



National Audit Office

New Dimension – Enhancing the Fire and Rescue Services’ capacity to respond to terrorist and other large-scale incidents

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SUMMARY

1 The New Dimension programme (“the Programme”) was established following the terrorist attacks on the United States of 11 September 2001. The programme now aims to enhance the capacity of Fire and Rescue Services in England to rapidly, effectively and flexibly tackle the consequences of terrorist and other large-scale catastrophic incidents, such as flooding, by: providing appropriate specialist vehicles and equipment; funding training for firefighters to use the new equipment; and supporting planning for deployment of the equipment in the case of an emergency. The Department for Communities and Local Government (the Department) has committed £330 million to the programme. A timeline of significant events can be found at **Figure 2 on page 8**.

2 This report examines how efficiently and effectively the Department has enhanced the Fire and Rescue Services’ capacity through programme management and procurement of specialist equipment; training of firefighters; and supporting Fire and Rescue Services’ preparedness to tackle major terrorist or other large-scale incidents.

3 Our methods include: a census of all Fire and Rescue Services in England; visits to Fire and Rescue Services; Departmental interviews and document review; individual procurement case studies; financial management review and use of consultants to examine emergency planning. Further details can be found at Appendix 1.

Key findings

On procurement of the equipment

4 The Department has procured and rolled out high specification equipment which has proved useful and popular with firefighters. This has been achieved despite some early firefighter misgivings about the programme.

Capacity to respond to major emergencies has been much enhanced as a result. The High Volume Pumps enabled the fire at the Buncefield oil depot in December 2005 to be put out more quickly, and their use during the summer 2007 floods reduced the amount of damage, allowed a major power station to maintain electricity supply, and eased the burden on other emergency services. New vehicles which aid in the Detection, Identification

and Monitoring of dangerous substances have resolved contamination alarms quickly and effectively saving time and resources. **Figure 1** summarises capacity before and after the New Dimension programme.

5 The decision to purchase New Dimension equipment centrally was novel. Until then the Department itself had not procured equipment for all the Fire and Rescue Services: indeed central Government had no role – and no statutory power – to purchase equipment on behalf of Fire and Rescue Services. The Department involved the user community to provide expertise throughout the programme in order that the new equipment should meet the user requirement and be well embedded.

1 Fire and Rescue Services' capacity before and after the programme

	Before New Dimension programme	After New Dimension programme
Mass Decontamination	<p>No specialist equipment.</p> <p>Some Fire and Rescue Services had dedicated Hazardous Material officers to manage emergencies involving hazardous substances.</p>	<p>73 incident response units carrying erectable decontamination showers for decontaminating up to 400 people per hour.</p> <p>47 clothing (Dis-robe and Re-robe) modules.</p> <p>17 Detection, Identification and Monitoring vehicles – 'mobile labs'.</p> <p>Over 7,000 trained fire-fighters.</p> <p>206 specialist transport vehicles (Prime Movers).</p>
Urban Search and Rescue	<p>12 Fire and Rescue Services offering limited search and rescue capability: usually deployed to overseas disasters on behalf of UK government on an ad hoc basis.</p> <p>Teams consist of voluntary full time firefighters undertaking work outside of normal work hours.</p>	<p>20 fully trained Urban Search and Rescue teams of 30 firefighters each.</p> <p>Five standardised modules of high specification equipment, containing many hundreds of state of the art items.</p> <p>New local and national training facilities.</p> <p>Prime movers.</p>
High Volume Pumps	<p>One larger capacity pump based in Shropshire.</p> <p>14 other Fire and Rescue Services have larger diameter hoses able to transport a high volume of water.</p> <p>'Green Goddesses' have some pumping capacity, otherwise fire engines used.</p>	<p>46 larger capacity pumps capable of pumping seven times more water than normal fire engines.</p> <p>46 hose boxes with larger diameter hoses and many kilometres of extra hose length.</p> <p>Over 2,000 trained firefighters.</p> <p>Prime movers.</p>
Command and Control	<p>Local control rooms.</p> <p>Some Fire and Rescue Services have low-tech mobile command units.</p>	<p>Local control rooms.</p> <p>National Co-ordination Centre dedicated to New Dimension response based at West Yorks Fire and Rescue Service.</p> <p>Nine Enhanced Command Support vehicles with high-tech capacity to be rolled out in late 2008.</p>

Source: National Audit Office

6 Funding uncertainty delayed the programme.

The original proposal to enhance Fire and Rescue Services capabilities was made in December 2001, with a completion date of early 2003. But securing funding for all key elements took at least 18 months, and most of the new vehicles and equipment were not rolled out until 2005 and beyond.

7 The programme, which comprised 14 projects by 2003, had no clear plan of deliverables or milestones and progress relied more on the enthusiasm, commitment and hard work of the project teams than coherent programme management.

In 2004 the Department brought in Serco consultancy to strengthen the programme's management. Serco helped the Department streamline the projects into six work streams, establish clearer governance arrangements, and introduce better risk management and project management. By early 2005 a coherent overarching implementation plan was in place.

8 Early delays and weak management impacted on delivery, and value for money has been difficult to demonstrate in some individual procurements.

Support functions such as Logistics and Command and Control were only properly developed after most equipment had been rolled out, and fire stations were not ready to receive vehicles and equipment. Some important equipment and vehicle procurements were also affected. For example Prime Movers, which are the trucks that transport New Dimension equipment to the scene of incidents, were delivered late with unnecessary costs of between £3.2 and £7.78 million, or over 20 per cent, due to over-ordering and poor record keeping and contracting.

9 The Department relied more on consultants than it originally envisaged.

The original contract provided that consultants would set up the programme office and work on a 'call off' basis mostly to train internal staff. In practice many consultants have worked full time for over four years. This dependence on consultants was costly however, with many charging on average over £1,000 a day, compared to the average cost stated in the contract of £500 a day. The Department did not conduct any systematic evaluation to measure the value for money of the consultants' performance, but instead appraised consultants individually.

10 Financial management was weak, although it did improve after 2005.

Financial controls, reporting and use of financial information have all been poor, especially in the early years of the programme. Between January and June 2004, one employee working as a management

accountant defrauded the programme of £867,200.

There has been improvement since 2005, although more could have been done after this date to use accurate financial information to inform programme and project decision making.

On training

11 Sufficient firefighters have been trained for all equipment types except the Detection, Identification and Monitoring capability.

Many firefighters have had to learn new skills, fire stations have been adapted physically to accommodate the new vehicles, and senior managers have made organisational changes to adopt the enhanced role. The Department has provided funding for training and some crewing, to build training rigs, and has organised an extended range of courses at the Fire Service College and elsewhere.

12 Some risks remain, however, in terms of quality and maintenance of sufficient skills.

There is limited assessment of skills levels both during training courses and afterwards at Fire and Rescue Services, where regular monitoring of skill levels varies. Maintaining skills is expensive, especially where retained firefighters are used. Lessons learnt at the few exercises at regional and national level could be more systematically disseminated. Fire Service College capability to provide the training necessary to reduce these risks could be enhanced.

On use of the equipment

13 New Dimension equipment has improved the quality of Fire and Rescue Services' response to recent major incidents.

High Volume Pumps enabled the fire at the Buncefield oil depot in December 2005 to be put out more quickly, and their use during the summer 2007 floods reduced the amount of damage and eased the burden on other emergency services. New vehicles which aid in the Detection, Identification and Monitoring of dangerous substances have resolved contamination alarms quickly and effectively, saving time and resources. Actual events and major exercises amongst other evidence have shown that in most cases response requirements can be met. But the Department has not undertaken a comprehensive modelling exercise to test this responsiveness. For example if in the 2007 summer floods, Yorkshire and the West Country had flooded simultaneously rather than in successive months, 76 High Volume Pumps might have been needed, 26 more than are currently available in England and Wales.

14 The Department has enhanced national command and control for New Dimension equipment deployment, by setting up a National Coordination Centre in West Yorkshire, developing the role of the new Chief Fire and Rescue Adviser to manage emergencies, and procuring enhanced communication vehicles for use at incidents.

Some Fire and Rescue Service staff are not convinced, however, of the usefulness of the new Coordination Centre, and are unclear about the role of the Adviser. The procurement of Enhanced Command Support vehicles is running late and the vehicles are yet to be deployed.

15 Major emergency response capacity varies across Fire and Rescue Services. The Department does not expect to anticipate and fund all needs assessed locally, and New Dimension is primarily for major national incidents. Fire and Rescue Services commit different levels of resources to local major emergency needs, thus leading to some differences in capacity across the country. Mutual aid agreements between Fire and Rescue Services aim to mitigate these differences.

16 Emergency planning, especially on a regional scale, is undeveloped with New Dimension equipment not yet reflected in Fire and Rescue Services' major incident and site specific plans. The Department can do more in providing technical upgrades and guidance to enable better planning at the regional level within Fire and Rescue Services. National scale multi-agency exercises are few and far between (between one and two per year) and many Fire and Rescue Services find such exercises both too expensive and time consuming.

Conclusion on Value for Money

17 The New Dimension programme has enhanced the Fire and Rescue Services' capacity to respond to terrorist and other large-scale emergency events, and has already contributed significantly to the handling of a number of major incidents. On the whole sufficient firefighters are fully trained to operate the equipment, although there are some concerns about maintaining skill levels. There is sufficient equipment, allocated to appropriate locations, to tackle effectively the majority of major incidents the programme was designed to tackle. Some weaknesses remain however, for example in Command and Control arrangements and major emergency planning, which currently prevent even greater effectiveness being achieved. And the Department could do more to quantify the extent of any gaps in response that still exist.

18 Procuring a wide range of complicated equipment and vehicles despite having little prior procurement experience is an achievement for the Department. However a combination of funding uncertainty, a lack of programme and project management in the early days, and generally poor financial management has led to late and, in some cases, unnecessarily costly procurement. The Department did address many of its management weaknesses by bringing in consultants and other trained staff, although at greater cost than originally planned, and some weaknesses have remained.

Recommendations

- 1** The Department needs to learn lessons from the procurement of New Dimension equipment:
 - i** **There has been significant risk to value for money from some poor programme, project and financial management with a consequent lack of financial discipline. Both avoidable costs and delays have been incurred.**
 - Programme management techniques should be embedded from the outset, including: clear objectives, a detailed implementation plan, proper whole life cost budgets, the use of milestones and sound monitoring arrangements.
 - Project managers should be trained and well supported by suitably qualified financial staff. They should also carry out competitive tendering unless there are exceptional reasons not to do so. Both appropriate indicators for assessing performance in contracts and penalties for inadequate performance should also be specified.
 - Strong financial control, such as supervision, authorisation and separation of duties controls, should be installed.
 - ii** **Consultants have been more costly than expected and there is a lack of benchmarks for judging whether spending on their services has been good value for money.**
 - When employing consultants to work in programme and project management, evaluative mechanisms, such as Service Level Agreements and Key Performance Indicators, should be established from the outset to assess performance and value for money.

2 New Dimension Timeline

2001	2002	2003	2004
<p>11 September Terrorist attacks on the USA</p> <p>13 September New Dimension Group formed</p> <p>December £318 million bid proposed by New Dimension group for Mass Decontamination, High Volume Pumps and Urban Search and Rescue</p>	<p>January Revised £246 million bid proposed by New Dimension group for Mass Decontamination, High Volume Pumps and Urban Search and Rescue</p> <p>Memorandum of Understanding between Department of Health and the Department that Fire and Rescue Services would carryout decontamination of people</p> <p>April Department agrees £56 million for Mass Decontamination only (including interim solution of 48 leased vehicles)</p>	<p>January £296 million bid proposed by New Dimension group for Urban Search and Rescue and High Volume Pumps</p> <p>February £3 million single tender exercise to provide Urban Search and Rescue interim capability</p> <p>April Department awards £88 million for Urban Search and Rescue</p> <p>July Interim Mass Decontamination capability delivered</p> <p>Department awards £54 million for High Volume Pumps</p>	<p>March 73 Incident Response Units delivered</p> <p>By April 414 firefighters trained at Disaster City in the USA</p> <p>June Interim Urban Search and Rescue capability delivered – 15 teams using equipment transported in leased vans</p> <p>December Civil Contingencies Act 2004 comes into force</p>

Source: National Audit Office

2 The Department needs to maximise the operational effectiveness of the New Dimension programme:

- i With Fire and Rescue Services facing increasing costs and competing demands for funding priorities, firefighters’ New Dimension skills may not be maintained to adequate standards.**
- In carrying out its assurance work, the New Dimension National Team should assess training and crewing against the Department’s model requirements regularly, and also work with the Fire Service College to better utilise New Dimension facilities, for example by providing more flexibility in scheduling of courses.

- The paucity of large scale exercising should be addressed by developing a strategy for national and regional scale multi-agency practice exercises.
- To make the most of existing knowledge, the Department should consider ways, for example by developing an interactive online portal, for sharing of lessons learned from exercises, use of equipment and other good practice.

2005	2006	2007	2008
<p>7 June 238 Prime Movers delivered</p> <p>July 'Concept of Operations' document agreed</p> <p>Terrorist bombing of London</p> <p>September Urban Search and Rescue training rig at Fire Service College opens</p> <p>11 December Buncefield Oil depot fire</p>	<p>May Fire and Rescue Service National Coordination Centre opens</p> <p>June 46 Mass Decontamination disrobe/erobe modules delivered</p>	<p>February 17 Detection, Identification and Monitoring vehicles delivered</p> <p>April Fire and Rescue Services statutory duty for Mass Decontamination and Urban Search and Rescue</p> <p>June Yorkshire flooding</p> <p>July 46 High Volume Pumps delivered</p> <p>West Country flooding</p> <p>November Chief Fire and Rescue Adviser Unit (in the Department) set up</p> <p>2 November Warwickshire warehouse collapse</p>	<p>March Final Urban Search and Rescue equipment delivered</p> <p>September Expected delivery of Enhanced Command Support vehicles</p>

- ii **There are some weaknesses in operational arrangements which hamper the maximisation of New Dimension effectiveness. The main areas of concern are Command and Control and major emergency planning.**
 - Local commanders need to know what to deploy, how to deploy it and to understand their powers. The Department should address any uncertainties with regard to National Coordination arrangements, by setting out clear frameworks with respective roles and responsibilities of the Fire and Rescue Service National Coordination Centre and the Communities and Local Government (CLG) Emergency Room, and make this widely available.
- iii **The Department should ensure response documents are fit for purpose.**
 - The Department should systematically identify the gaps between actual and their desired Fire and Rescue Service capability. They should update agreed response documents in the light of the most recent assessments of risk and the experience of responding to actual incidents. Data available nationally regarding major incident risks should be translated into a practical form to inform Fire and Rescue Services' planning.
 - The Department should also develop and promulgate standard operating procedures for Urban Search and Rescue, High Volume Pumps and Detection, Identification and Monitoring vehicles where these are not already in place.



Introduction

The need for New Dimension

1.1 Following the terrorist attacks on the United States of 11 September 2001, the Government requested HM Chief Inspector of Fire Services to examine the Fire and Rescue Service's ability to respond to similar attacks. A "New Dimension Group" was established, comprising Ministers and officials and co-ordinated by the Cabinet Office, with the remit: "to evaluate Fire Service capabilities and to make recommendations to ensure that it is sufficiently trained and equipped to deal with catastrophic, Chemical, Biological, Radiological, Nuclear and conventional terrorist incidents".

1.2 Today the New Dimension Programme is one of the key projects through which the Government seeks to build resilience. It "aims to ensure that a robust infrastructure response is in place to deal rapidly, effectively and flexibly with the consequences of large scale and catastrophic incidents – whether hazard (floods, pandemics, industrial disasters etc) or threat (terrorism)"¹.

1.3 In particular the programme aims to enhance the Fire and Rescue Services' capacity to play a role in:

- the detection, identification, monitoring of and mass decontamination from chemical, biological, radiological and nuclear attack;
- Urban search and rescue from collapsed buildings and major transport incidents; and
- Tackling major fires and floods.

and in three main ways by:

- procuring centrally appropriate specialist vehicles and equipment, and providing them to Fire and Rescue Services;
- funding training and training facilities for Fire and Rescue Service staff in New Dimension roles, and for some additional crewing of new equipment; and
- supporting appropriate planning and preparedness within Fire and Rescue Services, together with new Command and Control Structures.

1.4 Early New Dimension planning included both the English and Welsh Fire and Rescue Services, but in 2004, before the delivery of New Dimension equipment, responsibility for Fire and Rescue Service emergency response in Wales was devolved to the Welsh Assembly Government. Scotland and Wales now have their own Fire and Rescue Service major emergency response policy, which includes provision of New Dimension-type equipment.

1.5 Both the Scottish and Welsh governments have pursued very similar policies and programmes to England. Wales has procured almost exactly the same equipment and vehicle types. Scotland has procured very similar types, except that their equivalent vehicles to Incident Response Units can transport Urban Search and Rescue modules as well as Mass Decontamination units. They have also provided 10 flood rescue boats for their 8 Fire and Rescue Services. Both Welsh and Scottish New

¹ CLG policy statement, October 2007.

Dimension teams train with their equivalents in England. Mutual aid agreements exist between English, Welsh and Scottish Fire and Rescue Services to provide ready support if needed. This report covers England only.

1.6 Forty six Fire and Rescue Authorities are responsible for the delivery of local services in England including, together with other local bodies, local planning for and response to local terrorist and other large-scale catastrophic incidents. Each Fire and Rescue Authority is responsible for providing a Fire and Rescue Service, while day-to-day management of each Service is undertaken by the Chief Fire Officer. The Department sets national strategic policy and direction, and manages national programmes such as New Dimension. The relationship between the Department and Fire and Rescue Services is explained in Appendix 2.

1.7 The Department has committed some £330 million to the programme: £190 million on vehicles and equipment, £85 million on training and crewing, and an estimated £55 million on programme administration (including £12 million on Serco consultants and £16 million on seconded firefighters). The programme is almost complete with most of the equipment delivered, firefighters trained, and a new Command and Control Structure established.

1.8 The Department plans to formally transfer responsibility for the programme to Fire and Rescue Authorities, including ownership of New Dimension equipment. Negotiations are ongoing as to how and when this transfer will be achieved.

Scope and methodology

1.9 We have undertaken the first evaluation of the New Dimension programme since its inception, comprising:

- how well the Department has managed the programme and procured the specialist equipment (Part 2);
- whether Fire and Rescue Service Staff have been appropriately trained (Part 3); and
- the Fire and Rescue Services' use of New Dimension in practice (Part 4).

1.10 A detailed methodology is set out in Appendix 1.

3 New Dimension equipment

Item Image

Support vehicles



Equipment Description

Prime Mover

A truck with a mounted hook loading system. It delivers New Dimension equipment to the incident.

Number

206



Enhanced Command Support vehicle

A van used as a base to co-ordinate resources at an incident, and comprising a number of work stations and onboard communication systems, including satellite phones.

9 (roll-out from September 2008)

Mass decontamination



Incident Response Unit

A soft-sided truck containing pallets of Mass Decontamination equipment. A forklift truck at the back of the vehicle enables the dismantling of the equipment.

73



Detection, Identification and Monitoring vehicle

A van modified to detect, identify and monitor Chemical, Biological, Radiological and Nuclear substances. It transports specialist advisers (known as 'Detection, Identification and Monitoring' advisers) and their equipment, and at the scene acts as a mobile laboratory.

17








Mass Decontamination Dis-robe and Re-robe modules

Modules containing additional dis-robe and re-robe clothing packs, to supplement those on Incident Response Units¹.

MDD 33
MDR 13
MDS 1

3 New Dimension equipment *continued*

Item Image	Equipment Description	Number
Urban search and rescue		
	Urban Search and Rescue: five modules, each transported on a Prime Mover	
	Module 1 carries equipment for: scene assessment, building triage, technical search, scene safety equipment, scene lighting, timber and timber cutting, and equipment for working at height.	20
	Module 2 carries equipment for: heavy hydraulic rescue, heavy lift jacking, lifting and shifting, hot cutting, and Paratech shoring.	20
	Module 3 carries equipment for: heavy hydraulic breaching and breaking, medium and heavy lift air cushions, work access platform, hydraulic powered chainsaw and disc cutter, and heavy duty drilling.	20
	Module 4 includes a Multi Purpose Vehicle and its container, used for unloading equipment off other Urban Search and Rescue modules, and transporting it to the incident site, as well as general support. It has rear carrying space and front hydraulic arm with various attachments. The container is used for carrying spoil.	20
	Module 5 is used for the storage and transportation of various lengths and types of timber.	20
	<p>Training Rigs</p> <p>A state of the art training rig constructed at the Fire Service College (see photo), and 17 smaller rigs at Fire and Rescue Services that host Urban Search and Rescue teams.</p>	<p>17 local; 1 at the Fire Service College</p>
High volume pumping		
	<p>High Volume Pump</p> <p>A unit containing: a high volume submersible pump capable of pumping 7,000 litres per minute, a hose box containing one kilometre of high pressure hose, and hose recovery equipment.</p>	46

Source: National Audit Office

NOTE

1 The Isle of Wight Fire and Rescue Service considers a standard Incident Response Unit vehicle too large to operate on the island. Instead it uniquely uses a special module (known as 'MDS'), which contains the Mass Decontamination structure, and dis-robe and re-robe packs within it, and fits on a Prime Mover.



Managing the programme and procuring the equipment

2.1 The New Dimension programme required the identification, specification, procurement and roll-out to 46 separate Fire and Rescue Services of complex vehicles and equipment, alterations to fire stations to house equipment and multi-agency emergency exercises to test it. The programme has adapted as new Fire and Rescue Service capabilities have been identified and associated equipment required. This Part examines the Department's overall programme management and projects to specify, procure and deliver specialist vehicles and equipment.

2.2 In December 2001 the New Dimension Group identified the need to enhance the capacity of Fire and Rescue Services in the protection and safety of the public; in search and rescue facilities (including for collapsed structures and High Volume Pumps); in planning and training, protection and safety of firefighters; and in greater national coordination. The proposed programme was costed at £318 million with a target delivery date of early 2003.

2.3 In April 2002 the Department committed £56 million to fund a Mass Decontamination programme. In April 2003 a further £88 million was committed for development of the Urban Search and Rescue capability, and in July 2003 a further £54 million was committed to High Volume Pumps. The remaining £132 million funding of the programme (making a total of £330 million in all) was committed in annual tranches over succeeding years. Despite the funding uncertainties, the Department built up the programme, and by 2003 there were 14 separate projects. Each project team comprised civil servants and seconded firefighters.

2.4 While plans for permanent capabilities were developed and funding clarified, the Department put in place temporary measures. For Mass Decontamination, the Department rented and delivered to Fire and

Rescue Services 23 modified vans from July 2003. The Department funded £12 million from December 2002 to June 2004 to bolster Urban Search and Rescue capability, by providing additional equipment, training, and crewing funding to 10 Fire and Rescue Services already providing voluntary rescue aid to international incidents², and a further five with no previous experience.

2.5 A retrospective assessment of Departmental management of the programme in the early years is difficult because of the high turnover of staff and poor record-keeping. The Office of Government Commerce undertook three Gateway™ Reviews on the programme.³ Two looked at the programme strategy as a whole (June 2002 and March 2005) and one looked at overall delivery strategy (December 2003). The Department sought Reviews at the programme, rather than the project, level.

2.6 The 2002 and 2003 Reviews commended the commitment and enthusiasm of the separate teams, and the progress made through good use of expertise and a 'can do' attitude. These Reviews, and the Department's internal programme review by consultants in 2003, nevertheless identified a need for better programme and project management. No overarching delivery plan was in place, nor clear critical path analysis. Forward planning for equipment storage at fire stations, and essential equipment support projects on Logistics and Command and Control, had been neglected.⁴ The programme aims were not clear, and managers' roles and responsibilities were not adequately defined. The Reviewers concluded that the overall status of the programme was 'amber' in 2002, and 'red' in 2003.

² United Kingdom Fire Service Search and Rescue Teams (UKFSSART).

³ Gateway™ Reviews constitute a mandatory "peer review" process for all Government Departments undertaking large procurements. Independent expert practitioners examine the programme and its projects at up to six key decision points during a programme's life-cycle. The application of the process is flexible – a Programme's senior official has discretion to decide which type of Review should take place and when. The first Review (0) focuses on the programme as a whole and the other five (1–5) look at projects. A traffic light system is used to denote the readiness of the programme or project to move to the next stage.

⁴ "A major adjustment to the New Dimension programme....was made to focus on logistics and command and control", CLG policy statement, October 2007.

The Department brought in outside consultants

2.7 The Department decided that it should supplement its programme and project management skills by appointing consultants. After a tendering process, Serco were appointed from May 2004, with the remit to introduce improved management techniques and governance arrangements.

2.8 Serco helped develop an overarching programme plan in early 2005 by creating six work streams (termed capabilities) from the varied projects, and setting out dates for equipment roll-out to Fire and Rescue Services, with completion set for October 2006. Serco staff took over many of the related management roles, and introduced more sophisticated management tools, including detailed risk registers and monthly reports to a Programme Board. From June 2005, significant changes to work stream plans were formally reviewed by a separate 'change control board'. Regular risk reports and update reports were made by the capability managers to the Programme Board, enhancing management of the programme (see Appendix 3 for a chart of the new management structure). The Office of Government Commerce Review of March 2005, although concluding that the status of the programme was still 'amber', commended the progress that had been made in programme management.

2.9 The delay in introducing these formal programme management techniques impacted on delivery and response effectiveness. The absence of an overarching plan from the outset, and detailing the sequencing of equipment delivery, meant that the enabling Logistics and Command and Control capabilities were delayed. Fire stations were not ready to receive vehicles and equipment. Incident Response Units and Prime Movers were parked away from home stations or left in nearby streets with little security, though none were lost as a result. Enhanced Command Support vehicles, for coordinating responses at a large-scale incident, have still not been delivered.

2.10 The Department's contract intended consultants to be "called off" i.e. join the programme, when necessary, with senior consultants transferring knowledge to civil servants from the outset. In practice many consultants

worked full time on the programme for over four years, and knowledge was transferred to civil servants in places on an informal basis. The Department kept the consultants longer than originally planned, for the sake of continuity and expertise as the programme developed from contracting to delivery.

2.11 According to the 2005 Office of Government Commerce Review, "some stakeholders" considered too much reliance was placed on the consultants to manage the programme and projects.⁵ There was also extra cost as some consultants charged over £1,000 per day against the average cost that the contract stated should not exceed £500 per day after the initial period. The total cost of £12 million is about 25 per cent of the cost of administering the programme as a whole.⁶ The Department did not install performance indicators or systematic evaluation to enable it to make a formal assessment of value for money of the contract, but instead appraised performance on an individual consultant basis.

Equipment and vehicle procurement

2.12 At the programme start the Department had little experience of large scale procurement. FireBuy⁷ – the Department's own national procurement body – was not established until November 2005, and the Department has relied on the Office of Government Commerce Buying Solutions and its own procurement division.

2.13 Individual project managers have undertaken vehicle and equipment procurements, determining the appropriate supplier and acting as the key interface with Fire and Rescue Authorities and suppliers of equipment. Necessary skills included project management expertise, contract negotiation, commercial awareness and use of project management tools such as budgeting, financial analysis and investment appraisal.

2.14 A recent Department-wide Procurement Capability Review by the Office of Government Commerce found that in general Departmental procurement had a number of weaknesses, including "an acknowledged deficiency in programme and project management", and that there was "little evidence of a strong contract management capability, able to drive out Value for Money once contracts have been let".

5 OGC Review March 2005 para 1.3.

6 Across government, average cost of consultants as a proportion of spending on administration is 11 per cent. NAO report: *Central Government's Use of Consultants*. HC 128, Session 2006-07.

7 A company limited by guarantee, with 20 staff based over 2 sites.

2.15 We examined a sample of the four most important equipment and vehicle types (Prime Movers, Incident Response Units, Detection, Identification and Monitoring vehicles and High Volume Pumps), testing against the Office of Government Commerce criteria such as the use of Business Cases, tendering and contract management, and use of project management tools.

2.16 There was poor value for money in our case studies (Appendix 4). Costs of High Volume Pumps have increased as the maintenance contract was agreed in euros, with no hedging against future rate changes. The strengthening euro has added some £250,000 to costs. Inaccurate specifications in the contract for Detection, Identification and Monitoring vehicles caused excess costs of £306,000 (20 per cent), and roll out was five months late. The Business Case was not completed until after the contract had been signed.

2.17 Poor planning and procurement of Prime Movers led to too many vehicles being ordered. This situation, together with the absence of Service Level Agreements in the contract and no competitive tendering exercise of the maintenance contract, led to a one year delay and unnecessary extra costs of between £3.2 and £7.78 million. When first delivered some Prime Movers suffered from corrosion and remedial work was required, although the supplier accepted that this was a production fault and paid for the repairs.

2.18 Firefighters have mainly been pleased with the functionality and specification of the vehicles and equipment, particularly High Volume Pumps and Urban Search and Rescue. Services have found the equipment useful in both day-to-day and major emergency incidents.

2.19 Many firefighters found some vehicles – especially the Incident Response Units and the Prime Movers – over-engineered, with too many unnecessary electronic features. Departmental records show that, while few vehicles were off the road at any one time (three per cent), there were many minor defects reported (eight per vehicle in 2007-08).

Financial management

2.20 Good programme and project management relies on robust financial information to inform decision-making at programme and project level. For much of the New Dimension programme, however, costs have not been accounted for properly or financial information been used appropriately, with particular weaknesses before 2005.

2.21 No budgets were set in the first two years, and formal financial information was not provided to the Programme Board until September 2005. Before 2006 some project managers did not use the Departmental finance team and systems, producing their own financial data, possibly because financial staff, dealing with New Dimension, were mainly temporary staff and not all fully trained.

2.22 Accounting for the programme's expenditure was inaccurate reflecting the lack of trained staff, and weak financial control environment with inadequacies in supervision, authorisation and separation of duties controls. One employee was able to defraud the Department of £867,200 over a period of five months between January and July 2004 (**Box 1**).

BOX 1

Fraud in New Dimension

In January 2004 a Departmental employee working as a management accountant within the programme created both a fictitious supplier (RTR Housing Association) and a fictitious employee (Timothy Cunningham) on the Department's accounting system. The employee made regular payments to both these fictitious entities over a period of five months (an average of £175,000 per month between 28 January 2004 and 29 June 2004), before leaving his employment voluntarily. The total amount defrauded amounted to £867,200. The fraud was not detected for many months, even though the Programme had no reason to transact with a housing association, and the fictitious housing association was at one stage the second largest supplier to the programme by value.

The fraud was detected in March 2005 during the exercise to try and reconcile all capital assets to invoices, as part of wider attempts to remedy previous poor financial management within the programme. The perpetrator has been caught and convicted and £160,000 has been recovered so far.

2.23 In 2005-06 trained financial staff joined the programme improving accounting systems and remedying many previous financial accounting errors. Enhanced management accounting systems enabled project managers to review spending on a consistent basis. And better financial governance arrangements were established, with senior members of central finance, procurement and internal audit installed on the Programme Management Board. From 2006-07 members of the policy team had regular budget meetings with programme and project managers.

2.24 Nevertheless, some problems remained. On the financial reporting side, a National Audit Office review of the Programme's asset accounting in 2006 found ongoing deficiencies, and some earlier errors remained uncorrected at the time of this study. Our work suggests that, at the start of our study, the Department's working figure of total programme costs, of £359.1 million, overstated the true position by nearly £30 million. The Department's figure left out costs of £24 million, notably £7 million of civil service costs and £8 million of Fire Service College costs; and included £50 million, which had been double-counted (due to an internal reporting method of valuing capital expenditure as the sum of the equipment cost and its depreciation). The net result is that the total programme costs in fact amount to around £330 million. Spending on individual vehicle and equipment types, as well as the programme's running costs, has been difficult to establish.

2.25 Management accounting systems also remained under-utilised after 2006. Our detailed review of monthly Programme Board minutes, and accompanying financial information suggest that financial considerations played an insufficient part in decision making at programme and project level. Many monthly reports to the Programme Board excluded financial data (for example, in 2007: April-May, August-September). There was little or no monitoring of actual spending against budgets, or analyses of variances and trends.



Training Fire and Rescue staff to take on the New Dimension role

3.1 This part of the report assesses how well the Department, the Fire and Rescue Services and the Fire Service College have worked together to train sufficient firefighters to deploy and operate New Dimension equipment.

Staffing New Dimension

3.2 New Dimension equipment has required many firefighters to acquire new skills within a short space of time. Skills and skill levels vary by equipment type. Mass Decontamination and High Volume Pumps need less technically demanding skills than Urban Search and Rescue technicians and Detection, Identification and Monitoring advisers, who need dedicated training for many weeks each year to reach and maintain the required standard.

3.3 New Dimension has also required the physical environment and work routine of many fire stations to be adjusted: heavy vehicles require extra accommodation and reinforced driveways; space is needed for Urban Search and Rescue training rigs; and many firefighters have taken on New Dimension duties alongside normal fire service duties.

3.4 Senior Fire and Rescue Service managers have changed organisation structure and crewing arrangements at a time of wider modernisation, attended Local Resilience Fora and undertaken more emergency exercises. One particular challenge has been to free up firefighters to undertake the training required.

New Dimension training needs

3.5 The Department set out the expected minimum trained crewing levels for each equipment within a training strategy (Figure 4). Model numbers of firefighters to staff the equipment were developed using the prevalent national planning assumptions (4.2–4.4) and the views of key stakeholders, such as senior fire officers and equipment users.

3.6 The Department has spent £85 million so far on training and crewing including:

- Fire Service College and local Urban Search and Rescue training rigs: £11 million;
- Fire Service College training programme, including organisation, support and provision of 7,465 course places for Mass Decontamination, High Volume Pumping and Urban Search and Rescue training: £21 million;
- Training courses at Disaster City⁸, Texas (414 firefighters plus equipment): £2 million; and
- Funding for training and crewing within Fire and Rescue Services: £51 million. The majority of which (£39 million) relates to the crewing costs of Urban Search and Rescue crews, the remainder for training funding.

⁸ 'Disaster City' is a training facility for firefighter search and rescue.

3.7 The Department funds basic training directly through the Fire Service College. The College allocates places to individual Fire and Rescue Services in advance, and the Services must attend at the allocated time or their place is lost (the courses are rearranged if possible – paragraph 3.10). All Urban Search and Rescue technicians are required to attend initial training courses at the College, along with instructors for Mass Decontamination and High Volume Pumps. For skills maintenance, the Department allocates £35,000 per year per Incident Response Unit hosted within Fire and Rescue Services, but Services can decide how this money is spent. The crewing of Urban Search and Rescue teams is fully funded, on the basis of an agreed formula related to each Service's staff costs.

3.8 The Fire Service College provides well regarded courses and training facilities, especially in Urban Search and Rescue. Urban Search and Rescue training facilities were completed in September 2005, after which the Department fully funded courses for firefighters at the College. Previously, the Department provided funds for 414 firefighters and equipment to go to Disaster City in Texas at a cost of £1.63 million.

3.9 Based on course fees, accommodation and transport, it was cheaper to send firefighters to Texas than it has been to use the Fire Service College. The equivalent cost for Texas was £3,950 per firefighter, and for the Fire Service College £5,500 per firefighter, though the United Kingdom

facility has advantages in terms of less time away from duty. According to many Urban Search and Rescue technicians and New Dimension training managers, the facilities at the College better simulate buildings in the United Kingdom.

3.10 Fire and Rescue Services are not required to use the Fire Service College and some do not. Courses can be under-utilised, and some are re-arranged where numbers are insufficient to recover delivery costs. The Fire and Rescue Services have three main concerns with the College: high cost of courses, poor accommodation facilities, and inflexible course scheduling.

3.11 The Department does not consider that checking that minimum trained crewing requirements have been met is part of its role, but sees it as an operational issue for individual Fire and Rescue Services. It has data on the number of firefighters who have attended courses but not on current skill levels, as many New Dimension trained firefighters have moved on to other activities. To give it wider assurance on the ability of Fire and Rescue Services to respond to major incidents, it has established a national operational assurance team comprising experienced firefighters, which reports regularly on aspects of response. Fire and Rescue Services claim that New Dimension equipment has sufficient trained firefighters to meet minimum standards except for Detection, Identification and Monitoring Vehicles. The Department plans to address this shortfall with the relevant Fire and Rescue Services (Figure 4).

4 Numbers of firefighters trained in New Dimension

Numbers	Minimum number per team required for deployment (A)	Number of teams (B)	Model numbers required to be fully trained (A×B)	Extrapolated numbers from NAO census – Appendix 1 (C)	Difference (C–A×B)
Equipment					
Mass Decontamination	22 ¹	195.0 ²	4,290	7,653	3,363
Detection, Identification and Monitoring teams	4	51.0 ²	204	158	(46)
Urban Search and Rescue	10	57.5 ²	585	767	182
High Volume Pumps	14	46.0	630	2,145	1,515
Total			5,709	10,723	5,014

Source: National Audit Office Survey

NOTES

- 1 Concept of Operations 2005 stated team number = 34. Since then this has been reduced to 22 after the introduction of better personal protective equipment in Fire and Rescue Services.
- 2 This number assumes three shifts in a day, with each shift requiring a separate team.

Risks to the maintenance of firefighters skills

3.12 Thirty six out of thirty seven Fire and Rescue Services that responded to our census of the forty six Fire and Rescue Services in England, expressed concern about training arrangements. Operational assurance audits and other stakeholders have raised similar concerns. Three main issues emerge:

- **Lack of independent assessment or benchmarking of skills.** Each course attendee is given a certificate on completion, but their competencies are not tested at the end of the course beyond the course instructor's own observation and assessment. No Urban Search and Rescue course has 'failed' a student (struggling students received extended one-on-one tuition to reach the required standard, and some students left courses voluntarily as a last resort). There is no independent assessment of ongoing competency. Some Fire and Rescue Services have no structured monitoring of competency, and those that do use either self-assessment or assessment by the supervisor on the spot.
- **Lack of exercising:** most Fire and Rescue Services carry out local exercises each year, but there are few multi-agency exercises on a scale to fully test New Dimension capability and enhance key skills. Most Fire and Rescue Services take part in one or two multi-agency exercises a year, and few of these are on a large regional or national scale. Lessons learnt from such exercises are not disseminated systematically. Exercising is often reliant on local goodwill agreements between Fire and Rescue Services and other local land owners, usually the military or other government departments.
- **Increasing demands:** the model numbers are based on the 2005 Concept of Operations document. But the assumptions underpinning this document may now understate the actual position in some cases, and more firefighters may need to be trained in New Dimension (Part 4).



PART FOUR

The Fire and Rescue Services' use of New Dimension in practice

4.1 This part of the report assesses the impact of New Dimension on Fire and Rescue Services' preparedness to tackle terrorist and other major emergencies. It examines the use of equipment; the extent to which equipment has been supplemented by Fire and Rescue Services; the enhancements to Command and Control; and how well New Dimension has been integrated into planning and decision-making.

The national strategy to respond to major emergencies and New Dimension

4.2 Since 2001 the Cabinet Office has been responsible for coordinating and developing national resilience policy and procedures. Its overall aim is to build a robust infrastructure to identify and prevent disruptive challenges, whether from hazard (floods, pandemics, industrial disasters etc.) or threats (terrorism), and to deal rapidly, effectively and flexibly with the consequences of such challenges. In partnership with the Department, and other Government Departments, it assesses and quantifies national risks of threats and hazards, considers the response required, and aims to build up the capacity of key services to provide the appropriate response.

4.3 In 2004 the Home Office, as the lead Department in Chemical, Biological, Radiological and Nuclear response, developed a framework for emergency services and other agencies to respond to such incidents. In 2005 the Department used this framework and work on flooding and building collapse to create a "Concept of Operations" which defined in detail operational and personnel standards for New Dimension equipment including how equipment should be crewed, how quickly it should arrive at the scene of an incident, and what it should achieve in terms of numbers of people rescued within specified times.

4.4 The Concept of Operations was used to help determine the numbers required of each type of vehicle and equipment. Allocation of New Dimension equipment was based, however, on a combination of factors, including which Fire and Rescue Services were best located to provide optimal coverage according to the level of risk, were willing to host it and which stations had, or could have with some alteration, sufficient capacity. Storage problems were overcome, through the allocation of specific grants for building alteration, hardstanding, electrical supply and security.

Use of New Dimension in major emergencies to date

4.5 New Dimension equipment has been deployed to three major emergencies: Buncefield oil depot (December 2005); floods in the West of England and Yorkshire (summer 2007 – **Box 2 overleaf**); and the Warwickshire warehouse collapse (November 2007). On each occasion independent reviewers, commentators and others concluded that it was effective – reducing stress, physical damage and freeing resources to undertake other tasks. Using High Volume Pumps the Buncefield fire was put out in four days rather than weeks, saving considerable environmental damage to local communities.

4.6 New Dimension equipment has also been deployed to smaller incidents, often to investigate suspect packages, or to deal with localised extreme weather events. These incidents have also led to a saving of resources, but the Department has not yet established a systematic capture of business benefits.

4.7 The Department has not undertaken a systematic and comprehensive modelling exercise to determine whether equipment numbers and locations are appropriate to meet Concept of Operations' response

times and requirements for all incidents. The Department has, however, undertaken a number of smaller modelling exercises of varying sophistication which show that in most cases response requirements can be met. The Cabinet Office's National Capability Survey⁹ of Emergency Services shows similar results for the Fire and Rescue Services. The Department considers that the number and allocation of equipment types is broadly justified, in the context of financial and other constraints. Nevertheless some response requirements have increased in recent times, with some risks of major incidents, such as the frequency and size of flooding incidents, showing an upward trend.¹⁰

4.8 Actual incidents such as the 2007 flooding, and major exercises, have also highlighted the need to keep response requirements and capacity under regular review. If in the summer of 2007, Yorkshire and the West Country had flooded at the same time, 76 High Volume

Pumps might have been required – 26 more than is currently available in England and Wales. The Chief Fire and Rescue Adviser in his review of the Fire and Rescue Services' operational response to the flooding in 2007 reported views of those involved as being that "the current capability of the Fire and Rescue Service was inadequate to meet either national planning scenarios or events on the scale of summer 2007".¹¹ The Government is considering its future flood response capability, which will be outlined as part of its wider response later this year to Sir Michael Pitt's review¹² of the 2007 summer floods.

Command and Control

4.9 The Department and the Fire and Rescue Services have taken a number of steps to enhance the effectiveness of the Fire Service's Command and Control capacity in the event of a major emergency (Appendix 5).

BOX 2



Flooding in summer 2007

During the summer of 2007, England suffered two separate but concerted periods of flooding on an unprecedented scale.

Yorkshire: On Monday 25 June, all Humberside Fire and Rescue Service pumping appliances were deployed including their High Volume Pump which went into action in the coastal town of Withernsea. With severe flooding along the river Humber, the Fire and Rescue Service National Co-ordination Centre then oversaw

mobilisation of 31 High Volume Pumps from around the country helping to pump out water in Hedon, and relieve pressure on a reservoir near Barton, pumping out water to avoid substantial flooding in the town. On the night of 27 June, High Volume Pumps played a crucial role in helping to remove water, at a rate of 22,000 gallons a minute, from the Ulley Dam, near Rotherham and Sheffield, preventing the reservoir overflowing and breaking the dam wall. On 5 July 26 High Volume Pumps were in use at Toll Bar, north of Doncaster, using approximately 27.5 kilometres of hose-line to remediate extremely heavy flooding in the area. Between June 25 and July 5, 36 high volume pumps were in use.

West of England: Later in July, High Volume Pumps were used in Gloucestershire and in Oxfordshire to combat flooding in a number of villages. On July 21 a High Volume Pump was used at Marcham, west of Abingdon and on 23 July a major pumping operation took place in Witney. Between July 20 and July 24, 40 high volume pumps were in use.

The Chief Fire and Rescue Adviser in his report on the operational response to the flooding found that "the Fire and Rescue Service provided an excellent response to the 2007 widespread flooding"...."The provision, mobilisation and effectiveness of high-volume water pumps under mutual aid during the 2007 floods were widely praised by local Fire and Rescue Service officers".

⁹ The National Capabilities Survey (NCS) is run biennially by the Cabinet Office and provides an assessment of current levels of national resilience. It plays a key role in assessing the UK's readiness to respond to a range of assessed risks, such as terrorist attacks or flooding.

¹⁰ See UK National Security Strategy – March 2008: paras 1.3,3.1,3.4,3.14,3.23,3.34ff.

¹¹ *Facing the Challenge: The Chief Fire and Rescue Adviser's review of the operational response by the Fire and Rescue Service to the widespread flooding in England during 2007*, Chief Fire and Rescue Adviser, March 2008. The report recommends that the increased flood risk facing the country should be clarified through the cross-Government capability programme and that if any gaps in flood response are identified, the Fire and Rescue Services should not be expected to increase their national response capability until fully funded to do so.

¹² *The Pitt Review*, Sir Michael Pitt, June 2008.

4.10 Within Fire and Rescue Services some confusion exists on whether the authority to deploy New Dimension equipment rests with the individual Fire and Rescue Service, the Department, the Chief Fire and Rescue Adviser, or the Fire and Rescue Service National Coordination Centre based in West Yorkshire. A Departmental operational readiness audit in July 2007 found that: “there is a lack of clarification on the responsibility and the process that the Fire and Rescue Service National Coordination Centre follows to mobilise equipment... It is unclear how long it would take the National Coordination Centre to support requests for additional New Dimension resources at a major incident”. The Chief Fire and Rescue Adviser has recently drafted guidance on New Dimension roles and responsibilities to try and address some of these issues.

4.11 Availability of equipment for major emergencies is reliant on Fire and Rescue Services informing the National Coordination Centre of local deployments. The Centre does not hold information on non-New Dimension emergency response equipment, which some Fire and Rescue Services believe could help coordination of emergency response to incidents. The Department, however, does not believe that holding such information should be part of its role and it should rather be held by individual Fire and Rescue Services.

4.12 Standard operating procedures for New Dimension equipment have been developed, but until summer 2008 not for its operation in conjunction with standard equipment or with other emergency teams which put effective Command and Control at risk. In the summer of 2008, new incident management guidance was issued to Fire and Rescue Services to address this problem. Urban Search and Rescue teams thought that difference of approach between teams was a problem during one recent large scale exercise. To address this difference, the Department has recently issued – through the national operational assurance team (paragraph 3.11) – regular circulars on Mobilisation, Deployment and Convoying of Urban Search and Rescue vehicles.

4.13 New Dimension is due to be integrated into other future resilience programmes, including the amalgamation of 46 local control centres into a network of nine Regional Control Centres,¹³ and the upgrading of each Fire and Rescue Service’s current main radio system to a common system, enabling easier communication with Police and Ambulance Services and across local boundaries.¹⁴ Multi-agency exercising is also due to increase in complexity and scale, further stretching Command and Control capacity, although it is designed to be able to cope with such increased demands.

4.14 The Department is learning lessons about the use of New Dimension. In addition to the National operational assurance team, the Practitioners’ Forum, established by the Department in 2004 and consisting of key Fire and Rescue Service stakeholders, considers reviews of large-scale incidents, such as the Buncefield oil depot emergency.

Fire and Rescue Service major emergency resilience

4.15 Local procurement of emergency equipment is compatible with the aims of New Dimension, as the Department does not expect to anticipate and fund all needs assessed locally. New Dimension is intended to deal primarily with ‘national’ major incidents rather than ‘local’ ones, although the boundary between the two is not always clear. For example as the London Fire Brigade did not need outside Fire and Rescue Service help to respond to the 7 July 2005 terrorist bombings, it was treated as a local incident by Fire and Rescue Services. Yet since many Departments of State and other national bodies were involved in the Government’s broader response, it was treated as a national incident by Government.

4.16 Provision of equipment to deal with major emergencies therefore varies around the country, depending on the planning, resources and priority with which each Fire and Rescue Service devotes to major emergency response. The impact is partly mitigated by mutual aid agreements between neighbouring Fire and Rescue Services, which aim to enable ready response to incidents beyond the capacity of individual Fire and Rescue Services.

Fire and Rescue Services’ planning for regional and national incidents

4.17 Fire and Rescue Authorities have a statutory duty to plan for their response in the event of a catastrophic event and to work together with other bodies to develop contingency plans for civil protection. Appendix 6 shows the local regional and national fora in which the Fire and Rescue Services work with others to plan for terrorist and other large-scale major incidents.

¹³ Known as FiReControl, the project is due for completion by 2011.

¹⁴ Known as Firelink, the project is due for completion by 2011.

4.18 Generally, Fire and Rescue Services are enthusiastic participants in Local Resilience Fora, many of which are committed to putting in place good multi-agency coordination arrangements and extensive local exercise plans. Examples of good practice include structured learning of lessons, through formal de-brief sessions (Gloucestershire Fire and Rescue Service) and use of an intranet to share learning points (West Yorkshire Fire and Rescue Service). The Department could increase the profile given to planning for regional and national scenarios by, for example, encouraging Regional Government Offices to disseminate regional capability information to local fora.

The incorporation of New Dimension into Fire and Rescue Services’ major emergency planning

4.19 The Civil Contingencies Act 2004 identifies two specific types of Major Emergency Plans – Generic and Specific – that should be drawn up by Fire and Rescue Authorities (**Figure 5**).

4.20 These plans should, taken together, describe how to mitigate the effects of an emergency, starting with the impact of the event. They include alerting and response functions, roles and responsibilities, Command and Control mechanisms, resource requirements and remedial actions to reduce the impact. New Dimension equipment should be fully integrated into each function where relevant.

5 Types of Major Emergency Plan	
Emergency Plan type	Contents
Generic Emergency Plans	The core plan which enables a response to and recovery from a wide range of possible emergencies usually drawn up as multi agency or multi organisation plans.
Specific Emergency Plans	Either a particular kind of emergency such as a transport incident or chemical spill, or to a specific site or location such as an airport or power station. Specific plans can be multi or single agency plans. Within the emergency services single agency plans are often referred to as ‘Standing Operational Procedures’.

Source: National Audit Office

4.21 We commissioned an Emergency Planning expert to review 15 emergency plans from 10 Fire and Rescue Services. Most Fire and Rescue Services in receipt of New Dimension equipment have undertaken some additional risk assessment and planning for major emergencies, but only two plans (one in draft form) identified operational procedures specifically for New Dimension. Neither plan considered incidents that might occur simultaneously in two or more Fire and Rescue Service areas.

4.22 The size and number of simultaneous events assumed for assessing resource resilience vary between Fire and Rescue Services and in many cases are based on previous historical experience and not on scenario modelling. Fire and Rescue Services with no New Dimension equipment may not produce risk assessment and emergency plan documents which access the equipment operated by neighbouring services. More information on critical sites would help Fire and Rescue Services improve their regional and national planning.¹⁵

4.23 Since 2003 the Department has required Fire and Rescue Services to use Integrated Risk Management Plans to match activities and resources to the major incident risks occurring in specific places. All risks should be reviewed and prioritised, including those for major incidents, whether they occur in the local area or elsewhere. However, only three Fire and Rescue Services out of 37 in our census said they had ‘fully incorporated’ their major emergency risks into their Integrated Risk Management Plans.

4.24 While planning responsibility for local, regional and national risks rests with individual Fire and Rescue Services, there is a new requirement for them to work closely with neighbouring Services in preparing plans.¹⁶ Regional Management Boards (see Appendix 6) are increasingly involved in facilitating this work. The Department could further help the process by enhancing its technical Integrated Risk Management Planning guidance for Fire and Rescue Services. Also the ‘Major Incidents Module’ of the software tool, Fire Services Emergency Cover (FSEC), which is used to target resources to risks, could be upgraded to better support resilience planning. The module illustrates the consequences of simultaneous major incidents at regional and national levels, but the methodology is not yet in a form for Fire and Rescue Services’ use.

¹⁵ The Pitt Review, Sir Michael Pitt, June 2008.

¹⁶ National Framework for Fire and Rescue Services 2008-11, Communities and Local Government.

APPENDIX ONE

Methodology

Census of Fire and Rescue Services

We surveyed all 46 Fire and Rescue Services in England by email about their experience of New Dimension, including on training, crewing, planning, exercising, use of equipment, effectiveness of equipment and financial costs. 37 Fire and Rescue Services, or 80 per cent, responded, with the great majority providing detailed answers from senior officers. The nine non-responders were both geographically dispersed and diverse in size, and therefore the findings from the census are not biased. Survey responses contributed particularly to the training and preparedness chapters in our study, and informed our later work, including our in-depth visits.

Visits to Fire and Rescue Services

We visited six Fire and Rescue Services to carry out in-depth analysis of their use and experience of New Dimension equipment. These were: London, Greater Manchester, West Midlands, West Yorkshire, Durham and Darlington and Gloucestershire. Selection was based on geographical and size diversity, although the latter was skewed slightly to ensure the largest Services, which contained the most New Dimension equipment, were included. These visits followed on from the census, and were intended to build on those results by exploring the various areas in more detail. During these visits we:

- carried out a series of in-depth interviews with senior officers responsible for the different aspects of New Dimension, such as training, planning, operations and logistics;
- conducted focus groups of firefighters at fire stations which hosted New Dimension equipment. There were typically one or two focus groups for each visit, and the groups contained mostly whole-time members of the watch on duty at fire stations (about 10 firefighters of different ranks). Two focus groups were of specialist Urban Search and Rescue teams;

- reviewed planning documents; and
- audited financial and training records.

We also carried out detailed telephone interviews with senior officers (including the Chief and/or Deputy Chief) at two other Fire and Rescue Services – Kent and Hereford & Worcester – because of the prominence of particular officers in the New Dimension programme.

Departmental Interviews and Document Review

We interviewed all key New Dimension policy, research, training, financial and procurement officials within the Department's Fire and Resilience Directorate to inform all parts of our study. This amounted to at least 30 interviews of officials at various levels from senior directors to first line managers. We interviewed ex-capability managers now working at other organisations because of their particular importance in the procurement aspects of the programme. We also reviewed all relevant documents, for example the original bids for funding, plans, business cases, Departmental policy statements, risk assessments, research papers, internal audit reports and operational readiness assessments.

Audit of Procurement

We assessed the Department's programme and project procurement management against best practice, and conducted a detailed audit of the procurement of four assets. These were: High Volume Pumps; Prime Movers; Incident Response Units, and Detection, Identification and Monitoring vehicles. Best practice in both programme and project management were derived from previous National Audit Office work and the Office of Government Commerce. Best practice criteria were then used to assess performance on the New Dimension programme.

Stakeholder Contact

We interviewed senior representatives of the following organisations:

- Local Government Association
- Chief Fire Officers Association
- Government Offices – Regional Resilience Teams
- Local and Regional Resilience Fora
- The New Dimension National Team, including regional co-ordinators
- Retained Firefighters Union
- Cabinet Office: Civil Contingencies Secretariat
- Government Decontamination Service
- Suppliers of equipment
- Environment Agency

We also interviewed Sir Ken Knight, the Chief Fire and Rescue Adviser.

We requested submissions from the Fire Brigades Union, the Retained Firefighters Union, and the Fire Officers Association. We received a submission from the Fire Officers Association, and the Retained Firefighters Union preferred to be interviewed.

Use of Emergency Planning Consultant

We employed Leslie Moseley, Visiting Research Fellow at Coventry University, to help us in assessing Fire and Rescue Services' Emergency Planning and the incorporation of New Dimension equipment within them. We analysed 15 plans from 10 Fire and Rescue Services, which we received after a general call for such plans from all 46 Fire and Rescue Services in England.

Visits to Fire Service College

We visited the Fire Service College and met senior officials (including the Chief Executive, Deputy Chief Executive and Director of Finance) and instructors, and reviewed training records and other documents.

Visit to the National Coordination Centre

We visited the National Coordination Centre in West Yorkshire and met with the Centre manager, discussing in detail the technical equipment and operational procedure used during recent incidents.

Review of local risk assessments and other documents

We collected a random sample of about 10 community risk registers of different types to inform our understanding of the local multi-agency risk assessment process. We also reviewed many other documents including for example reports on recent major incidents involving New Dimension equipment.

Trained firefighter numbers in Figure 4

The extrapolation from the National Audit Office survey used in Figure 4 in Part 3 to ascertain trained firefighter numbers involves the following:

- Mass Decontamination extrapolated up by 46/35 (as 35 responses were received with relevant data).
- High Volume Pumps extrapolated up by 46/35 (as above).
- Urban Search and Rescue extrapolated up by 20/17 (as 17 responses were received with relevant data out of 20 Services which have USAR teams).
- Detection, Identification and Monitoring vehicles extrapolated up by 17/15, (as 15 responses were received with relevant data out of the 17 Services which have the vehicles).

APPENDIX TWO

National and local responsibilities for the Fire and Rescue Service

A summary of the national and local responsibilities for the Fire and Rescue Services is set out below:

Department

National Framework setting and monitoring
Standard setting and guidance on recruitment, training and development
New Dimension, FiReControl, Firelink
Research and development
Some training
National civil contingencies planning (with Cabinet Office)

Individual Fire and Rescue Services

Day-to-day delivery (prevention and response)
Community engagement
Recruitment and initial training
Decisions on operational capacity (risk management planning)
Health and safety planning
Non-specialist Procurement
Local civil contingencies planning (as part of Local Resilience Forum)

Local Fire and Rescue Authorities are responsible for the delivery of Fire and Rescue Services in their areas. They are treated as part of local government and are subject to audit, including Comprehensive Performance Assessment, by the Audit Commission.

The Department is responsible for setting national strategic policy and direction, and for managing various national projects and assets. One of the most important is the delivery and funding of the enhancement of resilience through capital and infrastructure programmes, such as New Dimension and Regional Control Centres. These

new capital assets remain on the Departmental balance sheet, but are due to be transferred to the Fire and Rescue Services in the near future.

It also monitors individual local Fire and Rescue Service's performance. Its strategy is set out in the National Framework, which was introduced in the Fire and Rescue Act 2004. Responsibility for delivery of the Framework is shared between the Department and the locally accountable Fire and Rescue Authorities. The Department seldom uses its significant powers to act at a local level. The Act states that Fire and Rescue Services should 'have regard' to the Framework.

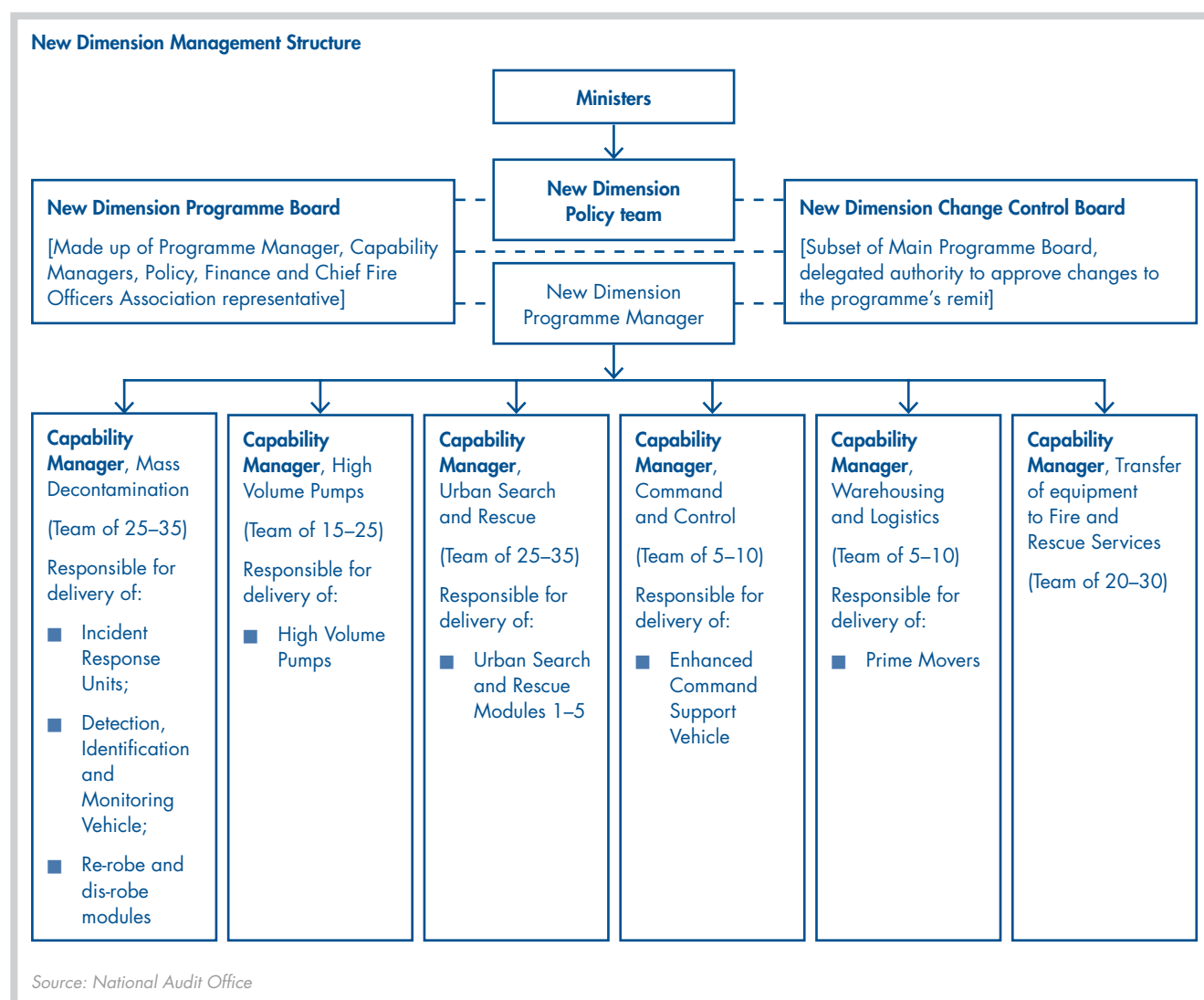
Key elements of the National Framework

- Section 21 of the Act states that the Secretary of State must prepare a Fire and Rescue National Framework. That framework must:
 - set out the priorities and objectives for Fire and Rescue Services;
 - may contain guidance; and
 - may contain any other matter as appropriate.
- Fire and Rescue Services must have regard to the Framework in carrying out their functions.
- The Secretary of State may intervene if they consider that a Fire and Rescue Service is failing, or is likely to fail, to act in accordance with the Framework.
- The Secretary of State has the power to require the Fire and Rescue Service to act, but only if it would promote VFM or public safety.
- The Secretary of State must report to Parliament on the extent to which Fire and Rescue Services are acting in accordance with the Framework; and any steps taken by them for the purpose of securing that Fire and Rescue Services act in accordance with the Framework.

APPENDIX THREE

Departmental programme management structure from 2005

The Department restructured the programme in late 2004. The following shows the new structure adopted, which lasted until the designated 'end of the procurement stage' in March 2008.



NOTES

- 1 Capability managers are a mix of Serco Consultants, seconded firefighters and civil servants.
- 2 Teams are made up of a mix of Serco Consultants, seconded firefighters and civil servants.
- 3 New Dimension programme has also been supported by central Departmental procurement, finance, training and administration team.

APPENDIX FOUR

Procurement Case Studies

The following detail the procurement of four key vehicle and equipment types in the New Dimension programme:

1. The procurement and maintenance of Prime Movers

Specification and Delivery

Prime Movers are designed to act as a delivery unit to load and carry a variety of module containers. The decision to procure these vehicles was made after a contract had already been entered into with the supplier Marshalls for the supply of Incident Response Units. The Department did not issue a separate tender for the Prime Movers but opted to award the work to Marshalls as a variation to the original contract to supply Incident Response Units. However, Prime Movers are fundamentally different in design and operation to Incident Response Units.

The original Business Case contained a target date of April 2005 for completion of the fleet. The fleet was not completed until March 2006.

The Department initially ordered 238 vehicles in February 2004, based on the prevailing plans for new dimension asset distribution to Fire and Rescue Services in England and Wales. By December 2004, however, it became evident that these plans over-estimated the amount of New Dimension equipment (for example 50 prime movers to be needed for flood water rescue). Having identified the over-estimate the Department calculated its new requirement to be the number of Prime Movers which by then had been manufactured, i.e. 184 and asked the supplier to stop making anymore. The supplier – Marshalls SV – pointed out, as the chassis were nearing completion, such a change would be very costly. In September 2005

the Department therefore decided to revert to its original order of 238. However, as a result of the delays this episode caused, the cost of the procurement increased by £2.1million, adding approximately £8,000 or seven per cent to the cost of each vehicle.

Of the 238 that were produced by March 2006, 54 were therefore surplus to requirements at the time and incurred an extra storage cost of £195,000 at the Marshalls site. Of the 54 surplus vehicles, 19 have been sold so far, to Scotland (7), Staffordshire Fire and Rescue Service (1) and Northern Ireland (11), at around the cost price of £136,000 each, leaving 35 undeployed and unsold which were parked at the New Dimension warehouse and at the Fire Service College until summer 2008, when they were deployed to Fire and Rescue Services. Some of the Prime Movers at the College were stored in the open, were not maintained as part of the maintenance agreement, and eventually suffered corrosion. Although such damage was outside the warranty, Marshalls rectified this at their own cost.

Maintenance

There was no separate tender for the initial maintenance of the Prime Movers, and the work was given to the supplier of the asset itself for reasons of expediency, even though it had little experience of civilian fleet maintenance. After Fire and Rescue Services had raised concerns over maintenance performance for over a year, the fleet maintenance contract was put out for full tender in 2007. As a result, the maintenance supplier was changed to Fraikin, and savings of £750,000 per annum have been achieved by more clearly specifying the service required. Fire and Rescue Services report a better service is now being delivered. The opportunity cost of the original contract, which lasted for two and a half years, is £2.0 million.

The Department initially withheld payment of £450,000 to Marshalls on account of their poor performance. A claim which Marshalls disputed. The Department's legal team reviewed the claim and advised it was unenforceable because Fire and Rescue Service complaints over the service provided had not been collected systematically and the Department had failed to agree performance measures with the contractor or to raise issues earlier with Marshalls. As part of a negotiated settlement, Marshalls did agree to do £150,000 of work without charge.

Reliability

The Prime Movers on the whole have been serviceable, although there have been problems with many of the electronic systems. For example in the first eight months of 2007-08, Fire and Rescue Services reported 1,459 defects, which equates to eight per vehicle.

We estimate the total waste as a result of poor procurement practice to be between £3.2 and £7.78 million.

2. Procurement of Detection, Identification and Monitoring vehicles

Detection, Identification and Monitoring Vehicles

The aim of a Detection, Identification and Monitoring vehicle is to transport specifically trained firefighters and equipment to the scene of an incident to act as a covert mobile laboratory, providing the necessary safe and controlled environment for the testing of suspicious substances.

The original Business Case for this capability, drawn up by the capability manager, identified the need for new equipment and its transport. However, it was not approved and the capability manager purchased individual items in line with Home Office requirements but without an overarching approved capability plan. Between February 2005 and January 2006, 17 host brigades received an array of equipment ranging from hazardous substance readers to radiation detectors. No means of transporting them to an incident was provided, and Fire and Rescue Services improvised, for example transporting them in the boot of senior officers' cars.

After the London Bombings on 7 July 2005, Detection, Identification and Monitoring was given programme priority, and a means of transport was identified as an urgent need, with a target roll out for new vehicles of March 2006. In September 2005 an advert was placed in the Official Journal of the European Union for bids to manufacture vehicles. To the confusion of bidders, the advert did not state clearly how many vehicles were required. A training programme was also devised.

It was not possible for the Department to use an existing Office of Government Framework agreement for the supply of similar vehicles to the Metropolitan police. This framework agreement was set up for use by local police authorities, and not a central government department.

In November 2005 the Department approved the procurement of 18 vehicles (17 plus a servicing spare) and additional equipment. The Department estimated that each vehicle would cost £70,000 at most. After negotiations that took longer than expected, a contract for the manufacture of the vehicles was awarded in July 2006 at a cost of £83,000 per vehicle. An updated, full Business Case was approved in April 2007, nearly 16 months after the procurement had started. The ultimate cost of each van was actually £100,000, 43 per cent higher than the original cost estimate of £70,000, and 20 per cent (£306,000) higher than the contract value.

The first three vehicles were rolled out on 30 August 2006, five months after the original target date. The roll out of vehicles to Fire and Rescue Services was completed in February 2007, almost a year late. A significant proportion of this delay was a result of negotiations between the Department and supplier over design requirements after the award of the contract.

We estimate a total cost overrun of £306,000 (£100,000 – £83,000 x 18) and delays of 11 months (Feb 2007 actual: March 2006 planned).

3. Procurement of High Volume Pumps

High Volume Pumps

High Volume Pumps can pump 7,000 litres of water a minute (equivalent to approximately seven fire engines) and can deposit it tens of kilometres away if necessary. There are two distinct parts to the equipment – the pump and the hose box.

The Department specified that it wanted a single contract for both the pump and the hose box, for simplicity. This requirement reduced the number of potential suppliers to one – Kuiken Hytrans B.V. based in the Netherlands. No cost benefit analysis of this decision was carried out, and the Department has been unable to evidence that the resulting single tender was approved in line with established Departmental authorities.

The Department used the services of the Office of Government Commerce buying solutions to negotiate the contract, which was signed in November 2003. It specified that all the pumps/hose boxes should be completed and rolled out by July 2005, and that the cost would be £12.7 million. The first Pump/hose box was rolled out in April 2004, and the final in July 2006, 12 months late.

The Department, rather than the Office of Government Commerce buying solutions, contracted for the 20 year maintenance contract for the pumps/hose boxes. The maintenance contract was also not let through a competitive tender. The Department claims that the reason for this is that no alternative companies could do the work, but there is no evidence of market testing in this regard. Again, the Department was unable to evidence that this single tender was approved in line with established Departmental authorities.

The maintenance contract was signed in October 2005, months after the Department had started rolling the pumps/hose boxes out to Fire and Rescue Services. This maintenance contract only covered the pumps and not the hose boxes, as the Department originally thought that the Fire and Rescue Services could do their own hose box maintenance. The Department agreed the pump maintenance contract in euros. It did not put in place any measures to hedge against a future strengthening of the euro. Since the signing of the contract, the euro has strengthened by 14 per cent. This represents extra cost of £250,000.

The Department sought to arrange a variation to the original contract to cover the maintenance of the hose box and ancillary equipment when it became clear that Fire and Rescue Services could not do their own hose box maintenance, but no agreement was reached. The Department has therefore paid for maintenance of the hose box on an 'ad hoc' basis since 2005. Total costs for this work between April 2007 and June 2008 are £192,000. There are risks in this approach – the contractor could withdraw their services at any time without penalty, impacting on the equipment availability, and costs cannot be predicted accurately. There is also a risk that unit costs are higher than they would have been if negotiated and agreed in a contract.

There have been several minor design issues, which have been rectified. For example, during the 2007 floods some fuel tanks cracked as the pumps were moved off Prime Movers by forklift truck.

4. Procurement of Incident Response Units

Incident Response Unit Vehicles

The Incident Response Unit vehicle is a large lorry with attached fork lift truck which transports Mass Decontamination equipment – structures and dis-robe/re-robe modules – to the scene of an incident. The Department procured the vehicle separately from the rest of the equipment.

There was no Business Case prior to the tendering exercise, which took place after an advert had been placed in the Official Journal of the European Union in February 2003. The advert did not specify accurately the amount of Mass Decontamination equipment the vehicle would be expected to hold (although OJEU adverts are often couched in general terms), but it did specify that Urban Search and Rescue equipment would also be carried in the vehicle.

The Department asked the Office of Government Commerce buying solutions to set up a framework agreement for the purchase of the vehicles and assess the tender bids. During the assessment, however, it became clear that the bidders were all proposing vehicles that could not hold all the Mass Decontamination equipment needed – let alone the Urban Search and Rescue equipment. A decision was therefore made to re-tender the contract with new specifications for a larger vehicle, no Urban Search and Rescue and less cabin space for crews. This re-tendering exercise added additional time to the procurement process. Further delays were incurred as the preferred bidder was required to re-submit its proposal for a chassis.

The vehicles were rolled out to Fire and Rescue Services on time by March 2004. However, maintenance of the vehicles was not considered until just before the first Incident Response Unit had been manufactured, and there was no competition for the contract, which was given to the equipment manufacturer, even though maintenance was not part of the manufacturer's core business.

APPENDIX FIVE

Command and Control enhancements under New Dimension

During the New Dimension programme the Department and the Fire and Rescue Services have taken a number of steps to enhance the effectiveness of the Fire and Rescue Service's command and control capacity in the event of a major emergency. These are:

- A Chief Professional Adviser – currently Sir Ken Knight – has been appointed with the dual task of advising the relevant Minister, and helping to make sure local decisions are made in accordance with national priorities. His role is to be bolstered over the next few months as a support team is established in the Department.
- The Fire and Rescue Service National Coordination Centre has been established to coordinate New Dimension equipment. The Department is also developing an Emergency Room to facilitate the most effective deployment of Fire and Rescue Service/Government equipment during any major emergency, in liaison with National Coordination Centre.
- Nine Enhanced Command Support vehicles are being procured by the Department to act as coordination hubs for resources being held at strategic holding areas in preparation for deployment to the immediate incident.
- Development of a National Strategic Advisor Team drawn from Fire and Rescue Service Principal Officers is being established to provide where required, additional strategic support and advice to assist those in command of a serious incident.
- A New Dimension National Team will be put in place to support New Dimension equipment after transfer to local Fire and Rescue Service ownership. The team will consist of around 27 personnel which can be called upon to provide advice during the response to a large scale incident.
- A National Mutual Aid protocol was put in place in 2006 to allow Fire and Rescue Services to support each other more easily at national incidents.

APPENDIX SIX

Local and Regional Resilience Fora

The following bodies exist to address resilience issues:

National Resilience Bodies

Cabinet Office Civil Contingencies Secretariat

The Cabinet Office Civil Contingencies Secretariat coordinates the development of resilience policy and procedures across Government, and seeks to identify and prevent disruptive challenges. It oversees a five stage process: assess national risks; decide on planning assumptions; work out resilience requirements; assess current capability levels; and enhance capability levels to meet requirements. The main mechanism for achieving these tasks is through 19 work streams, of which three relate directly to New Dimension.

Regional Resilience Bodies

Regional Resilience Forums

Regional Resilience Forums were set up to bring together central government agencies, and representatives of local responders, including the emergency services and local authorities and the armed forces. Each Forum has at least one representative from the Fire and Rescue Service. The Forums work to improve the coordination of planning at a regional level and improve communications between the centre and the region and between the region and local responders. Participation in the Regional Resilience Forums helps Regional Management Boards to put in place effective resilience plans for large scale emergencies.

Regional Civil Contingencies Committee

In the event of a larger scale emergency a separate committee, the Regional Civil Contingencies Committee, could be formed to coordinate the regional response to an event which overwhelmed local responders or which had an impact over a wide area. The Civil Contingencies Act also empowers Ministers to appoint a Regional Nominated Coordinator, if required, to help coordinate activities under the emergency regulations made in response to the emergency.

Regional Management Boards

There are nine Regional Management Boards, one for each region in England. They are specific to the Fire and Rescue Service, and one of their key responsibilities is to make sure that effective emergency plans are in place to deal with large scale emergencies.

Regional Resilience Teams

Since April 2003 Regional Resilience Teams have been operational in each of the Government Offices in the nine English regions. The teams provide support for the Regional Resilience Forums, including helping to coordinate local resilience work. They also support Regional Civil Contingencies Committees in the event of regional response arrangements being called upon, and work with the Devolved Administrations to make sure of effective cross-border arrangements.

Local Resilience Bodies

Local Resilience Forums

Outside of London, Local Resilience Forums are based on the 38 Police Authority Areas and meet quarterly. They are formed of Category 1 and Category 2 local responders. Category 1 organisations (emergency services, local authorities and NHS trusts) are subject to the full set of civil protection duties, whereas Category 2 organisations (utilities, local industry) have an information sharing/cooperating role. Fire and Rescue Services are Category 1 organisations and play an important part in Local Resilience Forums, often taking the lead in planning for certain specific emergencies.

Local Resilience Forums have a statutory duty to put together a Local Risk Assessment and Emergency Response Plan for their area. From these documents a Community Risk Register (CRR) is drawn up and published. For each risk identified a statement should be made of whether the risk would require a national, regional or local response, and how the risk is to be addressed.

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