



The Buncefield Investigation

The Government and Competent Authority's Response

*Presented to Parliament by the Secretary of State for Work and Pensions
By Command of Her Majesty
November 2008*



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THE BUNCEFIELD INVESTIGATION: THE GOVERNMENT AND COMPETENT AUTHORITY'S RESPONSE

Introduction

The explosions at Buncefield Oil Storage Depot, on 11 December 2005, resulted in injuries to more than 40 people and significant damage to the surrounding area and the environment. The Major Incident Investigation Board (MIIB), independently chaired by the Rt Hon Lord Newton of Braintree, carried out an extensive investigation and has now published eight reports, four setting out findings and recommendations. Those four reports are entitled:

- Design and operation of fuel storage sites;
- Emergency preparedness for, response to and recovery from incidents;
- The explosion mechanism advisory group report; and
- Land use planning and the control of societal risk around major hazard sites.

This document sets out the Government and Competent Authority's response to the first two of the MIIB reports. Government consideration of the most recent report, covering land use planning matters, will be led by the Secretary of State for Communities and Local Government who will respond separately in due course. The 'explosion mechanism' recommendations are being taken forward by a specialist group including regulators, academics and industry representatives.

The MIIB's recommendations are aimed at site operators, the Competent Authority and are also for Government to consider with respect to their findings regarding emergency preparedness. There are many interrelated recommendations in the report on design and operation of fuel storage sites, whereas the report on emergency preparedness has a number of issue specific recommendations. This document is structured in a way that best assists readers' understanding of the responses in both cases.

Overall, good progress has been made against the recommendations. On the first MIIB report, the Competent Authority (namely the Health and Safety Executive (HSE), Environment Agency, Scottish Environment Protection Agency) and industry have acted promptly to provide the necessary resource, and worked on implementing its recommendations both at fuel storage sites as well as other Control Of Major Accident Hazards (COMAH) sites where appropriate. Additionally, as the MIIB explains in its report, some of its recommendations set a significantly higher standard than is generally in place in the sector and such changes need to be planned and phased in with care, not least in order to avoid compromising the resilience of the UK's fuel supply.

On the second MIIB report, Government departments, notably Communities and Local Government and the Cabinet Office, as well as the Competent Authority and industry have responded positively to the challenge with a programme of action. The devolved administrations have also been fully engaged; and although there are no equivalent sites in Northern Ireland, the MIIB's work is being monitored and considered there. The efforts of Government departments and other organisations are coupled with positive work at the local level to enhance the resilience and effectiveness of emergency response, supported by new guidance from Government.

Finally, it should be stressed that this is not the end of the process. The Government, and all the authorities involved, are committed to delivering a programme of work that will ensure real improvements in the prevention of major accidents and, should major incidents occur, that effective plans are in place to respond and recover in the best way possible.

Progress against recommendations of the Buncefield Major Incident Investigation Board (MIIB) in their report '*Recommendations on the design and operation of fuel storage sites*', following the Buncefield explosion on 11 December 2005

The MIIB report was published in March 2007 and contains 25 recommendations aimed at improving the design and operation of fuel storage sites. These recommendations are wide-ranging and far-reaching and set goals that the MIIB believed needed to be achieved to prevent another Buncefield-type incident from occurring.

Responding to Buncefield and securing improvements at fuel storage depots has been an important priority for the COMAH Competent Authority (CA). The CA will use the regulatory provisions of the Control of Major Accident Hazard Regulations 1999 (COMAH) to their full to ensure delivery of the improvements necessary to prevent a similar incident. Where the implementation of these recommendations requires changes to safety reports for COMAH top-tier sites, these will be assessed by the CA.

The CA has responded in a prioritised way to the incident, dealing first with the issues giving rise to greatest impact on control of risk. For HSE this has been overfill protection, staff competence/manning levels and control of fuel transfer – putting the receiving site in control of stopping delivery in the event of an emergency. HSE has also focused on improving leadership in process safety management at COMAH sites because setting the right agenda at the top ensures that major hazards are effectively managed throughout an organisation. For the Environment Agency and its Scottish equivalent (SEPA), the integrity of bund walls and floors, together with the provision of suitable means of tertiary containment should the bunds fail or be overwhelmed by water used to tackle a fire, have been a priority.

Immediate action was taken ahead of publication of the MIIB recommendations to provide assurance about safety and environmental controls at all fuel storage depots. The CA issued a safety alert¹ in February 2006 to all operators of COMAH oil and fuel storage sites requesting them to review the safety of their operations and plant to ensure that major accident hazards are being well managed. The CA then followed up this advice with an intensive three-month inspection programme to more than 100 fuel storage depots to check compliance against 45 key points of safety and environmental control.

¹ Safety Alert to operators of COMAH oil/fuel storage sites: <http://www.hse.gov.uk/comah/buncefield/alert.htm>

In June 2006 the CA set up a Task Group to drive forward a challenging programme of improvements at the 50 sites identified as sufficiently similar to Buncefield to give rise to the same potential risk. The task group identified eight priority improvements to be addressed by early 2007.² Approximately 90% of operators achieved compliance by that time and the CA took enforcement action in instances where progress was not satisfactory.

The task group went on to issue a further 16 recommendations in July 2007³ to be met by mid-2008. Operators achieved 75% compliance by this deadline and the CA is now following up those sites yet to complete work necessary to meet the recommendations.

Since the publication of the MIIB Design and Operations Report, the CA and industry have continued developing guidance dealing with the issues specifically highlighted in that report. To oversee this and other work in the fuel storage sector, the CA published a Containment Policy in February 2008 that sets out a framework for the application of improvements to safety and environmental controls, including tank top design. Improvements will apply immediately to new sites and will be phased for existing sites. Compliance with this policy is being monitored by the CA.

The MIIB acknowledges in its report on the design and operation of fuel storage sites that some of its recommendations set a significantly higher standard than is generally in place in the sector. They go on to state that these changes need to be carefully planned to consider upstream implications and phased in over time to avoid compromising the resilience of the UK's fuel supply. In addition, some of the recommendations are dependent on other recommendations being completed first. Therefore, the CA and industry have prioritised their work to deal with the recommendations on the basis of risk, taking into account dependencies between them and the need to carefully schedule the work.

The MIIB Design and Operation recommendations are at Annex 1. The responses to these recommendations are grouped under the following five headings:

- Protecting against the loss of primary containment using high-integrity systems (Recommendations 1-10)
- Engineering against escalation of loss of primary containment⁴ (Recommendations 11-16)

² Buncefield Standards Task Group Initial Report – recommendations requiring immediate action: <http://www.hse.gov.uk/comah/buncefield/bstg1.htm>

³ Buncefield Standards Task Group Final Report <http://www.hse.gov.uk/comah/buncefield/final.htm>

⁴ Primary containment consists of the tanks, pipes and vessels that hold liquids, and the devices fitted to them to allow them to be operated safely; secondary containment consists of enclosed areas around storage vessels (often called bunds); and tertiary containment consists of features such as drains or raised kerbs designed to limit the passage of chemicals off site.

- Engineering against escalation of loss of secondary and tertiary containment (Recommendations 17-18)
- Operating with high-reliability organisations (Recommendations 19-22)
- Delivering high performance through culture and leadership (Recommendations 23-25).

Protecting against the loss of primary containment using high-integrity systems

Recommendations 1-5 and 8

Ensuring high standards of primary containment means that products remain in controlled and secure plant. If the integrity of primary containment can be maintained, then emergency secondary and tertiary controls will not be called upon.

Buncefield was very unusual as most overfills, even though not acceptable, can be safely confined to a liquid spillage into the bund. Fires from overfilling of tanks are rare events and an explosion on the scale of Buncefield is even less likely. In response to the incident, the CA focused first on gaining assurance that all sites had the basic control measures in place. The initial priorities were to ensure that operators had:

- set tank headspace margins properly to allow sufficient time to react to a developing overfill before the contents spill out over the top of the tank;
- effective oversight of pipeline transfers to ensure that they are properly planned and scheduled with effective pre-transfer checks to ensure sufficient capacity and product routing;
- put the receiving site in absolute control to terminate a transfer and shut down the filling operation in the event of an emergency;
- effective means of gauging and monitoring filling levels with sufficient competent trained staff available to respond to a developing emergency;
- valves and controls to safety isolate tank contents, with fire-safe shut-off valves to limit the escalation of fires or major spillages; and
- effective programmes for inspection; testing and maintenance of existing overfill protection systems.

All these measures were in place by mid-2007.

The next priority was to upgrade and improve the integrity and reliability of tank overfilling control equipment – level gauges, high-level alarms and shutdown systems. As acknowledged by the MIIB this will require a significantly higher standard of equipment and systems than was commonly in place prior to Buncefield. These significant modifications will need to be carefully planned to consider upstream implications and phased in.

The CA agrees with the MIIB recommendation relating to compliance with BS EN 61511:2004 (*Functional Safety: Safety Instrumented Systems for the Process Industry Sector*) as a means to achieve high integrity for these systems. This requires a carefully planned programme of upgrades for most sites. This is likely to take several years to complete.

The CA has agreed with industry that the risk assessment protocol within BS EN 61511:2004 provides a suitable methodology to determine the appropriate level of integrity for these systems. The use of layers of protection analysis provides the most practical tool to meet this requirement.

The CA now requires immediate compliance with BS EN 61511:2004 at new storage sites or those undergoing significant change or modification. For example, the rebuilt facilities at the Buncefield complex will meet this standard in full prior to recommencement of gasoline storage operations.

All existing sites have completed a risk assessment against BS EN 61511:2004 and the CA has agreed with industry a minimum safety integrity level, SIL1 as defined by that standard. This represents a significantly higher standard of reliability for control systems than existed prior to Buncefield, not just in the UK but also elsewhere in Europe and the United States. Higher-risk sites will be required to have systems above this minimum level. So far just over 80% of sites have complied with BS EN 61511: 2004 with a SIL1 minimum or have an improvement plan in place to meet that standard.

The CA has also required that sites move to fully automatic shutdown systems within a timetable agreed with the CA. The fitting of automatic operating overflow protection is complicated by the variety of sites covered by the Buncefield-type definition. Some are pipeline fed from major cross-country pipelines, some from ship to shore, and some are refineries with process operations feeding products into storage tanks. Any automatic system that closes the pressurised feed pipe to a tank could have significant consequences back upstream if the flow of material is suddenly stopped. The CA and industry are undertaking research to determine a safe way to automatically and quickly shut off the supply from ship loading operations and for downstream refinery storage tanks. In the meantime the CA has ensured that operators have set their tank capacities with sufficient head-space margin, above the high-level alarm setting, to allow for a safe shutdown period.

Most sites fed by cross-country pipelines already have automated emergency shutdown systems in place. The programme for other sites is expected to take between two and five years to complete, depending on risk, complexity and the need to carefully schedule tank upgrades.

The CA checked the management systems and standards for inspection, testing and maintenance of plant and equipment in the initial safety review during spring 2006. To underpin this, the CA and industry issued good practice guidance in July 2007 relating to proof testing of overfill prevention systems. Sites were required to meet the testing arrangements set out in BS EN 61511:2004 by December 2007. The CA has an ongoing inspection programme to check compliance with this standard. As systems are upgraded to meet the requirements of recommendations 3 and 4, then inspection, testing and maintenance arrangements will need to reflect these changes.

The CA checked compliance with good practice on plant change procedures in 2006. This is to ensure that changes in plant or operations do not have an adverse effect on the integrity of containment systems. To reinforce this, good practice guidance on the management of change was issued in July 2007.

In the longer term the CA is ensuring that industry is exploring alternative means of ultimate high-level detection not reliant on components internal to the storage tank. This requires further research into systems such as radar level detection to ensure the reliability and compatibility with existing tank designs.

The CA has ensured that changes to operators' systems and procedures are included in the safety reports for COMAH top-tier sites as they are reviewed and revised within the requirements of the regulations.

Recommendations 6, 7, 9 and 10

The requirements of Recommendations 6 and 7, concerning fuel transfers between sites, have been met by sites through the use of a fuel-transfer consignment agreement.

The requirements of Recommendation 9, concerning the maintenance of records, have been largely met. There are practical difficulties with having records available both on site and at a different location as most records are kept on computer servers integral to data logging within control systems on site. Good practice guidance to fully deal with this will be released by mid-2009. In the interim, the CA is ensuring that sites maintain rigorous records on site, including logs of override action, near misses, and data on the performance of level gauges, alarms and system trips.

The CA and industry have agreed leading and lagging performance indicators and have met MIIB Recommendation 10 requiring this. The indicators were based on existing HSE guidance, *Developing Process Safety Indicators HSG 254*.

The CA has verified compliance with these recommendations and its ongoing inspection programme will ensure that compliance is maintained.

Engineering against escalation of loss of primary containment

Recommendations 11-16

Recommendations 11 and 12 require a review of the places on sites where explosive atmospheres may occur and an evaluation of the siting/protection of emergency response facilities in light of this review. The CA issued a Safety Alert to all COMAH sites in February 2006 requiring site operators to review their explosive atmospheres assessments and checked by inspection that these reviews were conducted at all Buncefield-type sites. Guidance and a methodology for reviewing emergency response facilities with respect to their vulnerability to explosion have recently been issued. The CA is verifying sites' progress to ensure that this guidance is met by the end of 2009 at the latest.

Recommendation 13 requires operators to evaluate methods of detecting flammable vapour in secondary containment in the event of a tank overflow. There were concerns about the reliability of flammable gas detectors at fuel storage sites and research was commissioned by the CA with the Health and Safety Laboratory (HSL) to assess their viability. The final report of this research is expected shortly but indications are that gas and flammable vapour detection systems may not be sufficiently reliable to facilitate emergency shutdown. Work on identifying other practical methods of detecting leaks has already begun, building on the findings of the CA safety alert issued in February 2006, which indicated that many sites already had some form of leak detection system either linked to the tank gauging system or based on monitoring ground conditions. Guidance on practical methods of detecting leaks will be issued by mid-2009.

Recommendations 14, 15 and 16 relate to the design of fuel storage tank tops and the safe re-routing of overflows to avoid a vapour cloud being formed if there is an overflow and is a medium term objective. There have been few new tanks built or sites undergoing major modification at Buncefield-type sites, with the exception of the rebuilding at the Buncefield site itself. This rebuilding has been closely monitored by the CA to ensure that this meets high standards of safety and environmental protection.

There have been concerns that any redesign of tank tops and incorporation of diversion systems will compromise other aspects of safety and environmental controls. The CA has commissioned research to develop key principles for tank top design to ensure that modifications do not compromise safety in other aspects of primary containment. The CA, with industry, is identifying reasonably practicable measures to improve safety in tank top design in the UK

and abroad. The CA is currently working with a small number of operators to prove the design and practicality of these modifications. Guidance on tank top design based on this work will be published by mid-2009.

Engineering against escalation of loss of secondary and tertiary containment

Recommendations 17-18

These recommendations require improvements in secondary and tertiary containment at sites. In mid-2006, the CA carried out a review of the fuel storage sector, which included measures relating to secondary and tertiary containment.

The CA Containment Policy, released in February 2008, provides a framework for the application of improvements to primary, secondary and tertiary containment. The CA is carrying out a programme of site inspections and is requiring operators to produce improvement plans where necessary.

In England and Wales, where there are a greater number of large-scale fuel storage sites, the Environment Agency (EA) has prioritised sites according to risk. The EA has required the operators of the higher-risk sites to produce improvement plans within six months. This will be followed by the sites of lower risk producing improvement plans within either 9 or 15 months. Seventy per cent of the plans required within six months have been submitted and the CA is currently assessing the proposed improvement plans.

In Scotland, the limited number of Buncefield-type sites has allowed SEPA to apply the policy at all these sites concurrently. Improvement plans are expected to be submitted by sites within a similar overall timeframe to the EA's and SEPA's assessment of these plans is prioritised on the basis of risk.

Suitable means of assessing risk to prioritise programmes of engineering work on containment exist and will be bolstered by a consolidated risk assessment tool, under development by the Energy Institute, which is due for release in late 2008.

To underpin the policy and this work, the CA and industry released in April 2008 guidance containing good practice standards for secondary and tertiary containment and firewater management. The combination of the policy and the guidance means that there is now a wide-reaching and far-ranging set of standards and guidance in place.

Operating with high-reliability organisations

Recommendations 19-22

The CA places a high degree of importance on high standards of leadership within major hazard companies. The CA has promoted a number of interrelated initiatives aimed at delivering improved standards of process safety leadership and management.

The CA and industry published guidance on High Reliability Organisations in July 2007. In particular, standards are provided for:

- roles, responsibilities and competence;
- staffing and shift work arrangements;
- shift handover;
- organisational change and management of contractors;
- performance evaluation and measuring process safety performance; and
- the management of change.

The CA is overseeing the sector's plans to ensure that good practice and experience from other high-hazard sectors is shared openly. So far meetings have been held involving the onshore sector, offshore oil and gas, and the nuclear industry.

Safety Reports for relevant COMAH sites will need to contain demonstrations that all necessary measures have been taken to prevent a major accident and limit its consequences, including the factors that underpin high reliability in organisations. The CA will interpret this requirement in terms of the lessons from Buncefield and other relevant incidents.

Delivering high performance through culture and leadership

Recommendations 23-25

HSE organised in April 2008 a flagship 'Leading from the Top' conference for major-hazard industries.⁵ Directors and CEOs began the process of sharing good practice on process safety leadership and management. The CA's regulatory programmes will give high priority to influencing senior managers to develop strong leadership in process safety. Two further events are being held during 2008 to build on this enthusiastic start and to take forward the sharing of good practice and learning across the sector and with other major-hazard industries.

⁵ See <http://www.hse.gov.uk/leadership/principlesleadership.htm>

Industry's earlier guidance and standards have been widely publicised and disseminated. As part of this work, good industry practice has been sourced from North America, Europe and Asia. The CA and industry have an ongoing programme to promote leadership via the Process Safety Leadership Group (PSLG).

The PSLG forum will provide the means for collecting and sharing incident data and will act as a conduit for improvements to be promulgated to industry.

The CA will monitor industry progress and ensure that this continues.

Progress against recommendations of the Major Incident Investigation Board in their report '*Recommendations on the emergency preparedness for, response to and recovery from incidents*', following the Buncefield explosion on 11 December 2005

This MIIB report was released in July 2007 and contains 32 recommendations aimed at improving planning for emergencies and the effectiveness of the response to emergencies at major-hazard sites. These recommendations are wide-ranging and far-reaching and set goals that the MIIB believe needed to be achieved to effectively deal with another Buncefield-type incident.

The MIIB itself recognised the need for reducing the risk of a major incident happening as being the 'first priority', and the initial work of the CA and industry has been focussed accordingly. Nonetheless, the CA and Government departments recognise the critical importance of dealing effectively with major incidents and continue to be determined to apply appropriately the lessons relating to emergency preparedness, response and recovery arising from the MIIB investigation.

An example of this determination was that shortly after the incident, the CA issued in February 2006 a Safety Alert to COMAH fuel storage sites containing a requirement for sites to ensure that they had suitable on-site emergency plans in place. The CA carried out a verification programme to ensure that this was the case at Buncefield-type sites.

In order to ensure sensible and consistent implementation of the MIIB's recommendations, a cross-Government group of officials, including the devolved administrations, was set up to co-ordinate the response to these recommendations. This ensured an efficient response to the recommendations, and translated recommendations into standards and guidance so that they are effectively implemented.

Recommendations are grouped under the following four headings:

- Assessing the potential for a major incident (Recommendation 1)
- Managing a major incident on site (Recommendations 2-9)
- Preparing for and responding to a major incident off-site, including central Government leadership in the planning for and early response to a major incident and setting up a means of assessing the public health implications (Recommendations 10-26)
- Recovering from a major incident (Recommendations 27-32)

Assessing the potential for a major incident

Recommendation 1 states that operators of Buncefield-type sites should review their emergency arrangements to ensure they provide for all reasonably foreseeable emergency scenarios arising out of credible major hazard incidents, including vapour cloud explosions and severe multi-tank fires that, before Buncefield, were not considered realistically credible. The Competent Authority should ensure that this is done.

The CA and industry have published guidance on what such a scenario means for a site in terms of the extent and scale of the explosion and the level of associated damage. Using the published guidance, all Buncefield-type sites are reviewing their emergency arrangements with respect to the scenario of an explosion followed by a multi-tank fire.

The CA expects all Buncefield-type sites to have completed this review and developed any necessary improvement plan by June 2009. The CA will check on this as part of the monitoring process it has in place for MIIB recommendations.

Managing a major incident on site

MIIB Recommendation 2 states that the Competent Authority should review the existing COMAH guidance on preparing on-site emergency plans. This guidance needs to reflect the HSE's Hazardous Installations Directorate Chemical Industries Division inspection manual, used by inspectors to assess the quality of the on-site plan in meeting the COMAH Regulations. In particular, reference should be made to the need to consult with health advisors and emergency responders.

In July 2007, a CA/industry emergency arrangements working group published a route map that detailed all of the emergency planning duties placed on operators by COMAH and where relevant guidance on these duties could be found. Operators have used this route map to improve their on-site plans and this has been monitored by the CA.

The CA has reviewed the existing HSE COMAH guidance on the assessment of on-site emergency plans and has published supplementary guidance that includes lessons from Buncefield, particularly with reference to the need to consult with health advisors and emergency responders. This guidance is available through the HSE website.

Recommendation 3 states that for Buncefield-type sites, operators should review their on-site emergency plans to reflect the revised guidance on preparing on-site emergency plans as per Recommendation 2. The Competent Authority will need to check that this is done.

The CA published in July 2007 a template to be used by Buncefield-type sites for on-site emergency planning that it had developed with industry. After the MIIB report was published, this template was reviewed and has been amended to ensure that it reflects fully the guidance published in response to Recommendation 2.

This amended template and accompanying guidance have been published and the CA expects all Buncefield-type sites to have implemented this guidance by the end of 2009 at the latest. The CA will ensure that this is done through the monitoring process of targeted inspection it has in place for MIIB recommendations.

Recommendation 4 states that operators should review and, where necessary, revise their on-site emergency arrangements to ensure that relevant staff are trained and competent to execute the plan and should ensure that there are enough trained staff available at all times to perform all the actions required by the on-site emergency plan.

In July 2007, a CA/industry working group published guidance on fire-fighting arrangements at sites, including a methodology for the assessment of the resources and personnel required. This existing guidance was reviewed by the CA and industry in light of the MIIB report, and guidance for operators to determine whether or not they have sufficient staff to perform all emergency actions at sites was published by the CA in Autumn 2008.

The CA/industry working group has also published guidance on training and competence based on the Energy Institute's guidance on *Fire Precautions at Petroleum Refineries and Bulk Storage Installations*.

The CA will ensure that sites have implemented this guidance by the end of 2009 at the latest.

Recommendation 5 states that, for Buncefield-type sites, operators should evaluate the siting and/or suitable protection of emergency response facilities such as the emergency control centre, fire-fighting pumps, lagoons or manual switches, updating the safety report as appropriate and taking the necessary remedial actions.

The CA has published a methodology and guidance, developed with industry, for operators to evaluate the siting and/or protection of emergency response facilities. This guidance directs operators to evaluate emergency response facilities at sites that are capable of dealing with a scenario such as that defined in Recommendation 1 of this report, as well as with lesser events.

Operators will need to ensure that the emergency facilities at their sites are capable of doing so. The CA will ensure that sites have implemented this guidance by the end of 2009 at the latest.

Safety reports are updated by operators in accordance with the five-year programme of revisions, as required by the COMAH Regulations. These will be assessed by the CA to ensure compliance with this recommendation.

Recommendation 6 states that operators should identify vulnerable critical emergency response resources and put in place contingency arrangements either on or off site in the event of failure at any time of the year and make appropriate amendments to the on-site emergency plan. This should include identifying and establishing an alternative emergency control with a duplicate set of plans and technical information.

As in Recommendation 5 of this report, a methodology and guidance for evaluating vulnerable critical emergency response resources has been published by the CA. This guidance directs operators to evaluate emergency response facilities at sites so that they are able to deal with a scenario such as that defined in Recommendation 1 of this report, as well as with lesser events.

Operators will need to ensure that their site(s) are able to do so. The CA will ensure that sites have implemented this guidance by the end 2009 at the latest.

Recommendation 7 states that, for COMAH sites, if the operator relies on an off-site Fire and Rescue Service to respond, the operator's plan should clearly demonstrate that there are adequate arrangements in place between the operator and the service provider. The Competent Authority will need to check that this is done.

The CA has published a template and guidance that it developed with industry, detailing the arrangements required to meet this recommendation. The template will be used as the means of recording the agreement between operators and service providers. Operators will assess emergency tests and real events to check on the robustness of their arrangements.

The CA, industry, and fire and rescue service representatives are developing mutual aid arrangements (as required by Recommendation 23 of this report) and the results of this work will strengthen the interface between COMAH site operators and service providers.

The CA will check that sites have implemented this guidance by the end of 2009 as part of the monitoring process it has in place for MIIB recommendations.

Recommendation 8 states that, for COMAH sites, operators should review their arrangements to communicate with residents, local businesses and the wider community, in particular to ensure the frequency of communications meets local needs and to cover arrangements to provide for dealing with local community complaints. They should agree the frequency and form of communications with local authorities and responders, making provision where appropriate for joint communications with those bodies.

The CA has published guidance developed with local authority emergency planners and industry, which is being used by operators to review their arrangements for communication with the public. It covers:

- the purpose of effective communication with the public;
- consulting with the local authority and the emergency services;
- the relevance and frequency of communications;
- having a means of effectively dealing with queries and concerns/complaints;
- consideration of the use of mailings, newspaper articles/adverts, radio messages, posters and local shows;
- press releases; and
- community liaison groups.

The CA will ensure that sites have implemented this guidance by the end of 2009.

Recommendation 9 states that the Competent Authority should review the Control of Major Accident Hazards (COMAH) guidance and should work with the Cabinet Office to integrate it and the Civil Contingencies Act 2004 (CCA) guidance, namely 'Communicating with the Public' guidance, so that communications regarding COMAH sites are developed jointly by the site operator and the local emergency responders.

As part of the work to review the CCA, the non-statutory guidance entitled 'Emergency Response and Recovery', first published in autumn 2005, will be updated by the Cabinet Office's Civil Contingencies Secretariat (CCS) to include lessons identified from recent emergencies and new standards

in response and recovery methodology. The updated guidance will include recommendations highlighted in the present MIIB report, Sir Michael Pitt's Review of the response to the summer floods in 2007 and the review of the response to the Foot and Mouth Outbreak in 2007. Developed in conjunction with responders, the updated guidance will be published in spring 2009 following consultation.

The review of communication arrangements is due for completion at the end of 2008, with implementation by summer 2009.

The CA, in conjunction with LA emergency planners, is reviewing existing COMAH guidance in order to integrate CCA guidance with warning and informing guidance under COMAH. Revised guidance for COMAH operators will also incorporate guidance published to meet Recommendation 8 in this report.

Preparing for and responding to a major incident off-site, including central Government leadership in the planning for and early response to a major incident and setting up a means of assessing the public health implications

Recommendation 10 states that the Cabinet Office should initiate a review of the arrangements to identify a Minister (and their devolved counterparts) and their role to complement and support the emergency responders following a major incident, to ensure national arrangements work as intended and that there is continuity of government attention throughout the response and recovery phases. Further, the recommendation said that the review should include: communications; public reassurance; the interface with planning for a return to social normality (recommendation 27); and arrangements to ensure that recommendations made following major incidents are implemented.

There are well established arrangements built around the concept of lead Government department to ensure that central Government is able to provide the necessary leadership and support to local responders during the response phase. These arrangements are set out in the Central Government Concept of Operations (CONOPs) for Responding to an Emergency and are supported by the list of Lead Government Departments, which is regularly reviewed and updated. CONOPs is currently being updated to reflect lessons identified during recent emergencies and is due to be published in early 2009.

As part of this process, and building on experience following the Buncefield explosion, the Government has developed new arrangements to support longer-term recovery and provide greater continuity between the response and recovery phases. These arrangements were tested during the response

to summer 2007's floods and were commended by the Pitt Review as good practice for the future. The list of Lead Government Departments has also been expanded to cover departmental responsibilities during both the response and recovery phases. Both documents are due to be published on the UK Resilience website and copies placed in the libraries of the House later in 2008.

The Lead Government Department concept is not applied in Scotland in devolved areas of competence. Instead, the Scottish Executive responds corporately in order to ensure all relevant directorates are engaged in the response. The Scottish Executive has established a Cabinet Sub-Committee (CSC-SGORR) to ensure that the necessary resources are brought to bear to support responders in dealing with an emergency. The Scottish Executive is in the process of producing a chapter for Preparing Scotland on the management of recovery as an integral part of preparation and response by Strategic Co-ordinating Groups in Scotland.

Recommendation 11 states that the Cabinet Office's Civil Contingencies Secretariat (CCS), working with the Competent Authority, should ensure that COMAH emergency arrangements are fully integrated with those under the CCA, with the aim of ensuring that major hazard events are dealt with consistently at all levels, from on-site to national, in terms of planning, shared resources, and practical arrangements. The recommendation specified that the review should include, but not be limited to, confirmation that:

- ***response arrangements take account of devolved responsibilities;***
- ***lead responsibility in Government for ensuring emergency response arrangements at COMAH sites is dealt with consistently under COMAH and CCA;***
- ***procedures and guidance are suitably aligned; and***
- ***deployment of emergency equipment considers both COMAH and CCA sectors and sites.***

The CCS, as part of its Enhancement Programme for the CCA, is currently reviewing the integration of arrangements under the Act with those developed under COMAH and under other sector-specific civil protection legislation. A specific project within the programme is seeking to ensure consistency across planning and response arrangements established by the CCA and other legislation, and revised CCS guidance in relation to the CCA and/or CA guidance in relation to COMAH are to be considered.

Recommendation 12 states that CLG should complete and, where necessary, initiate an assessment of the need for national-level arrangements to provide, fund and maintain emergency response equipment (such as high-volume pumps (HVP), firefighting foam and specialist pollution containment equipment). Further, the review could also consider criteria for allocation and use of this equipment across the UK.

Since the Buncefield incident, the HVP pumping capacity of the Fire and Rescue Service (FRS) has been doubled through the Government's New Dimension programme. Neither Sir Michael Pitt's Review nor the separate review undertaken by the Government's Chief Fire and Rescue Advisor following summer 2007's major flooding have suggested that FRS's pumping capacity need further enhancement. Roll-out to the FRS of the full range of enhanced response capabilities being funded through the New Dimension programme is close to completion. And arrangements are in place to ensure that the capability continues to meet the national risk assessment and planning assumptions.

The Environment Agency currently funds the provision of the majority of pollution equipment used by the FRS in England and Wales. Arrangements for the future management and funding of the provision of specialist pollution containment equipment to deal with major incidents such as Buncefield are being reviewed for CLG and Welsh Assembly Government (WAG) by the National Environmental Strategy Group (FRS and EA forum). The review will be completed by December 2008 and CLG will be exploring with key stakeholders how best the review's recommendations might be implemented.

In England, the existing national foam contract has been novated from the Office of Government Commerce to Firebuy Ltd and extended to March 2009. Firebuy will be developing new contract arrangements from March 2009.

In Wales, national arrangements for all New Dimensions assets, including HVPs, are in place and fully documented. Further work is ongoing in Wales to ensure appropriate arrangements are in place to support a national response. An all-Wales review of response to major petrochemical incidents is due to be completed by the end of 2008 and this is being conducted jointly via a specific lead task group comprising the Local Resilience Forum, FRS, EA and site operators. This work has focussed, initially, on the concentration of risk in Pembrokeshire but will be widened to cover the other petrochemical risks within Wales. Part of this continuing work is a review of the resilience of foam stocks and associated equipment to ensure supplies are adequate for various scenarios.

In Scotland, FRS capability is coordinated via the Chief Fire Officers' Association's New Dimensions Forum. Existing, formally agreed, mutual aid arrangements ensure that local capability is enhanced, where necessary and appropriate, by partner services. Pollution prevention equipment has now been provided to all Fire and Rescue Services via the New Dimension delivery programme and is supported by a Memorandum of Understanding with the Scottish Environment Protection Agency. Long-term capability management arrangements are presently being discussed within the Scottish Fire and Rescue Service Resilience Board.

Recommendation 13 states that the Civil Contingencies Secretariat should review guidance to responders on assessing the extent of the impact of an incident at a COMAH site to ensure appropriate scales of response and resources are provided, at local, regional or national levels.

The guidance developed by the CA and industry to meet Recommendation 1 of this report, on the size, scale and effects of an explosion similar to Buncefield will be used as the basis of assessing appropriate scales of response and resources.

As part of the work to review the CCA, the non-statutory guidance entitled 'Emergency Response and Recovery', first published in autumn 2005, will be updated by the CCS to include lessons identified from recent emergencies and new standards in response and recovery methodology. The updated guidance will include recommendations highlighted in the present MIIB report, Sir Michael Pitt's Review of the response to the summer floods in 2007 and the review of the response to the Foot and Mouth Outbreak in 2007. Developed in conjunction with responders, the updated guidance will be published in spring 2009 following consultation.

In Scotland, the review and update of relevant sections and chapters of *Preparing Scotland* are subject to regular review and will integrate lessons learned from emergencies and exercises including the Buncefield report.

Recommendation 14 states that the Civil Contingencies Secretariat, working with the Competent Authority, should arrange for national guidance to local authorities to be prepared. It was further stated that guidance should also address the competencies required for emergency planners, and be clear on the resources that may be demanded for an effective emergency planning function. In addition, the guidance should be a living document, ie periodically updated in the light of new knowledge of handling major emergencies.

The CA has produced detailed guidance on the inspection of COMAH off-site plans and this represents good practice that will be utilised in the production of off-site plans. Additionally, guidance for off-site planners is included that has been developed in conjunction with the Emergency Planning Society. This includes guidance on the resources that may be demanded for an effective emergency planning function. The CA will check off-site emergency plans against this inspection guidance – including ensuring that the plans are updated to reflect new knowledge.

The inspection guidance will be published through the HSE website before the end of 2008.

The CA has recently published updated guidance (developed with industry) for COMAH operators, making it clear what information they should provide to local emergency planners for off-site plans. Work is advanced on the development of guidance on the production of off-site plans – this will be based on existing guidance on consultation published for use in the production of on-site plans.

The CCS has supported two related strands of work to improve the competences of civil protection practitioners. Skills for Justice has completed a set of National Occupational Standards (NOS) for Civil Contingencies for all those involved in civil protection: the NOS are currently awaiting approval by the relevant standards body. The Emergency Planning Society will be launching its Professional Competences Framework for members of the Society later in 2008. In addition, the CCS is developing an Expectations Set for emergency responders, advising on what standards of performance are expected to meet the CCA's requirements. The CA, with local authority emergency planners, will engage with CCS to identify elements of the Expectations Set that are useful in COMAH off-site planning.

As part of the work to review the CCA, the non-statutory guidance entitled 'Emergency Response and Recovery', first published in autumn 2005, will be updated to reflect lessons identified from recent emergencies and new standards in response and recovery methodology. The updated guidance will integrate lessons identified from a range of recent emergencies, including recommendations highlighted in the present MIIB report, Sir Michael Pitt's Review of the response to the summer floods in 2007 and the review of the response to the Foot and Mouth Outbreak in 2007. Developed in conjunction with responders, the updated guidance will be published in spring 2009 following consultation.

In Scotland, Scottish Resilience is developing a Professional Development Award for Civil Contingencies Practitioners, which will take note of the EPS/EPC competences and is scheduled to be complete by autumn 2009. The Scottish Executive will also work closely with the Cabinet Office regarding review of the CCA.

Recommendation 15: Local authorities should review their off-site emergency response plans for COMAH sites in line with the revised guidance produced in response to Recommendations 13 and 14, and, in the case of fuel storage sites, to take account of explosions and multi-tank fire scenarios. The aim is to ensure plans contain the key information from relevant COMAH safety reports (without compromising the safety reports' confidentiality), which should be provided by site operators following their reviews of arrangements under Recommendation 1. The review should include but not be limited to the following:

- ***input from trained and competent emergency planners following clear guidance;***
- ***working in conjunction with Regional Resilience Forums, and their equivalents in Scotland and Wales, in preparing their off-site emergency plans to understand potential impacts on the Region. The Local Resilience Forum structure encourages multi-agency co-operation and information sharing within a county. The Regional Resilience Forum, and their equivalents, should determine where further consultation is applicable and determine how this is done within and across regions;***
- ***working in conjunction with neighbouring local authorities in developing their off-site emergency plans and involving these authorities in training and in emergency exercises;***
- ***extending co-operation beyond the statutory consultation distance (CD) supplied by HSE to take into account the worst possible impact of a major incident, in effect recalibrating the public information zone, which conventionally aligns with the CD.***

The Cabinet Office established in January 2008 a joint working group with the Local Government Association (LGA) to review existing mutual aid arrangements between local authorities and the issues that, to date, have often impeded development of such arrangements. The group is chaired by the LGA, and has local authority chief executives and emergency planning practitioners among its members. A draft guidance document was issued to all local authorities in July 2008 for comment. Following this consultation, the working group is to reconvene to consider the results and produce a revised document as soon as possible. It is anticipated that this will be published on the UK Resilience website and in booklet form. The Emergency Planning Society is leading a project establishing a core-competencies framework for emergency planners.

Guidance, developed with industry, on Recommendation 1 of this report has been published by the CA, and operators should have the appropriate arrangements in place by the end of 2009 at the latest. This guidance contains information on the extent and severity of a Buncefield-type incident, which can be readily incorporated into off-site planning for large-scale fuel storage sites. Guidance for COMAH site operators on the information that they should provide for off-site plans was released by the CA in July 2007.

The practical implications of recalibrating the Public Information Zone (PIZ) are being considered by the CA and local authority emergency planners because, for some COMAH sites, this may result in a disproportionate response being required.

Scottish Resilience is developing mutual aid arrangements within and between Strategic Co-ordinating Groups and Sectors. In January 2008 a mutual aid workshop was held and a multi-agency action programme is being prepared. The Resilience Advisory Board for Scotland (RABS) has issued an action programme to take forward these regulations and Strategic Coordinating Groups have been asked to co-operate in supporting the activities of local responders.

Recommendation 16 states that the Health Protection Agency (HPA), Health Protection Scotland (HPS) and National Public Health Service Wales (NPHS), Environment Agency, Scottish Environment Protection Agency (SEPA) and Environment and Heritage Service Northern Ireland (EHSNI) should provide local contact details to local authorities and Local Resilience Forums (LRF) to facilitate emergency plan development. This will ensure local authorities have clear consultation routes for the public health and environment aspects of their off-site emergency plans.

Local contact details have been provided to local authorities and LRFs by each of the stated health and environmental agencies. Local authorities now have clear consultation routes for the public health and environmental aspects of their off-site emergency plans and accordingly this recommendation is considered complete in England, Wales, Scotland and Northern Ireland.

Recommendation 17 states that Local Authorities should ensure their off-site emergency plans give due consideration to meeting the welfare needs of responders, including arrangements to provide food and drink and toilet and washing facilities, on all shifts. This will also need to include guidance on rest breaks and the provision of accommodation for responders from outside the local area. Plans should make provision for the contribution of the volunteer community in attending major incidents in the welfare and other supporting roles.

The emergency services make their own arrangements for relief and welfare provision. These are normally well-rehearsed and effective. It is likely to lead to confusion and wasted effort if these arrangements were to be duplicated by local authority emergency planners. The further measures in the recommendation are part of the generic emergency response in many areas.

However, when there is a large ongoing incident involving responders who are not able to be self-sufficient with respect to welfare facilities, the emergency plan should ensure that this factor is considered by emergency planners and a means of providing the requisite welfare facilities should be detailed. These matters were considered in Sir Michael Pitt's report into the summer 2007 floods and he also stressed the value of well organised welfare arrangements and the involvement of voluntary organisations.

Welfare support will be considered as part of the review of off-site plans and will be checked by the CA as part of its verification work on emergency arrangements.

As part of the work to review the CCA, the non-statutory guidance entitled 'Emergency Response and Recovery', first published in autumn 2005, will be updated by the CCS to include lessons identified from recent emergencies and new standards in response and recovery methodology. The updated guidance will include recommendations highlighted in the present MIIB report, Sir Michael Pitt's Review of the response to the summer floods in 2007 and the review of the response to the Foot and Mouth Outbreak in 2007. Developed in conjunction with responders, the updated guidance will be published in spring 2009 following consultation.

Generic arrangements in Scotland currently provide for short-term care for responders. Scottish Resilience is also:

- scoping work in relation to logistic support available to Category 1 responders under the CCA;
- exploring further avenues for voluntary-sector involvement at national and Strategic Co-ordination Group (SCG) levels; and
- taking forward actions arising from its mutual aid workshop.

Scottish Resilience is due to publish guidance on establishing Welfare (Care for People) multi-agency functional groups in each SCG area.

Recommendation 18 states that, in reviewing their off-site emergency arrangements for COMAH sites, revised in accordance with our recommendations, local authorities should identify the facilities, resources and actions that are critical to successfully respond to an

emergency and should provide contingencies for Buncefield-type sites. Local authorities should review and, where necessary, revise emergency arrangements to ensure that relevant staff are trained and competent and that there are enough trained staff and resources to perform the actions required by the emergency plan at all times.

Local Authorities should review existing plans as part of their update of Community Risk Registers, and the CCS has issued Local Risk Assessment Guidance to aid this process. The review should identify where changes to a plan, such as an increased area being affected by an incident, have had an impact on the use of facilities such as pre-arranged rendezvous points for emergency responders or evacuation centres.

The CCS is producing an 'Expectations and Indicators of Good Practice' set of documents, which comprise minimum standards for local responder 'operational' capabilities. The majority of these documents will be published by the end of 2008, with the remainder being published early in 2009.

In Scotland, Strategic Co-ordinating Groups have been asked to support the activities of local authorities and other partners in taking forward the recommendations.

Recommendation 19 states that Local authorities should ensure their revised off site emergency arrangements for COMAH sites are tested within 12 months of production. Exercise scenarios based on real incidents should be compiled by CCS and the Competent Authority and available for multi-agency exercise development.

- ***All Category 1 responders should ensure their staff are trained within six months of production to deliver the emergency response; and***
- ***Local authorities should arrange for councillors and elected members to have awareness training regarding their role in planning for, responding to and recovering from emergencies to effectively represent their communities.***

Some local authorities (LAs) that have considerable numbers of COMAH sites in their areas face practical difficulties in attempting to test all of their revised plans within 12 months. COMAH legally requires that off-site emergency plans are tested within three years of revision. In light of this, LAs will be expected to develop a schedule, prioritised on the basis of risk, for the testing of all of their revised plans within three years of revision. LAs should aim to test plans as rapidly as practicable and the schedule for testing should be agreed with the CA at a local level.

As part of the work to review the CCA, the non-statutory guidance entitled 'Emergency Response and Recovery', first published in autumn 2005, will be updated to reflect lessons identified from recent emergencies and new standards in response and recovery methodology. The updated guidance will integrate lessons identified from a range of recent emergencies, including recommendations highlighted in the present MIIB report, Sir Michael Pitt's Review of the response to the summer floods in 2007 and the review of the response to the Foot and Mouth Outbreak in 2007. Developed in conjunction with responders, the updated guidance will be published in spring 2009 following consultation.

The CA together with LA emergency planners will draw up relevant exercise scenarios. Sir Michael Pitt's review of the response to the summer floods in 2007 suggested that the Emergency Planning College (EPC) might act as a repository for exercise information, including lessons learnt, and in the light of this the CA will explore with the Cabinet Office the possibility of keeping the exercise scenarios developed at the EPC for local authorities to access. It is intended that this work will be complete by spring 2009.

Scotland's Resilience Advisory Board for Scotland (RABS) has established a sub-group that has created an action programme based on this and other Recommendations. The action programme has been issued to Strategic Coordinating Groups and other stakeholders, seeking their support in meeting the Recommendations.

Recommendation 20 states that Local Resilience Forums and devolved equivalents should assess and advise operators, local authorities and the Competent Authority on the effectiveness of communications with residents, local businesses, dutyholders and the wider community in the event of a major incident. Further, it was specified that the assessment should use an agreed standard in line with CCA guidance, 'Communicating with the Public', and include arrangements with local media to avoid conflicting advice being received, and to ensure key messages are transmitted.

The requirements of this recommendation are consistent with the role of Regional Media Emergency Forums (RMEFs) and Warning and Informing Groups at the Local Resilience Forum level. Through RMEFs and Warning and Informing Groups, regional media, government representatives, emergency planners, emergency services and other interested bodies work together to help ensure that all parties can operate more effectively when an emergency occurs. Their work includes preparing useful standard background material in advance, planning practical arrangements and building trust and confidence on all sides. RMEFs work alongside Regional Resilience Teams.

Sir Michael Pitt's Review of the response to the summer floods in 2007 made a number of suggestions and recommendations with regard to communicating with the public and engaging constructively with the media. Local and Regional Resilience Forums (among other organisations locally) are actively taking forward this work and a number of actions have already been completed.

Wales has its own MEF with roles mirroring those of RMEFs.

In Scotland, the Scottish Executive has issued guidance – *Warning and Informing Scotland, Communicating with the Public*, alongside ongoing training. It also proposes multi-agency Public Communications Groups in each SCG area.

Recommendation 21 states that the Civil Contingencies Secretariat should conclude their review of arrangements for obtaining and using air quality data in an emergency. This revision of arrangements should be delivered no later than 2008. The review should include:

- ***agreement on clear notification procedures;***
- ***agreement on roles and responsibilities for collecting air quality data;***
- ***arrangements to disseminate the above to all responders and include them in emergency plans; and***
- ***agreement on performance standards for quality and delivery; and***
- ***consideration for the provision of local meteorological stations in the vicinity of COMAH sites, which can provide local wind direction and speed.***

The review has been concluded and DEFRA has agreed to fund the Environment Agency to take responsibility for providing air quality data in an emergency. Interim arrangements are now in place, with the full monitoring and modelling capability expected to be ready by April 2009 and fully operational from September 2009 following a series of validation exercises.

The primary aim is to co-ordinate air quality modelling and monitoring during major air pollution incidents. This is to ensure the delivery of robust air quality information to the public health advisors and the local Strategic Co-ordination Group in a timely manner, to enable appropriate action by emergency services and meaningful messages to be provided to the public during and in the immediate aftermath of a major incident. A secondary aim is to provide air quality data, which can be used after the incident to assess the likely exposure of members of the public and hence any medical follow-up.

Following an emergency it is expected that there will be a phased provision of air quality data, from initial air modelling and monitoring data within the first few hours, to more detailed air modelling and then real-time air monitoring after several hours.

An Air Quality Cell (AQC) will be convened, either virtually (using IT links) or physically for a major air pollution incident. AQC will have an advisory and co-ordination role and will report to the Scientific and Technical Advice Cell where this is established.

Recommendation 22 states that the Civil Contingencies Secretariat and Department of Health should clarify the different roles for providing health advice at Strategic Co-ordinating Group (SCG) (Gold Command and Control Centre) to local responders. Local agreements should be in place in advance to allow health agencies to decide quickly who will do what in any incident so that the SCG chair receives the support they need. Different arrangements will exist in devolved areas and planning should take account of these. Information relevant to public health arising from the incident at the major hazard site in questions should be available at the outset to enable health responders to give accurate, useful advice when first needed.

The Scientific and Technical Advice Cell (STAC) concept has been developed and guidance has been issued to local responders in England on the establishment of a STAC within Gold Commands. A STAC will be established automatically wherever there is likely to be a requirement for co-ordinated scientific or technical advice, and it will cover both the response and recovery phases of any incident. A detailed training programme has been developed and was piloted early in 2008. The training for STAC chairs has commenced, with half the regions completed by July 2008 and the remainder expected to be completed by February 2009. Updated guidance will be issued in England and Wales shortly that will take into account lessons learned from STACs formed during the 2007 flooding and relevant sections of Sir Michael Pitt's report on that emergency.

In Wales, Health Advisory Team (HAT) arrangements are currently in place, with the National Public Health Service providing public health advice and liaising with other appropriate organisations where wider scientific and technical advice is needed. It has been agreed in principle to adopt the STAC guidance in Wales following a review led by CCS.

In Scotland, STAC interim guidance was issued in November 2007. Following feedback and comments, a final version was issued in September 2008.

Recommendation 23 states that the operators of industrial sites where there are risks of large explosions and/or large complicated fires should put in place, in consultation with the FRSs at national level, a national industry-FRS mutual aid arrangement. The aim should be to enable industry equipment, together with operators of it as appropriate, to be available for fighting major industrial fires. Industry should call on the relevant trade associations and working group 6 of the Buncefield Standards Task Group to assist it, with support from the Civil Contingencies Secretariat.

In England, work is being taken forward by the joint CA/industry Process Safety Leadership Group (PSLG). This group is chaired by HSE and is currently working up options for the provision of a national mutual aid arrangement. Much of the mutual aid work is dependent on the results of Recommendation 24 below, although work that can be decoupled from that Recommendation has commenced.

Mutual aid agreements are scheduled to be in place by summer 2009 for Buncefield-type sites and for other sites by summer 2010.

In Wales, stakeholder engagement with relevant site operators has been facilitated via extensive local consultation and also via membership of the Pembrokeshire Mutual Aid Partnership (PMAP). This has resulted in the development of a 'Statement of Intention' document, which will identify assets and resources available for release from each PMAP site, when possible, to enable effective pooling of resources to deal with fighting a major incident. The 'Statement of Intention' document does not encompass sites outside Pembrokeshire but it does identify what is possible and may be used to develop similar protocols with other members of the industry in other parts of the country where possible.

Wales continues to contribute, via its membership of the UK National Working Group, in assisting to prepare guidance on mutual aid schemes.

In Scotland, work is being taken forward by forums, including the industry, regulators and emergency responders. The Chief Fire Officers' Association has formed a group to look specifically at equipment compatibility between the FRS and industry, and it is due to report its findings before the end of 2008.

Recommendation 24 states that Fire and Rescue Authorities (FRA) and their equivalents in Wales, Scotland and Northern Ireland should review the availability of materials and equipment nationally and determine if they are sufficient to respond to and manage major incidents. Further, critical interface components, such as foam equipment couplings used by the FRS, should be capable of use by the FRS and for any industry the authority may call upon.

In England, this work is being taken forward through the joint CA/industry Process Safety Leadership Group. This group is currently undertaking a programme to identify industry inventories for Buncefield-type sites. The initial results of this survey are being assessed and the identification of FRS inventories has begun. This work will underpin the mutual aid work because the geographical availability and type of equipment and resources will underpin the future design of a robust mutual aid arrangement.

In conjunction with the Chief Fire Officers' Association, Firebuy Ltd will develop user requirements and associated new performance specifications for national contracts for specified equipment. Timescales will depend on the identification of equipment and requirements by FRAs. If required arrangements can be put in place for the devolved authorities to participate in the Firebuy Ltd framework agreements.

In Wales, a review of the compatibility and operational requirements of equipment needed at major incidents is currently being facilitated via the PMAP. An example of an early outcome of this work has resulted in the standardisation of ship-to-shore connections for fire-fighting water supplies. It is envisaged that completion of all identified workstreams will be achieved by 31 March 2009.

In Scotland, a review of national capability delivery within the FRS has been undertaken through work on the national resilience strategy for Scotland. The Scottish Executive, along with the FRS, through the Chief Fire Officers' Association – Scotland and the Convention Of Scottish Local Authorities (COSLA), are currently measuring the ability of FRSs to respond to major incidents as defined through the National Risk Assessment process.

Recommendation 25 states that the recommendations in the Hertfordshire FRS report into the lessons learned from the Buncefield fires that are widely applicable, should be put into effect where it is practical to do so as soon as possible.

In England, Wales and Scotland, all of the 30 recommendations from the Hertfordshire FRS report have been taken forward and 24 are fully implemented. Of the six not complete, four are on track to be completed by the end of 2008; and the remaining two, which involve complex upgrades to infrastructure, are being implemented over the period 2009-10 and 2009-11 respectively, in tandem with the roll-out of the national resilience projects for radio communications (Fire link) and the Regional Control Centres FiReControl.

The recommendations from the Hertfordshire FRS report are wide-ranging and cover health and safety, welfare, communications, control rooms, appliances, equipment and uniform, fireground, and functional sectors and incident

command. Significant issues from these areas that have been completed include:

- provision of appropriate health and safety advice to incident commanders;
- provision of a national system of incident-command support teams to be deployed during a catastrophic or protracted incident;
- a strategic holding area procedure for incidents requiring the wide deployment of national assets;
- a national team of High Volume Pump operational and tactical advisers, who have been trained and equipped to be deployed anywhere in the UK;
- all local authority FRSs now working to the current edition of the Fire Service Manual on incident command, as well as other fire responders being aware of the incident command system and able to integrate their working practices in order to ensure a safe system of work; and
- systems and protocols to enable national deployment and extended working of fire resources having been implemented and tested between the FRS National Coordination Centre and others.

Recommendation 26 states that the Civil Contingencies Secretariat should review the procedures and arrangements in Government Offices in the English regions for deploying liaison staff, to ensure effective communications between central government and Gold Command (Strategic Control Group) in a major emergency. Further, the review should ensure that communications are managed in a way which minimises the demands on Gold Command and maximises efficiency. It should also ensure that the necessary level of human and technical resources can be sustained over a significant period, if required by the demands of the response and recovery phases. Further, the review should be conducted with the devolved administrations to ensure equivalent improvements in communication arrangements for incidents in devolved areas.

Procedures have been put in place that have been successfully exercised at a national level in the past 12-18 months, including with the devolved administrations. The CCS is now working on a review to ensure sustainability throughout the response and recovery phases and is in the process of producing a policy on departmental capacity and capability.

As a result of the lessons identified from recent exercises and operations, the CCS is currently revising central Government's *Concept of Operations* (CONOPS). This document outlines the arrangements for the response to an

emergency (irrespective of its cause) that requires co-ordinated UK central Government action. It is expected that this document will be published in early 2009.

The CCS conducts frequent training on the role and responsibilities of central Government response through Central Government Emergency Response Training (CGERT). This training is currently being rolled out across the regions and seeks to improve the quality and effectiveness of liaison, information sharing and co-ordination between national, regional and local responders.

In Scotland, deploying Scottish Executive Liaison Officers is an established part of the Scottish Executive's response.

Recovering from a major incident

Recommendation 27 states that the Cabinet Office should confirm formally, to avoid any doubt, where lead ministerial responsibility lies for the recovery phase following a major incident until the affected community has regained social normality. We believe responsibility should lie, in most foreseeable situations, with Communities and Local Government (or its successors, or in the case of Scotland and Wales, its devolved administration counterparts) supported as necessary by other central departments. In the event it is agreed that another Minister should assume this role in a specific situation, the transfer of responsibility should be made clear. Emergency arrangements should take full account of the need to ensure recovery starts as soon as possible, including a smooth handover of lead ministerial responsibility where appropriate.

The Government agrees that there should be greater clarity on departmental leadership and responsibilities in the recovery phase of an emergency. The CCS has agreed with other departments the Lead Government Department status for a range of incidents and will publish a list of these shortly. As part of this process, CLG has agreed to lead the central Government contribution to the recovery effort from a future major industrial accident with wide-ranging effects on the built environment.

With regard to the requirement that preparations for recovery should start as soon as possible and that there should be a smooth handover, the Pitt Review into the summer 2007 floods came to a similar conclusion and there is evidence that this has been widely acknowledged and understood. In particular, the Pitt Review found that recovery arrangements following the floods generally worked well, with strong collaborative working between key Government departments and agencies and that CLG had contributed fully and

effectively to the recovery effort. These principles are captured in the revised *Central Government Arrangements for Responding to an Emergency – Concept of Operations* document which is due to be published in early 2009.

Recommendation 28 states that local authorities should ensure that recovery plans dovetail with off-site emergency response plans and the Regional Economic Strategy (and devolved equivalents) to ensure that all relevant organisations are involved at an appropriately early stage.

The National Recovery Guidance, published in October 2007, was produced by Government to support local responders in carrying out their recovery activities. The Guidance explicitly addresses the issue of involving relevant organisations in the co-ordination of the recovery effort through the early establishment of a Recovery Co-ordinating Group (RCG) and sub-groups where appropriate. The Guidance contains a draft Terms of Reference for the RCG, including a suggested membership list (which includes the relevant Regional Development Agency). The Guidance recommends that responders establish the RCG within 24-48 hours from the start of the emergency if possible, and that the RCG should provide advice and guidance to the Strategic Co-ordinating Group whilst it is in place.

The National Recovery Guidance is a “living” document which is updated regularly in the light of lessons identified from emergencies and exercises.

In Scotland, a chapter on recovery for the guidance *Preparing Scotland* is being prepared.

Recommendation 29 states that the CLG should review options for government support to communities affected by a disaster and produce practical recommendations without delay. The review should consider the merits and mechanisms for providing immediate, short-term financial assistance to affected communities, for instance through establishing special status, and how long the period of special treatment should last. The lead Minister for recovery that we ask to be confirmed in Recommendation 27 should have responsibility for controlling special funding provided for recovery. Suitable indicators of social and economic well-being should be adopted to assist in the monitoring of the recovery. The equivalent administrations should be involved in the review to ensure that appropriate financial support arrangements are put in place in their areas.

The floods of summer 2007 demonstrated the Government’s ability to provide financial support for recovery speedily and effectively. But we are not complacent and a Cross-Departmental Group (inc. CLG, HMT, CO, DfT, Defra and DCSF) is reviewing options for providing support for local authorities in recovery, taking into account recommendations from the Pitt Review into the summer 2007 floods. The Government will publish its response to the Pitt

Review in Winter 2008 and relevant arrangements will be set out in the revised 'Emergency Response and Recovery' guidance, which will be published in spring 2009 following consultation.

Recommendation 30 states that central Government should give urgent consideration to support to assist in the recovery of the area around Buncefield, including to both help restore business confidence and attract new workers and new employment. The aim would be to apply to the area the principles of our recommendations during the period of implementing them.

The CLG and the Government Office East have met the Chief Executive of Dacorum Borough Council, identifying that funding is required for 'regular' growth aspiration as opposed to 'continuing need for support for long term recovery from the fire'.

Following a conference that pledged to bring together different elements of private and public investment, the East of England Development Agency (EEDA) is now working closely with stakeholders to implement proposals to designate the area as a 'New Town Improvement District'. Under this programme, local partners are aiming to bring together a combination of funding mechanisms to help finance some of the major improvements identified in the Maylands Business Park masterplan.

Based on its submitted Programme of Development for the support they would require in order to deliver the proposed housing growth, Dacorum Borough Council will receive a provisional award of £6.5 million, as Dacorum was brought into the growth areas in the newly published Regional Spatial Strategy, the East of England Plan. Of great significance is the near agreement to a local Business Improvement District.

Once agreed and implemented (subject to an upcoming positive vote by local business), this initiative will create a substantial funding stream controlled by local businesses to further fund local infrastructure investment.

Recommendation 31 states that the HPA and equivalent health bodies (HPS, NPHS and DHSSPS (Department of Health, Social Services and Public Safety, Northern Ireland)) should agree a framework for continued co-ordination of health impact assessment and response after the acute incident response phase stands down.

In England and Wales, a template for overseeing the transition to recovery has been developed by the HPA and this is currently being tested for validity within the Agency and will then be shared through Local and Regional Resilience Forums.

In Wales, the HPA leads on health impact assessment in respect of environmental guidelines and has a new agreement with the National Public Health Service (NPHS) for joint working.

In Scotland, the STAC Guidance includes a provision for longer-term support. *Preparing Scotland* clearly states that recovery should be integrated with preparation and immediate response.

Recommendation 32 states that the Environment Agency (in consultation with SEPA and the Northern Ireland Environment and Heritage Service) should complete, as quickly as possible, its review of methodologies for assessing the potential harm to the environment arising out of credible major incidents at COMAH sites, and from the emergency response scenarios attaching to them. The objective is to improve information provided to aid planners and emergency responders.

The Environment Agency has reviewed the methodologies. Incident response procedures are comprehensive and robust. The key aspect is the provision of critical environmental information, this being:

- details of the off-site areas likely to be affected by major accidents;
- estimates of the levels of harm that might result – for example, maps that indicate environmentally sensitive areas; and
- on- and off-site drainage maps.

The CA, through inspection, is checking that operators ensure that environment aspects are fully addressed in on-site emergency plans and that the critical environment information would be available at the onset of an incident.

November 2008

Annex 1: MIIB Recommendations on the design and operation of fuel storage sites

Protecting against the loss of primary containment using high integrity systems

Recommendation 1 states that the Competent Authority and operators of Buncefield-type sites should develop and agree a common methodology to determine safety integrity level (SIL) requirements for overfill prevention systems in line with the principles set out in Part 3 of BS EN 61511: 2004. Application of the (SIL) methodology should be clearly demonstrated in the COMAH safety report submitted to the Competent Authority for each applicable site. Existing safety reports will need to be reviewed to ensure this methodology is adopted.

Recommendation 2 states that operators of Buncefield-type sites should as a priority review and amend as necessary their management systems for maintenance of equipment and systems to ensure their continuing integrity in operation. This work should include, but not be limited to, reviews of the following:

- the arrangements and procedures for periodic proof testing of storage tank overfill prevention systems to minimise the likelihood of any failure that could result in loss of containment, and any revisions identified pursuant to this review should be put into immediate effect; and
- the procedures for implementing changes to equipment and systems, to ensure any such changes do not impair the effectiveness of equipment and systems in preventing loss of containment or in providing emergency response.

Recommendation 3 states that operators of Buncefield-type sites should protect against loss of containment of petrol and other highly flammable liquids by fitting a high-integrity, automatic operating overfill prevention system (or a number of such systems, as appropriate) that is physically and electrically separate and independent from the tank gauging system.

Recommendation 4 states that the overfill prevention system (comprising means of level detection, logic/control equipment and independent means of flow control) should be engineered, operated and maintained to achieve and maintain an appropriate level of safety integrity in accordance with the requirements of the recognised industry standard for 'safety instrumented systems', Part 1 of BS EN 61511: 2004.

Recommendation 5 states all elements of an overfill prevention system should be proof tested in accordance with the validated arrangements and procedures sufficiently frequently to ensure the specified safety integrity level is maintained in practice in accordance with the requirements of Part 1 of BS EN 61511: 2004.

Recommendation 6 states that the sector should put in place arrangements to ensure the receiving site (as opposed to the transmitting location) has ultimate control of tank filling. The receiving site should be able to safely terminate or divert a transfer (to prevent loss of containment or other dangerous conditions) without depending on the actions of a remote third party or on the availability of communications to a remote location. These arrangements will need to consider upstream implications for the pipeline network, other facilities on the system, and refineries.

Recommendation 7 states that in conjunction with Recommendation 6, the sector and the Competent Authority should undertake a review of the adequacy of existing safety arrangements, including communications, employed by those responsible for pipeline transfers of fuel. This work should be aligned with implementing Recommendations 19 and 20 on high-reliability organisations to ensure major-hazard risk controls address the management of critical organisational interfaces.

Recommendation 8 states that the sector, including its supply chain of equipment manufacturers and suppliers, should review and report without delay on the scope to develop improved components and systems, including but not limited to the following:

- alternative means of ultimate high-level detection for overfill prevention that do not rely on components internal to the storage tank, with the emphasis on ease of inspection, testing, reliability and maintenance;
- increased dependability of tank level gauging systems through improved validation of measurements and trends, allowing warning of faults and through using modern sensors with increased diagnostic capability; and
- systems to control and log override actions.

Recommendation 9 states that operators of Buncefield-type sites should introduce arrangements for the systematic maintenance of records to allow a review of all product movements together with the operation of the overfill prevention systems and any associated facilities. The arrangements should be fit for their design purpose and include, but not be limited to, the following factors:

- the records should be in a form that is readily accessible by third parties without the need for specialist assistance;
- the records should be available both on site and at a different location;
- the records should be available to allow periodic review of the effectiveness of control measures by the operator and the Competent Authority, as well as for root cause analysis should there be an incident; and

- the records should be held for a minimum period of one year.

Recommendation 10 states that the sector should agree with the Competent Authority on a system of leading and lagging performance indicators for process safety performance. This system should be in line with HSE's recently published guidance on developing process safety indicators, HSG254.

Engineering against escalation of loss of primary containment

Recommendation 11 states that operators of Buncefield-type sites should review the classification of places within COMAH sites where explosive atmospheres may occur and their selection of equipment and protective systems (as required by the Dangerous Substances and Explosive Atmospheres Regulations 2002). This review should take into account the likelihood of undetected loss of containment and the possible extent of an explosive atmosphere following such an undetected loss of containment. Operators in the wider fuel and chemicals industries should also consider such a review, to take account of events at Buncefield.

Following on from Recommendation 11, Recommendation 12 states that operators of Buncefield-type sites should evaluate the siting and/or suitable protection of emergency response facilities such as fire-fighting pumps, lagoons or manual emergency switches.

Recommendation 13 states that Operators of Buncefield-type sites should employ measures to detect hazardous conditions arising from loss of primary containment, including the presence of high levels of flammable vapours in secondary containment. Operators should without delay undertake an evaluation to identify suitable and appropriate measures. This evaluation should include, but not be limited to, consideration of the following:

- installing flammable gas detection in bunds containing vessels or tanks into which large quantities of highly flammable liquids or vapour may be released;
- the relationship between the gas detection system and the overfill prevention system – detecting high levels of vapour in secondary containment is an early indication of loss of containment and so should initiate action, for example through the overfill prevention system, to limit the extent of any further loss; and
- installing CCTV equipment to assist operators with early detection of abnormal conditions. Operators cannot routinely monitor large numbers of passive screens, but equipment is available that detects and responds to changes in conditions and alerts operators to these changes.

Recommendation 14 states that operators of new Buncefield-type sites or those making major modifications to existing sites (such as installing a new storage tank) should introduce further measures including, but not limited to, preventing the formation of flammable vapour in the event of tank overflow. Consideration should be given to modifications of tank top design and to the safe re-routing of overflowing liquids.

Recommendation 15 states that the sector should begin to develop guidance without delay to incorporate the latest knowledge on preventing loss of primary containment and on inhibiting escalation if loss occurs. This is likely to require the sector to collaborate with the professional institutions and trade associations.

Recommendation 16 states that operators of existing sites, if their risk assessments show it is not practicable to introduce measures to the same extent as for new ones, should introduce measures as close to those recommended by Recommendation 14 as is reasonably practicable. The outcomes of the assessment should be incorporated into the safety report submitted to the Competent Authority.

Engineering against escalation of loss of secondary and tertiary containment

Recommendation 17 states that the Competent Authority and the sector should jointly review existing standards for secondary and tertiary containment with a view to the Competent Authority producing revised guidance by the end of 2007. The review should include, but not be limited to the following:

- developing a minimum level of performance specification of secondary containment (typically this will be bunding);
- formally specifying standards to be achieved so that they may be insisted upon in the event of lack of progress with improvements;
- improving firewater management and the installed capability to transfer contaminated liquids to a place where they present no environmental risk in the event of loss of secondary containment and fires; and
- providing greater assurance of tertiary containment measures to prevent escape of liquids from site and threatening a major accident to the environment.

Recommendation 18 states that revised standards should be applied in full to new build sites and to new partial installations. On existing sites, it may not be practicable to fully upgrade bunding and site drainage. Where this is so, operators should develop and agree with the Competent Authority risk-based plans for phased upgrading as close to new plant standards as is reasonably practicable.

Operating with high-reliability organisations

Recommendation 19 states that the sector should work with the Competent Authority to prepare guidance and/or standards on how to achieve a high-reliability industry through placing emphasis on the assurance of human and organisational factors in design, operation, maintenance and testing.

Of particular importance are:

- understanding and defining the role and responsibilities of the control room operators (including in automated systems) in ensuring safe transfer processes;
- providing suitable information and system interfaces for front-line staff to enable them to reliably detect, diagnose and respond to potential incidents;
- training, experience and competence assurance of staff for safety-critical and environmental protection activities;
- defining appropriate workload, staffing levels and working conditions for front-line personnel;
- ensuring robust communications management within and between sites and contractors and with operators of distribution systems and transmitting sites (such as refineries);
- prequalification auditing and operational monitoring of contractors' capabilities to supply, support and maintain high-integrity equipment;
- providing effective standardised procedures for key activities in maintenance, testing and operations;
- clarifying arrangements for monitoring and supervision of control room staff; and
- effectively managing changes that impact on people, processes and equipment.

Recommendation 20 states that the sector should ensure that the resulting guidance and/or standards is/are implemented fully throughout the sector, including where necessary with the refining and distribution sectors. The Competent Authority should check that this is done.

Recommendation 21 states that the sector should put in place arrangements to ensure that good practice in these areas, incorporating experience from other high-hazard sectors, is shared openly between organisations.

Recommendation 22 states that the Competent Authority should ensure that safety reports submitted under the COMAH Regulations contain information to demonstrate that good practice in human and organisational design, operation,

maintenance and testing is implemented as rigorously as for control and environmental protection engineering systems.

Delivering high performance through culture and leadership

Recommendation 23 states that the sector should set up arrangements to: collate incident data on high-potential incidents, including overfilling, equipment failure, spills and alarm system defects; evaluate trends; and communicate information on risks, their related solutions and control measures to the industry.

Recommendation 24 states that the arrangements set up to meet Recommendation 23 should include, but not be limited to, the following:

- thorough investigation of root causes of failures and malfunctions of safety and environmental protection critical elements during testing or maintenance, or in service;
- developing incident databases that can be shared across the entire sector, subject to data protection and other legal requirements. Examples⁶ exist of effective voluntary systems that could provide suitable models; and
- developing incident databases that can be shared across the entire sector, subject to data protection and other legal requirements. Examples exist of effective voluntary systems that could provide suitable models.

Recommendation 25 states that, in particular, the sector should draw together current knowledge of major-hazard events, failure histories of safety and environmental protection critical elements and developments in new knowledge and innovation to continuously improve the control of risks. This should take advantage of the experience of other high-hazard sectors, such as chemical processing, offshore oil and gas operations, nuclear processing and railways.

⁶ Such as HSE's Offshore Hydrocarbon Releases Database and the Rail Safety and Standards Board's National Incident Reporting System, NIR-Online.



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