbate the problem. Local improvement opportunities exist within the current framework, and these have been described in detail in the Management Handbook. However, the more fundamental issues can only be addressed by modernising the national framework. This will require the concerted co-operation of national organisations, supported by the efforts of local authorities and chief fire officers. A national action plan is outlined in Box E. Specific actions that should be taken include:

◆ the Home Office should launch a research programme into fire risk (where, when and why do fires occur? how do fires spread?) and possible response strategies, so that a future framework of national fire cover standards can be formulated based on empirical evidence. The framework should incorporate a cost-benefit approach to tackling fires, and should not take as given aspects of the current standards such as the national specification for a pump or its crewing levels;
◆ in the short to medium term specific anomalies in the standards of fire cover should be dealt with;
◆ the brief of the Inspectorate should be revised to allow a more flexible approach to local responses to fire risk, based on local risk management plans. Increased emphasis should be placed by the Inspectorate on fire safety and outcome measures;
◆ consideration should be given to placing a statutory responsibility upon fire authorities to undertake fire safety promotion work;
◆ there should be encouragement given to multi-agency efforts to combat fire, involving the insurance industry and others. Through the discounts it offers on insurance premiums, the insurance industry has a major influence on the installation of fire safety measures, such as sprinklers;
◆ the NJC should review conditions of service to introduce more flexibility into the use of shift systems and to enable rank and pay structures to reflect more closely individuals’ roles and performance;
◆ the Department of the Environment in conjunction with the Home Office should revise the fire SSA formula to remove perverse incentives, encourage fire safety and allocate resources more in line with need. Consideration should be given to including a factor for pensions in the SSA formula;
◆ the terms and funding of the firefighters’ pension scheme should be addressed as a matter of priority;
◆ a national initiative should be taken by the Inspectorate, the local authority associations, the Chief and Assistant Chief Fire Officers’ Association and
### Box E
#### National action plan

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<td><strong>National</strong></td>
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<td>Shift in emphasis from firefighting to fire prevention</td>
<td>Consider extending statutory responsibilities of fire authorities to include fire safety promotion. Advice on developing robust outcome measures. Encourage multi-agency efforts to improve fire safety, involving the insurance industry and others</td>
</tr>
<tr>
<td>Research into the causes of fire and a cost-benefit analysis of different response strategies</td>
<td>Research to be sponsored by Home Office</td>
</tr>
<tr>
<td>Short/medium-term amendments to existing risk categorisation</td>
<td>Consider amending A and C risk categories</td>
</tr>
<tr>
<td>Review of conditions of service</td>
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<tr>
<td>Development of new SSA formula</td>
<td>Contribute to discussions on new formula</td>
</tr>
<tr>
<td>Consolidation of recruit-training resources</td>
<td>Encouragement to set up regional training centres</td>
</tr>
<tr>
<td>Inter-brigade collaboration on the use of control rooms</td>
<td>Encourage smaller brigades to collaborate in the use of control rooms</td>
</tr>
<tr>
<td>Addressing problems associated with the national pension scheme</td>
<td>Home Office study into terms and conditions of scheme already underway</td>
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other interested parties to collaborate to reduce under-used capacity in recruit-training centres and control rooms.

108. The agenda for change is substantial and demanding. Not to take action, however, would place the service in the line of fire – under increasing financial constraint but unable to respond with the flexibility that could be achieved by a revision of the framework. The Commission is confident, on the evidence of the study, that brigades are ready and willing to respond to the challenge of change; whether they are able to respond depends on the readiness to modernise the national framework.
Appendix A

 Brigades visited during the study

 Main fieldwork brigades

◆ Royal Berkshire Fire and Rescue Service
◆ Kent Fire Brigade
◆ Lancashire County Fire Brigade
◆ London Fire Brigade
◆ Norfolk Fire Service
◆ West Midlands Fire Service
◆ West Yorkshire Fire Service

 Other brigades studied

◆ Cambridgeshire Fire and Rescue Service
◆ Cleveland County Fire Brigade
◆ Devon Fire and Rescue Service
◆ Dyfed County Fire Brigade
◆ Essex County Fire and Rescue Service
◆ Hampshire Fire and Rescue Service
◆ Hertfordshire Fire and Rescue Service
◆ Wiltshire Fire Brigade
Appendix B

Members of the Advisory Group

- Mr Jeremy Beech, CBE, QFSM, SBSJ, FIFireE, Chief Fire Officer, Kent Fire Brigade
- Mr Andrew Best, QFSM, MIFireE, Chief Fire Officer, Merseyside Fire Brigade
- Mr Paul Carey-Kent, BA, IPFA, Assistant County Treasurer, Hampshire County Council
- Mr Andy Clyde, IPFA, Treasurer, London Fire & Civil Defence Authority
- Mr Alan Gray, GIFireE, Chief Fire Officer, Cambridgeshire Fire & Rescue Service
- Mr Brian Robinson, QFSM, Chief Fire Officer, London Fire & Civil Defence Authority

Members served in their personal capacities.
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District Auditors were first appointed in the 1840s to inspect the accounts of authorities administering the Poor Law. Auditors ensured that safeguards were in place against fraud and corruption and that local rates were being used for the purposes intended. The founding principles remain as relevant today as they were 150 years ago. Public funds need to be used wisely, as well as in accordance with the law. The task of today's auditors is to assess expenditure, not just for probity and regularity, but for value for money as well.

The Audit Commission was established in 1983 to appoint and regulate the external auditors of local authorities in England and Wales. In 1990 its responsibilities were extended to include the National Health Service. For more information on the work of the Commission, please contact:

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SW1P 2PN
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