

Market-wide Exercise 2009 *Report*

January 2010



HM TREASURY



BANK OF ENGLAND

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1 Tripartite Deputies' foreword

Last November's Market-wide Exercise (MWE) was our fifth, but the first to be based around a severe weather scenario. The relevance of such a scenario has been underlined by real events over the past year which, while fortunately less severe than in our exercise, nonetheless highlighted the importance of robust planning for weather-based disruption by both the public and private sectors.

The exercise was originally scheduled to take place in 2008 but was postponed following requests from participants, because of the very difficult market circumstances at that time. In deciding to go ahead in November 2009, we consulted the firms taking part and concluded that we should limit the demands of the exercise on their time by reducing it from two full days to two half days.

The main impact of the scenario was on the availability of people and premises; this posed a significant challenge to firms to manage their physical and human resources so as to maintain close to business as usual service levels. The remote-working strategies of firms were tested, as was their ability to convey staff to recovery sites in the midst of severe transport disruption. Maintaining effective communications across a dispersed staff complement also posed a serious challenge to firms.

With regard to the Authorities' participation in the exercise, feedback from several firms indicates that we could have done more during the exercise to clarify our in-crisis role to the sector and in communicating with participants. So we will be reviewing our approach to communications with the financial sector both ahead of and during a major operational disruption.

Over the next month we intend to seek the views of the financial sector on our future programme of MWEs. The first opportunity to kick off that discussion will be our MWE conference for participants on 12 February. It remains vital that London's markets continue to progress to a position where they could cope with a serious operational disruption.

Finally, this exercise, in common with all of its predecessors, was the product of intensive collaboration between the Authorities' planning team and representatives from across the public and private sectors. We would like to offer our thanks and appreciation to all of those who contributed.

Hector Sants
Chief Executive Officer
FSA

Tom Scholar
Second Permanent Secretary
HM Treasury

Paul Tucker
Deputy Governor
Bank of England

2 Executive summary

Introduction

In November 2009, we (the Tripartite Authorities) carried out the fifth in a series of MWEs designed to assess and improve the UK financial sector's ability to deal with major operational disruption. 76 organisations (13 for the first time) and approximately 5,000 staff members from across the financial sector took part in the 2009 MWE, which ran for two mornings, on 17 and 20 November.

The scenario for the exercise built on the widespread flooding across the UK in the summer of 2007 and the snow of February 2009 and coincided with actual severe weather and flooding. It centred on a prolonged period of heavy rain, followed by a substantial storm that left a path of destruction and widespread flooding in many regions, affecting office buildings, critical infrastructure and homes. It also caused severe transport disruption in cities and nationwide, with road and bridge closures and resultant high levels of staff absence, together with intermittent power outages and telecommunications failures (affecting both voice and data communications).

The key objectives of the exercise (which 92% of participants felt were met) were to:

- focus on the potential outcomes of severe weather;
- pursue key issues arising from benchmarking and the 2006 MWE as well as the return to business as usual; and
- explore the relationship between the Tripartite Authorities and the sector during a major operational disruption.

A feature of the scenario used was that its main impact was upon the availability of people and premises (both office space and data centres). As in 2006, there was a need for a model to simulate absence across the whole of the UK and in doing so, identify each individual that the scenario rendered unavailable for work. As a result of widespread transport disruption, a minimum absence level was applied to all participating firms, with further, variable, absence applied according to proximity to specific disruption. Firms were permitted to use existing remote access capability to reduce the impact where realistic.

High-level findings

Points of emphasis were:

- **Remote-working strategies** were tested, including health and safety concerns; whether the telecommunications infrastructure would be able to support large-scale remote-working for a prolonged period; and whether **trading from home** was a viable strategy even though more firms were willing to contemplate it than at the time of the 2006 exercise.
- The viability of existing **recovery sites** (whether in-house or third party) is being examined by firms that lost both production and recovery sites, as are the implications of travel disruption; and, more generally, some firms took the opportunity to increase awareness of the resilience levels of **critical suppliers**.
- The **Tripartite Authorities** are assessing lessons from the methods and timeliness of their engagement and communication with the sector during such incidents.

Next steps

- The Tripartite Authorities will review their strategy for engaging with the sector during such incidents, including the FSC website as an information tool and the range and scope of that information. In addition, the role of the Tripartite Incident Response Framework (TIRF), will be clarified, including when and why this plan would be invoked, and the various procedures within it.
- The **Association of British Insurers** is considering introducing market-wide agreements between general insurers with regard to automatic extension of cover;
- The **Building Societies Association** is considering forming a specialist Business Continuity Contingency Panel to share experience and best practice across their members, and to act as a forum for individual societies to seek business continuity advice; and
- The participating **recovery site providers** will examine the current wording of contracts to ensure clarity that if a recovery site remains operational during an incident and therefore available for use, the onus is on the customer to get staff to the site, rather than to expect to be offered a secondary site choice simply because the journey may be difficult. This approach is important in order to maintain the suppliers' risk management policies during wide-area incidents.
- The Tripartite Authorities will examine ways of encouraging and assisting exercises specific to certain sectors and/or infrastructure providers.

The non-uniform nature of a scenario such as severe weather inevitably meant that the impact on participant firms varied widely. A key message to facilitators was that they had the scope, if required and in conjunction with the MWE Project Office, to increase the impact of the scenario to engage their crisis response teams fully. Although a few

took this up, most did not; and the fact that 88% of participants indicated in the feedback surveys that they found the injects challenging supports the view that the 2009 MWE was a worthwhile and stimulating exercise. All but one of the participants indicated that they would take part in future exercises.

3 Introduction

The Tripartite Authorities have been running MWEs since 2003. The last, a six-week pandemic flu exercise in 2006, led to a significant improvement in the preparedness of the sector, particularly in the area of remote-working and coping with large-scale staff absences. More information on previous market-wide exercises can be found on the Tripartite Authorities' FSC website: www.fsc.gov.uk.

For 2009, we widened participation to include more firms. Although a few firms were in the end unable to take part, the final number of participants was 76, the highest so far. The range was very wide, both in terms of size and function. The FSA took the lead on behalf of the Tripartite Authorities in planning and coordinating the exercise. Organisations participated from their own premises and provided their own facilitators, who were given guidance through briefings in advance of the exercise.

As with previous exercises, the key objective was to improve the sector's preparedness by providing a collective opportunity to review, test and update business continuity and crisis response plans. The 2009 MWE scenario was based on severe weather (including flooding) and designed to generate significant business impacts. Consideration was also given to the experience some gained through the heavy snow in February 2009, so we reviewed and augmented the existing scenario (originally designed in 2008 and postponed as explained above) as necessary to ensure that the exercise remained challenging.

The scenario entailed both flooding across many UK regions (including major cities and rural areas) and also an accompanying severe storm across the UK. The combined impact was widespread transport disruption and significant supply outages affecting all key utilities together with structural damage to many buildings.

The scenario that was adopted for the 2009 MWE was chosen for a number of reasons. The potential hazard of severe inland flooding in the UK is a risk that has featured prominently in the Cabinet Office's annual National Risk Assessment (NRA), the latest being the 2009 assessment. The floods of summer 2007 and the resulting reports from Sir Michael Pitt have further highlighted the need to develop response strategies to enhance the UK's resilience to such a hazard. This was coupled with the fact that such a scenario would achieve our objectives for addressing issues that were highlighted by responses to the Resilience Benchmarking Project and the MWE 2006, such as

geographical concentration, dependence upon suppliers, the need to identify priorities when faced with multiple disruptions and the steps needed to ensure an ordered and successful return to business as usual.

The exercise scenario was delivered in a number of phases:

- a pre-exercise scene setting that provided context;
- on day 1, three sets of injects were posted on the FSA's MWE website and the exercise area of the secure FSC website;
- an update before day 2 of the exercise outlining how events had developed; and
- finally, on day 2, a further two sets of injects.

The exercise required participants to think about the interdependencies between financial institutions, including financial infrastructures, as well as the impact on their operations of disruption to resources such as transport, power, water and telecommunications.

To ensure a realistic and authoritative approach, we scripted disruption to transport and other essential services with the help of government agencies, utility providers and other experts. Participants accessed regular injects regarding the severe weather and its effect on them, the financial sector and the UK as a whole.

The next section focuses on the objectives of the 2009 MWE; a more detailed description of the scenario and exercise delivery is also given in Appendix 1.

4 Objectives, evaluation and findings

Each objective of the exercise is listed below, with an indication of how the exercise set out to achieve it and with what result.

Objective 1:

Focus on the outcomes of severe weather, including flooding, to understand better the likely effect on the financial sector, whilst also providing an opportunity to challenge new strategies developed following the real severe weather events of February 2009.

Key aspects of the scenario:

- flooding of specific postcode locations in London, Bristol, Birmingham, Manchester, Leeds, Edinburgh, Sheffield and Belfast, in addition to widespread flooding across rural areas;
- structural damage to office buildings;
- severe storm and high winds resulting in wind damage and flying debris;
- widespread transport disruption;
- power outages affecting production sites, recovery sites and staff homes;
- telecommunications disruption impacting on provision of data and SWIFT; and
- internet disruption making it harder for staff to work from home.

Participant response

Participants were affected in many different ways and to varying extents. Aside from staff absence, which was common to all firms (ranging from a base level of 25% to around 70%), problems encountered include flooded buildings, structural damage, denial of access to buildings, lack of power or telecommunications, and overburdened call centres.

The number of impacts and therefore issues each firm faced varied depending on their location relative to the storm. For many firms it was this variance of impact that distinguished the MWE from other business continuity exercises, and put a focus on the importance of stakeholder communication. One firm noted the challenge in managing relationships with stakeholders who were affected to varying extents, often having to make policy decisions in the business as to how to respond to customers or suppliers who had failed to meet their obligations.

Most firms said they would find out about an impending threat of severe weather through the media and notification through local resilience forums. Eight firms use a regular bespoke weather forecast provider.

85% of firms stated that they activated preparatory procedures when they received warning of severe weather. Preparatory action included contacting key staff and arranging for them to work remotely (45 participants); booking hotel rooms (32 participants); asking non-priority staff to remain at home (31 participants) and preparing recovery sites (26 participants).

As expected on day 1, most participants undertook a broad discussion of the issues they faced, then established a specific response team and implemented their remote-working strategy. By day 2, 20% of firms had to relocate to recovery sites either as a result of denial of access to production sites or technology disruption (see below for a more detailed discussion on this).

On day 1 and day 2, just over 50% of participants indicated that they had a comfortable margin above the level of absenteeism before their critical functions would have been at risk. A further 40% indicated that they had a small margin before their critical functions would have been at risk. Organisations transferred business to alternative sites and used remote-working to ensure that their critical functions were unaffected. However, five participants on day 1 (and seven by day 2) indicated that their critical functions were threatened by the impacts of the scenario on their organisation. Participants were also challenged by the multiple impacts of the scenario and the volume of information received in a short timeframe, reflecting the information burden that the sector would have to contend with in a real severe weather event.

89% of participants agreed the exercise identified new issues arising from a severe weather scenario that they would pursue. Examples cited included issuing staff communications early and identifying triggers for action when they were warned about a likely event.

The insurance industry was equally affected by the challenges presented by absenteeism and physical impacts of the scenario. 15% of insurers reported that the increase in insurance claims volumes would lead to significant backlogs and/or delays in making payments to claimants.

Insurance Sector Business Continuity Group members agreed that there is a need for increased clarity around market-wide insurance agreements, for example automatic extension of cover.

Significant learning points

- Issue staff communications earlier as a precautionary measure, even when it is unclear if/how an event will manifest itself (e.g. to advise staff to take laptops home where remote-working has been identified as part of the solution).
- Consider triggers for action when organisations receive a warning that a business continuity event is likely to occur.
- Take into account the information burden posed by a severe weather event due to the great variety in its effects.

Key themes for further consideration

- How can the sector ensure it does not become complacent when it comes to testing the impact of staff absenteeism?
- What triggers action when a warning is received that a business continuity event is likely (but not certain) to occur?

Objective 2:

Pursue key issues arising from the 2006 MWE, such as the practicality of large-scale remote-working (including trading from home), dependence on suppliers, transport disruption, reliance on telecommunications, use of owned and third-party recovery sites, large-scale staff absences, cash distribution, cooperation between and resilience of retail banks and the return to business as usual.

Key aspects of the scenario:

- widespread transport disruption, school closures and unavailability of – or unsafe – sites increase reliance on remote-working solutions;
- disruption to the internet and landlines reduces remote-working capability;
- unavailability of recovery sites in specified locations;
- disruption to deliveries;
- closure of cash centres;
- retail branch closures;
- structural damage to offices affects recovery time; and
- demand for maintenance engineers outstrips supply, resulting in longer term transport, power and telecommunications issues (of up to three months in some instances).

Participant response

Remote-working

The 2006 MWE introduced some of the issues presented by remote-working in a crisis. These included maintenance of compliance and controls; resilience and capacity of the telephony infrastructure; health and safety issues; information security risk and provision of IT equipment and services. A significant proportion of participants in 2006 (59%) had indicated that they needed to develop their plans further and the 2009 MWE sought to examine these issues in further detail.

89% of participants invoked their remote-working policy. Of those that invoked, 89% acted to ensure that they could continue their critical functions, whilst the remaining 11% used remote-working capability to enable non-critical support staff to continue to function.

The number of operational staff that participants indicated would work remotely in this scenario ranged from 11% to 86%, depending on (a) the extent to which the participant was impacted by the scenario and (b) the suitability of the participant's business activities to work remotely. Some facilitators arranged to tailor the absence model to focus on the remote-working capability of a particular business function, e.g. corporate banking or account management.

Of those firms that did not invoke their remote-working policy, reasons included: no remote-working capability (two firms); scenario impeded their capability (four firms); or that the scenario did not render it necessary (three firms).

Just over half of participants (53%) delivered their crisis management team (CMT) function remotely, whilst under a quarter delivered their liquidity management, wholesale payments and settlement functions remotely. In addition to these, firms also identified a range of other critical functions and conducted these remotely, including back office functions, IT support, corporate banking and relationship management.

Eight participants indicated that, given the impacts of the scenario, they would conduct **some** trading remotely (eight participants on day 1, reducing to five participants on day 2). Whilst the results show no increase since the 2006 pandemic exercise in the number of firms trading from home, a broadening in the type of activity carried out is evident in that a small number of firms this year indicated that they would conduct equity and derivatives trading, in addition to other active trading on books where staff could not reach the office or secondary site. One firm indicated that they would carry out all of their trading activities from home in this scenario. Significantly, in the Cross Market Business Continuity Group (CMBCG) call in the 2006 MWE, no firm said that they would trade from home and the activities cited in the survey responses were limited to position monitoring, hedging and proprietary trading.

The 2009 MWE results align with the outcomes of a trading from home survey issued by the Tripartite and completed by CMBCG members in the first half of 2009, in which half of responders reported that they would allow trading from home under some circumstances. Firms stressed that, on risk management and regulatory grounds, trading from home would only be used as a last resort and only to reduce risk and

concentrate on funding liquidity. The majority of responders had at least one site (in the UK or overseas) to which they could transfer trading operations, with half having three or more sites to which they could transfer operations, suggesting it is likely that the 2009 MWE participants utilised these and similar options instead of trading from home.

Technological capacity and difficulty in maintaining suitable controls were cited as key deterrents in both exercises, as was difficulty in accessing market data, suggesting that further technological development and thinking into compliance and controls is needed.

Most firms noted that the scripted disruption to the internet would have slowed their productivity levels as was to be expected, but that it was difficult to quantify the impact. 62% of participants' crisis management plans take potentially slow internet response times into account, while 63% cater for a reduction in productivity generally (e.g. as a result of anything from lack of access to systems to domestic disruption).

However, despite amending their plans to take these dependencies into account, many firms noted that they still did not have enough information about bandwidth capacity to be confident in their assumptions. Subsequent information from BT indicates that even at the busiest times broadband capacity is well above peak usage and to date, there have been no instances of it being under threat, though there is potential for local exchanges to be stretched (affecting some remote workers).

In addition, one firm commented that while company network engineering staff can provide for sufficient capacity to accommodate all remote users at the company's remote access entry and concentration points, they have not explored potential capacity issues with the internet service providers used by employees for internet access.

Other obstacles to reliable remote-working included disruption to telecommunications (see below); the limited type of work that can be done via BlackBerry; and health and safety issues, such as desk equipment and duration of working hours. 19% of participants did not address health and safety issues in their plans, but most stated that this was because the business as usual health and safety policy for remote-working would apply. This indicates an improvement on 2006, where most participants had not considered this issue.

Participants also experienced issues with not being able to access systems as administrators and IT staff were often unavailable (or not able to work remotely) to carry out password resets.

However, it is clear from responses that remote-working is the tool that most participants rely on to maintain critical functions. While firms did employ various strategies, in relation to remote-working (averaged over both days), 61 participants stated that remote-working enabled them to maintain critical functions and 31 switched operations to unaffected offices either overseas or elsewhere in the UK, implying that the policies put in place as a result of the 2006 exercise served them well.

Transport disruption

Participants experienced various levels of staff absence (with a minimum of 25% absence set by the absence model) depending on their locations and proximity to affected transport hubs. Many participants noted that they did not have data on staff routes into work, so would not be prepared for a situation in which they need to establish whether staff are affected.

Reliance on telecommunications

Owing to high levels of resilience and backup on-site, most participants found that disruption to a particular telecommunications provider was more of a problem in the context of remote-working than in-office operations. Indeed, several participants noted that if a key domestic provider (such as BT) were inoperable for a sustained period, it would render their remote-working solution ineffective. Many firms noted that while they had high levels of resilience built into access points to internet service providers at the company end, they would not know how to increase resilience at the home-user end.

Use of recovery sites

20% of firms had to relocate to recovery sites either as a result of denial of access to production sites or technology disruption. 13% stated that their ability to operate critical functions was hampered by impact on the recovery site. Causes varied but included lack of access as a result of flooding and disruption to systems at the recovery site.

Of the 25 participants that indicated they relied on third party recovery site providers, 32% reported they lost some of their seating allocation due to other firms invoking at the same time. This reinforces the need for firms to ensure they clarify the meaning and effect behind each contract provision with the provider.

Dependence on suppliers

Most participants engaged their third party suppliers in the exercise, contacting them on a bilateral basis to discuss the scenario and the impact it would have on the service that they would provide. However, few suppliers were asked by participants to contact the Project Office, so there is not enough information to gauge whether this aspect of the exercise was successful. 70% of participants confirmed that their suppliers' business continuity plans support their own recovery time objectives. This figure increased to 72% when relating it specifically to telecommunications suppliers. Additionally, 70% of participants have alternate suppliers for key suppliers and services.

Only 15% of participants said that they faced significant disruption from financial counterparties, and nearly all commented that this was related to interrupted payment instructions or receipts as a result of scripted disruptions to SWIFT and Real Time Gross Settlement (RTGS). Significantly, 8% of participants do not have alternative options in place if a payment system should fail. However, these participants are not direct members of a payment system themselves and used another firm to access the system. It is unclear from the results whether they had contingency arrangements governing such a situation with their settlement bank.

Large-scale staff absence

Participants coped well with absences ranging from 25% to around 70%, relying primarily on remote-working solutions, cross-trained staff and using staff from other areas of the business (or parent/subsidiary) to continue operating.

Some will look further at cross-training staff across multiple locations to reduce the impact of major operational disruption.

Cash distribution

Across the retail sector, there were concerns over availability of cash, but generally, this did not prove to be an issue. However, one participant now plans to look more closely at how cheques are moved around the country.

Cooperation between, and resilience of, retail banks

Only 5% of retail banks reduced their retail operations by more than 50%. 41% reduced their operations by between 20% and 50%, and 54% by less than 20%. The retail banks were primarily concerned with keeping branches open, which they did through relocating available staff to the branches most in need. However, this was of course a difficult task due to the transport disruption.

Return to business as usual

By day 2, 86% of participants thought they would be able to return to normal levels of business in less than six weeks, while 10% indicated it would take between six weeks and three months to recover fully and 4% indicated between three and six months would be needed. For those falling into the latter categories the primary reason was due to structural damage.

71% of participants' crisis management plans included provision for denial of access to buildings for up to six months.

Participants noted that their key decisions on day 2 related to the point at which they should return to their production site. Factors taken into consideration included the point at which the least technological disruption would occur and how long the impacts of the severe weather were expected to continue or recur. Interestingly, 15% of participants responded that staff welfare issues such as housing, family health and welfare, as well as the psychological impact of the crisis, were a concern for them in returning to business. Despite this, most firms reported that they would be unaffected by any longer term public transport, power or telecommunications issues as they would rely on (a) private transport or remote-working solutions, (b) alternative sites, and (c) switching to alternative providers. However, participants did not specify if they had taken into account a potential lack of supply of such services in the event that the rest of the sector and beyond was seeking the same solution.

Day 2 of the exercise was specifically designed to cause firms to consider their plans for the return to business as usual. While the feedback shows that firms did give this issue some thought, the vast majority identified only high-level strategies.

Significant learning points

- Ensure applications or home laptops are configured to work remotely.
- Communicate early with staff to ensure they take the necessary equipment home.
- Multiple channels of communication are needed for staff (e.g. email, intranet, telephone call trees).
- Although remote-working is an effective business continuity solution, in the event of extreme disruption there is still a need to bring key staff to site.
- Consider the impact of absent administrative staff on remote workers (e.g. inability to conduct password resets).
- Consider the impact of internet/telecommunications disruption on remote-working (remote-workers are unlikely to have the necessary resilience levels built in).
- Take into account the difficulty in relocating staff to branches when the transport network is disrupted.
- The exercise highlighted key staff dependencies and a need to review mandates for decision-making.
- Cross-training across multiple sites should be considered.
- The exercise confirmed that expansion of remote access capability after the February snow was appropriate and effective.

Key themes for further consideration

- How can firms gain confidence from suppliers in the level of service they will receive in the event of a major operational disruption?
- How can the sector acquire greater faith in remote-working as a more reliable solution in respect of (a) the availability of sufficient bandwidth to continue to conduct business and (b) internet and telecommunications impacts?

Objective 3:

Effectively address the relationship between the Tripartite Authorities and the sector during such an event.

Key aspects of the scenario

- the Tripartite Authorities participated fully in the exercise and were themselves affected by the severe weather and flooding (see Participant Response below for more detail).

Participant response

The Tripartite Authorities invoked the Tripartite Incident Response Framework to deliver their response to the sector. They conveyed key messages via the exercise area of the secure FSC website (www.fsc.gov.uk). Whilst 72% of firms responded via feedback that the exercise enabled them to enhance their understanding of the Tripartite Authorities' role during an operational disruption, additional comments received from participants outside the feedback surveys suggest that they would have welcomed more regular and informative briefings from the Tripartite Authorities, outlining what was expected of regulated firms.

A meeting of the CMBCG provided a forum for the Tripartite Authorities, infrastructure providers and key firms to pool information as regards the main scenario events.

Significant learning points

29% of firms indicated that they remain unclear on the role of the Tripartite Authorities during a major operational disruption. Some participants were unclear about the purpose of the CMBCG and the practicalities associated with CMBCG calls. This could be addressed by documenting procedures for CMBCG conference calls, as well as ensuring that the purpose/role of CMBCG is disseminated appropriately.

Key themes for further consideration

- Consider the level of detailed information the Tripartite Authorities will provide in an event.

We will explore these issues during the MWE conference on 12 February 2010 and through the Tripartite Business Continuity and Resilience Sub-Group (Sub-Group) work programme during 2010. We will also consider how future exercises can help us address these issues.

Objective 4:

Pursue the main themes and test the findings arising from the Resilience Benchmarking Project 2008 (RBP), namely joint testing, corporate policy, empowerment and geographical concentration.

Key aspects of the scenario:

- involvement of recovery site providers allowing for in-exercise play;
- senior management engagement as a result of severe disruption levels threatening firm performance and reputation;
- storm is at its worst in the early morning, affecting those members of staff available to make decisions, invoke plans and trigger activity; and

- UK-wide severe weather and flooding, impacting on regional branch structures and multiple business units/functions (i.e. not limited to main production sites).

Participant response

Joint testing

The increased involvement of recovery site providers and suppliers enabled participants to simultaneously assess their plans beyond the Tripartite Authorities and the financial sector (see Recovery site providers and Suppliers in Objective 2 for participant responses).

A number of participants also communicated with sector groups and trade bodies throughout the exercise, giving the groups/bodies an opportunity to review the way in which they support members during a major operational disruption. Means of communication, distribution lists, briefing methods, emergency agendas and methods of sharing experiences at meetings were all tested within the groups/bodies. Three have reported that they are reviewing their strategies and policies as a result. One sector group reported that the exercise confirmed its crisis procedures to the satisfaction of its members.

Corporate policy

Most firms met at board level on day 1 and reported that engagement of senior management was maintained throughout. The scripted disruption to RTGS and the consequential implications for trading and settlement were cited as being an element of key interest to senior management, and were the focus of discussion at a Foreign Exchange Joint Standing Committee conference call on exercise day 1.

Sector groups/trade bodies reported that members were reviewing a number of their policies in response to the exercise, most notably emergency trading protocols, response to widespread disruption to the water supply and the practicality of transferring calls between call centres.

Empowerment

In contrast to the RBP, no firms reported any problem with empowerment of their CMT. Remote-working meant that the people who needed to make decisions were generally contactable, if not physically available. Organisations, including trade bodies and sector groups, had alternates identified to assume responsibility in the absence of key individuals and some used the exercise as an opportunity to test their 'B team'. In addition, 92% of firms stated that they had alternates available for all key CMT staff rendered inaccessible by the absence model.

Geographical concentration

Firms with extensive branch structures were greatly affected by the wide geographical spread of the scenario and focused on keeping key hubs open. Some City firms reported that the geographical spread of events did not test them sufficiently as it moved the focus away from London, while many others commented that even if their main production

sites were operating as usual, the disruption to their processing sites and call centres in regional areas enabled them to test different areas of the business. Most firms were occupied with moving functions between locations on day 1 and many kept them at their alternate sites for day 2, indicating that they would be more likely to switch back at a weekend to minimise disruption to business activities.

Firms had to consider the geographical concentration of their staff (home and office) and locations of their key buildings and key suppliers. Over 50% of firms indicated that they were able to maintain business as usual by employing some of or all of the following mitigating strategies: transferring operations overseas; transferring operations to unaffected UK offices; and remote-working. Firms reported to sector groups and trade bodies that after the exercise, they would:

- examine the range of alternative strategies available to address geographical concentration risk; and
- review plans for implementing strategies to deal with concentration risk, e.g. means of relocating to recovery sites and internal displacement strategies.

Significant learning points

- Firms should test both main production sites and back-office/processing centres.

Key themes for further consideration

- How can the Tripartite Authorities deliver an exercise that ensures participants take the opportunity to engage suppliers so that they can engage in joint testing?
- Following the exercise, what strategies are firms reviewing/employing to manage geographical concentration?

5 Conclusions and further work

For firms

The MWE gave participants an opportunity to test the business continuity strategies and policies they put in place following the 2006 MWE and more recent events, and it provided new participants with an opportunity to practise their response to a sector-wide incident for the first time. However, given the short exercise timeline some organisations were unable to exercise their return to business as usual and/or consider some key issues in depth, such as communications with key stakeholders.

Further work

- Feedback suggests that, due to exercise time constraints, some organisations felt that they did not have adequate time to consider the issues associated with returning to business as usual. We encourage firms to revisit this issue and, if not already addressed, consider the long-term impact (three to six months) on their operations. Firms should take into account the impact of potential long-term building disruption on staff policies, including remote-working, staff welfare and working hours. They should also consider, amongst others, health and safety issues associated with remote-working, staff morale and communications (both internal and external).
- Due to the nature of the scenario, organisations were affected to varying degrees, bringing into focus the need for good stakeholder management and an effective method for distributing and receiving information to and from both suppliers and counterparties.
 - Have you considered whether you would apply different treatment to your suppliers/customers depending on the extent to which that supplier/customer is affected?
 - Have you established communication protocols with key suppliers in the event of major operational disruption? Do these protocols outline who is responsible for initiating and maintaining communications and how and when this should be done?

- Following the exercise more than half of participants confirmed that they do not have information about the routes their staff take to work in their business continuity plans. Organisations should consider whether gathering this information would enhance their plans by providing staff availability information more quickly and therefore improving their response to a major operational disruption.

For the Tripartite Authorities

Exercise feedback suggests that some organisations are still not clear on the role of the Tripartite Authorities during a major operational disruption.

Further work

- We will explore the extent to which the role of the Tripartite Authorities during a crisis can be made clearer. Our first opportunity will be at the MWE conference on 12 February.
- We will consider incorporating any further work on communications with the sector in our Sub-Group work programme for 2010.
- We will consider reviewing how the FSC website is employed and the range and scope of the information it communicates.
- We will review our strategy for engaging with the sector during a sector-wide crisis.

In addition, as part of their work programme the Tripartite Authorities will consider:

- whether firms are sufficiently aware of the resilience levels of their critical suppliers; and
- the increasing provision for remote-working to aid resilience and to what extent it is a viable solution for anything beyond a short-term disruption.

The future of exercising

We are considering our approach to future sector-wide exercising to test and promote resilience across the sector. We will start these discussions at the post-exercise conference and we encourage you to give us your views on the future of exercising before the conference (please email MWE_projectoffice@fsa.gov.uk). However, we hope discussions will cover:

- how we can test in tandem with the market; and
- opportunities to involve key suppliers.

96% of firms stated that they would share the lessons they have learned by participating in the MWE, either with members of their organisation, a relevant trade body/sector group, other firms (under Chatham House rules), key suppliers, the Tripartite Authorities, or some combination of these. We look forward to working with firms to share the knowledge we have gained through the MWE to enhance further the resilience of the UK financial sector.

6 Tripartite Authorities' engagement

The Tripartite Authorities' participation in the MWE is an integral part of their own exercise strategy. Events in the financial sector over the past couple of years, whilst of course necessitating effective communication and coordination across the Tripartite Authorities, have meant that the opportunity to test the sector's response to an incident resulting in widespread major operational disruption has not been possible since the 2006 MWE (although the Tripartite Authorities undertook their own crisis management exercises involving Standing Committee members and their respective teams in 2007 and 2009).

In response to the severe weather, each Authority activated its respective business continuity arrangements. The FSA was most impacted by the event, experiencing significant disruption due to the flooding in Canary Wharf, though it was able to operate from its recovery site, resulting in all its essential functions continuing to operate, most crucially maintaining contact with firms. The Bank of England remained operational, despite significant staff absences and its remote access arrangements enabled a large proportion of staff to work remotely. HM Treasury remained operational and critical functions continued across all areas of the department throughout the exercise.

The Tripartite Standing Committee Sub-Group on Resilience and Contingency Planning (Sub-Group) convened at 10am on 17 November to assess the impact on the financial sector. At this point, Sub-Group agreed to activate the Tripartite Incident Response Framework (which provides plans and processes to enable the Tripartite Authorities to deliver an effective and coordinated Tripartite response to a disruptive event). This remained in force throughout the incident. Sub-Group continued to hold regular meetings throughout the course of the two days and regularly updated Standing Committee on events.

In accordance with the Tripartite Incident Response Framework, the FSA and Bank of England initiated regular liaison with the sector; the FSA via its ongoing contact with markets, firms, exchanges and trade associations, and the Bank via its ongoing contact with infrastructure providers and the market intelligence network. HM Treasury received regular advice and updates from relevant Government bodies. The FSC website was updated, reporting on the status of the sector generally and providing specific updates on the issue of the RTGS outage.

In addition to utilising day-to-day communication channels, the Tripartite Authorities liaised with the chairs/secretariats of a number of sector groups with an interest in business continuity, including those representing: the securities industry, retail banks, the insurance sector and infrastructure providers. The Bank convened calls of the Money Markets Liaison Group, the Foreign Exchange Joint Standing Committee (Main Committee and Operations Subgroup) and the CMBCG. These additional communication channels provided a valuable way to share information, and inform decision-making as appropriate.

Standing Committee was provided with comprehensive briefing on the developing situation, its effect upon the sector and an outline of the discussions held by sector groups, together with an account of the Tripartite Authorities' response to the event. Standing Committee endorsed the actions being taken by the Tripartite Authorities. It was agreed that, given the degree of impact and the fact that there were no specific issues requiring detailed consideration and decisions to be taken, there was not a need for full Standing Committee discussion.

A number of follow-up actions have been identified (these are incorporated in Chapter 5 of the report):

- in response to some participants' feedback on the degree and timeliness of Tripartite Authorities' communication with the sector, the Authorities will review their strategy for engaging with the sector during such incidents, including reviewing how the FSC website is employed as a vehicle for communicating information to the sector; and
- the Tripartite Authorities will provide further explanation to the sector on the role of the Tripartite Incident Response Framework: when and why this plan would be invoked and the various procedures contained within it.

Market-wide Exercise 2009

Appendices

Scenario design and delivery

Each phase of the severe weather and flooding scenario was developed by the Scenario Design and Control Group, drawing on expertise from a number of organisations and agencies and, in particular, collaboration with the Met Office and the Environment Agency. The key objective was to ensure realism was maintained throughout the scenario and all specific weather and environmental impact references, such as wind speeds, weather advisories, flood warnings/levels and the UK floodmap, were as found on the respective Met Office and Environment Agency websites.

The scenario had four delivery phases:

- pre-exercise scene set, providing context to the scenario;
- day 1, providing three sets of injects delivered via the FSA MWE website and the exercise area of the secure FSC website;
- mid-exercise update published before the second day of exercise, updating participants on what happened during the intervening days; and
- day 2, providing two sets of injects again delivered via the FSA MWE website and the exercise area of the secure FSC website.

Days 1 and 2

Day 1 and day 2 were characterised by the following events which took place across the UK:

- Widespread flooding affecting homes, critical infrastructure and office buildings:

Following weeks of heavy rainfall, a severe storm (with gusts of 70mph and rainfall of 40mm) hit the UK in the early hours of exercise day 1, starting in the south west and moving north throughout the day, reaching Scotland by 11am.

The storm left a path of destruction including roof and building collapses, structural damage, uprooted trees, power and telecommunications line disturbance, road accidents and high levels of surface water, the result of which was a restriction of access to Canary Wharf (amongst other places).

By day 2 the strong northerly winds and wintry showers, which wreaked havoc on day 1, had all but abated, leaving fairly normal weather for the time of year.

As result of flooding and power outages most of the UK transport infrastructure was severely disrupted, with no bus service across the UK and a severe impact upon rail, tube and river/ferry services. With Britain's transport infrastructure still to recover from the events of day 1 and primary care issues, absence was still high on day 2: around 35%.

The UK suffered both intermittent and total power outages, which were particularly severe in rural areas as would be expected. In addition to landline and mobile outages affecting sections of the UK, the City of London also suffered telecommunications outages affecting both voice and data. Firms found the disruption to SWIFT, Reuters and Bloomberg particularly challenging. The restoration effort was hampered on day 2 by the difficult conditions, which disrupted engineers' movement across the UK.

- Financial infrastructure disruption:

RTGS sits at the centre of the UK's complex payments infrastructure and interacts with CHAPS and CREST, as well as with ancillary processes such as reserve accounts. Because of its inherent complexity, an RTGS failure could occur in a number of ways, each of which would have a different impact on the overall payments operations. How the Bank, Euroclear (EUI) and settlement banks would react to it would depend on the precise causes and impacts. Once those had been identified, the Bank would lead communication with the market as to how to mitigate, and eventually fix, the problem.

In order to generate more 'stress' and to keep the focus on severe weather, one reaction of the Bank of England to the RTGS outage was pre-scripted by the design team, deliberately overriding the system's inbuilt resilience and thus not reflecting how the Bank would have handled the event in a real incident of this sort. At the conference, the Bank will set out the actions that would have been taken in reality so that participants are aware.

- High levels of staff absence:

Staff were absent not only as a result of the transport disruption but also due to domestic issues, such as flooded homes necessitating evacuation and duty to care for children/the vulnerable. The use of postcodes in the absence model, and the clear relationship between absent staff and location of staff homes, enabled participants to consider how their staff demography affected the resilience of the firm.

On day 2, with power, drinking water, telecommunications and other issues affecting parts of the country, certain branches of banks, postal offices and other retail outlets were not able to open, which caused problems for businesses and people alike. Customers reacted to branch closures and rumours of cash shortages which caused a surge in website traffic and calls to call centres.

- Relocation to recovery sites and recovery site usage:

Many firms had to relocate to recovery sites not only as a result of flooded offices, but also as a result of power and telecommunications outages affecting the systems they could use at their production sites. Key suppliers and counterparties were affected by the storm and were unable to provide normal levels of service.

The storm and flooding affected all businesses to some degree; therefore impacts to supply chains were also experienced.

Disruption to drinking water distribution caused obvious health and safety issues for businesses and residential premises alike.

- Some disruption to BACS payments:

The media speculated about cash shortages and ran reports of cheques not being received by banks/credit card companies due to postal disruption. The impact of this on customers was a theme throughout the exercise.

- Continued high demand on third-party services:

Insurance companies would be inundated with claims from business and public. As expected, day 2 saw people's focus turn to the issue of insurance and specifically claims, ensuring that insurance companies were stretched with high volumes of customer enquiries.

Absence model

The absence model generated:

- on day 1, a particular level of absence depending on office proximity to specific disruptions;
- on day 2, for relevant postcode areas, a particular level of absence (expressed as a percentage of staff who lived in that area); and
- an alphabetical model to randomly identify those that were unable to travel to work.

This provided a credible basis for staff absences. It also gave organisations the opportunity to consider staff home locations and routes to work in their business continuity planning.

Experts' commentary

This appendix contains extracts from the questions put to, and answers provided by, the expert panel during the MWE.

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Transport

Relevant scenario information:

Power to the transport grid has gone down due to severe weather.

Q: Will we be provided with comprehensive advice on the availability and safety of public transport?

A: Yes: a number of sources of regularly updated information relating to the impact of adverse weather on transport services would be available. These include regular updates via the media (radio and television stations covering affected areas) and from transport agencies – Transport for London (www.tfl.gov.uk) and National Rail (www.nationalrail.co.uk) are two examples that have dedicated travel advice pages incorporating regularly updated travel disruption pages. These sites have links to other useful sites – an example is the TfL site that links to free mobile travel alerts relating to ‘Tube’ or DLR journeys. TfL and National Rail also have enquiry lines,

but these will be heavily used during the present period of disruption and delay to transport services resulting from the adverse weather conditions being experienced.

Other agencies that provide similar travel update services are the Highways Agency (noting the impact of disruption to road networks on local and long-distance public transport services), BAA and individual transport companies.

Q: What is the resilience of the Tube network if the power of the grid goes down?

A: The Tube network is fed from the Grid in terms of ‘normal’ power consumption requirements, with direct feeds through a number of ‘Bulk Supply Points’. This gives resilience against failures affecting the supply network in the Greater London area, in that should a failure affect a particular BSP, switching arrangements permit supplies to the affected area(s) to be restored from another part of the network.

During any failure, battery-backed emergency lighting at sub-surface/deep level Tube stations will facilitate any evacuation from station(s) and trains affected. In addition, a stand-by generating station will come on line if widespread/prolonged power loss from the Grid is experienced, but like battery-backed systems, this will provide power for emergency systems – lighting and pumps are examples – not traction current to move trains and restore ‘normal’ services. Unlike battery-backed systems, which are of limited duration, the back-up supply can be maintained until normal grid feed is restored.

Finally, if flooding accompanies widespread power loss, there is an additional risk in terms of recovery/restoration of service as a result of water or sewerage inundation/contamination. The flooding some years ago in Carlisle resulted in the local bus fleet being contaminated by foul water and therefore rendered unusable and closer to home, instances have occurred of flood damage to (electric) rolling stock, resulting in prolonged down time whilst decontamination and equipment replacement and testing took place.

Government

Relevant scenario information:

None.

Q: We would have expected a communication from the London Authority or City of London Police. How would this be communicated?

A: The City of London Police have the ability to send SMS text and email messages via an independent provider, so we would be telling you that there are problems in the area and what areas/locations we will have closed, as well as updating you once they are open again. This service can be subscribed to via the platform provider ‘Vocal/Imodus’. Many companies subscribe to this system, but remember if the police close a road at 2am for example you will get a text to tell you no matter what the time of night.

Q: With such major disruption across the country would the Government release a statement about actions it would be taking? Would COBR be sitting?

A: In such a quickly unfolding event the Government would through the course of the day and the days immediately following be gathering information from emergency services across UK regions and relevant Government Departments evaluating this information and assessing what actions needed to be taken. This process would have been initiated with an early COBR meeting on the morning of Tuesday 17th and further meetings would have been scheduled for that and subsequent days (as Treasury stated at the 14.00 CMBCG call) but COBR would not have been in a position to make any informative statement other than it was meeting. Appropriate advice on the weather and information on possible or actual flooding was available from the Met Office and the Environment Agency.

Q: What guidance or actions are being taken by Government regarding evacuation of the City of London?

A: The Police will only 'tell' you to evacuate if the danger to life of remaining in situ is greater than that of leaving. We normally tell you to invoke your own security/safety procedures. If YOU decide to evacuate that is your decision: it is only if we know you are in imminent danger that we will tell you to leave. This would be our advice in any communications from us.

Evacuation is quite an extreme measure, except in the immediate case of fire or building collapse. A situation requiring a large-scale evacuation would have to be very dire indeed or need to have the potential to become so, for example the discovery of a large unexploded bomb (UXB).

If and it is 'if' this were needed, the City of London has a series of strategically placed loudspeakers from which live voice messages can be broadcast from our Command Centre, so we can direct people away from an area of danger, but this would only be used for a 'Major Incident'. Remember that every day in the City of London 350,000 people come in and leave, so in effect they self-evacuate daily; however, if the transport infrastructure is affected this has a knock on effect. In this scenario people would have had trouble actually getting to work in the first place so numbers would be greatly reduced.

Q: What is the latest point in the day that a decision would be made to declare a 'disrupted' day?

A: It is not clear what is meant by this. However, if this refers to a point in the day when systems (e.g. RTGS, CREST, LCH, etc) can implement contingency arrangements, this depends on the system, the time of day, and the particular day. There is no definable time. Decisions about opening times or other market restrictions would be taken by the appropriate institution(s) e.g. the infrastructure provider, the Tripartite Authorities, etc.

Q: In what circumstances would a state of emergency be declared?

A: A state of emergency would be declared if the emergency services were unable to cope with the situation and the armed forces were utilised.

Thames Barrier

Relevant scenario information:

A ship has blown off course and hit the Thames Barrier, damaging 2 of its defence gates.

Q: What would the Emergency Services' advice be? Would employers be advised to evacuate or remain in their premises?

A: Any event of this sort would involve strategic coordination groups around the UK (often referred to as multi-agency 'Gold Commands'). These Gold Commands comprise a range of organisations, such as the emergency services, local government and health services; defined in the Civil Contingencies Act as 'Category 1' Responders. Input at Gold level from 'Category 2' Responders (such as power and infrastructure operators) would also be sought. Central government policy direction would be provided by COBR, with information flowing via regional government structures. Given the political, economic and personal risks involved in the scenario, local emergency services would not issue evacuation instructions in a vacuum. All of the relevant issues and risks would be considered at Gold Command before issuing instructions.

Q: Would any warning be given? If so how much?

A: If there is a high tide that is not quite high enough to warrant the closure of the Thames Barrier, we issue warnings 4-6 hours in advance of tide to areas in West London that have roads that are on the riverward side of flood defences. If we have a large high tide (which was replicated for the purposes of the exercise), the Environment Agency would start to close the Thames Barrier and associated defences. The Environment Agency start closing when the Barrier is at low tide. This allows sufficient time to ensure the Barrier will shut in time to take the top of the high tide and protect central London. However, if the Barrier gates failed for whatever reason before the approaching high tide, then we would not be able to give areas immediately downstream of the Barrier much notice of flooding. Even with one of the large gates (61m wide) not functioning at all, the Barrier would still hold back enough water with the other gates operational to take the top off the tide. It is also worth noting that when we close the Barrier, all river traffic on the Thames stops 1 mile either side of the Barrier, so likelihood of a boat being blown off course and striking the barrier is limited.

Q: If the Thames Barrier was to fail at high tide, what is the worst forecast impact?

A: Using the Isle of Dogs as a case study, the Thames is likely to flood approximately 100m inland from the River, and depths would be expected to be in the region of 20-30cm. This is still likely to cause problems in basements of buildings and access will be difficult to local areas. In other areas, the flooding extent inland would vary depending on the tide height. In terms of flood recovery operations, it is difficult to estimate how long it would take to recover after a flood. It is likely that it would take a number of days to pump water into the Thames.

Q: How could we find out more information in this situation?

A: In the event of a situation like this, we would issue Severe Flood Warnings to the public, businesses, professional partners, and the media. These would most likely be issued along the length of the Thames in London. You would receive this information by telephone, text message, email or fax. You should check that your company is registered to receive flood warnings by calling Floodline on 0845 988 1188. The Environment Agency would also provide details of flood warnings on their website and the media would also broadcast these warnings via TV and Radio.

Canary Wharf

Relevant scenario information:

There is surface flooding in Canary Wharf and vehicles cannot access the Wharf. There is also a risk to the Wharf as a result of the damage to the Thames Barrier, as stated above.

Q: What is Canary Wharf Management's advice to its residents? Would they ever organise a full evacuation of the Wharf?

A: Canary Wharf Group plc would remain as the conduit for advice from the Local Authority and Emergency Services to ensure all occupiers are as informed as can be, in order to make their own decisions. We would keep this community updated on progress on the estate and relevant developments off the estate (transport network etc). The decision to evacuate offices on Canary Wharf remains with the organisations who occupy those offices. If a situation arose where CWG felt it necessary to evacuate our own staff, we would inform all other occupiers of our intention to do so and the reasons why.

On behalf of the Emergency Services, we may ask whether other businesses are deciding to follow suit, in order that marshalling can be effected. We would always provide the conduit for the Emergency Services if they dictated a complete evacuation of the estate.

Q: Who would manage and direct any evacuation?

A: Any buildings would be subject to their own marshalling until their occupants exit buildings into our managed spaces. Marshalling in these areas would be facilitated by our Infrastructure and Security staff under strict direction from the Metropolitan Police. Again, in the unlikely event that this direction was lacking, our marshalling priority would be to move people to a place of safety (possibly off the estate – so we would marshal them to the appropriate exit route), secondarily we would try to move them in the direction of operating transport infrastructure (hence the shuttle boat service to Waterloo and London Bridge). If no transport systems were running then our priority would be marshalling people off the estate safely, where they may plan their own onward journeys. Our decisions would rely on the information available at the time and the co-operation of all concerned: we cannot force people to evacuate or indeed follow the suggested routes.

Q: What are the arrangements for emergency transport off the Canary Wharf Estate?

A: The Enhanced Boat Service is a contingency agreement between Canary Wharf Group and Thames Clippers. The service would be invoked with Thames Clippers in the event of prolonged transport disruption shuttling passengers to:

WEST: Waterloo and London Bridge City Pier

EAST: Greenlands (for eastbound services)

SOUTH: Hilton Ferry (Surrey Quays)

These services would be active for as long as are required or until river traffic is halted/commandeered by the Emergency Services. It is important to note that this service will not run to the detriment of Thames Clippers' routine timetable and all other routes will be maintained by Thames Clippers where possible.

We would await advice from the Emergency Services and keep tenants/occupiers up to date with any directions received. We would fully support the speedy resumption of DLR and Jubilee Line services; once TfL (London Underground Ltd and Serco Docklands) are able to resume services, or advise the prognosis for the suspension, we would communicate this to occupiers across the estate.

Emergency services

Relevant scenario information:

None.

Q: What advice would emergency services provide to firms outside the City?

A: All emergency operations in the UK would be managed by strategic coordination groups (multi-agency 'Gold Commands') who set the overall policy for the local response, taking account of any central government direction issued by COBR. At a

local level, multi-agency 'Silver Commands' would manage the tactical response to the emergency and operations on the ground would be managed through 'Bronze Commands'. Individual firms would receive general public safety advice and instructions issued by their local Gold Commands, and any directions to take specific action from operational commanders at Silver or Bronze. Feedback and information would be issued through a number of channels:

- 1 The news media – especially TV – BBC/Sky News have the resources to get helicopter news teams to an emergency very quickly.
- 2 Web sites and other electronic media (although this can be of limited use if you have lost power and communications).
- 3 Radio, especially local radio, becomes a key medium in any major emergency as it is more resilient. The BBC has a statutory role to assist in any emergency.
- 4 Direct communication with key/known own stakeholders – i.e. Local business forums, Canary Wharf Management Group.
- 5 Direct instructions from emergency services staff. Where all else has failed during wide area floods, we have used boats and helicopters with broadcast systems asking to issue instructions to those awaiting rescue.

Q: While we are aware that the emergency services and Canary Wharf Management Group are reluctant to advise tenants as to when to evacuate offices, an impending high tide dictates that firms located in the Wharf strongly consider evacuating their offices. To do so in a vacuum would increase the risk to staff and potentially cause further panic on/around the Wharf. Would emergency services manage such an evacuation? What advice would be provided by Canary Wharf Management?

A: Whether an evacuation was ordered by a command group, or simply advised as a precautionary measure, the same considerations/definitions would apply:

- 1 Any actions taken before the flood water arrives, at which point individuals can make their way from the area unaided is defined as an 'Evacuation'.
- 2 Any actions taken by emergency services to recover individuals from the area by boat or other means after the flood water has impacted and individuals can no longer make their way from the area unaided is a 'Rescue'.
- 3 Evacuation would only be ordered if there was a certain or imminent risk that the area would become inundated. However, as outlined above, an evacuation would only be ordered if all of the agencies represented at a Gold Command were satisfied that individuals could safely leave the area before it was inundated by flood water.
- 4 In coming to a decision, emergency services would consider the balance of risk between ordering an evacuation and leaving individuals in situ. This is not a straightforward calculation as to evacuate people in an orderly way

depends on early warning and a timely decision. A safe evacuation then relies upon sufficient transport infrastructure being available. However, leaving individuals in place could mean potentially leaving them isolated without power, food, water and sanitation for a number of hours/days.

- 5 A final decision about evacuation would take account of how long it would take to evacuate people safely, and when the flood water was expected to impact an area. An evacuation would not be ordered unless Gold Command was satisfied that it could be completed safely. If it was necessary, all of the agencies represented at Gold Command would coordinate their activities to assist the evacuation.
- 6 In our experience, 'panic' only occurs when individuals are in actual or perceived imminent danger. So, for example, the likelihood of panic is high if an evacuation commenced in an uncoordinated way when the flood water was already impacting an area and without adequate transportation being available. Equally, if a managed evacuation was not undertaken, there is a risk of panic where individuals attempt to escape at a point when it is too late to do so safely.
- 7 In the case of Canary Wharf, the management team would have a key role to play. Given the numbers of people involved and the additional complication of economic risk, it is likely that early precautionary advice might be issued by Gold Command for companies to consider a voluntary evacuation of non-essential staff. This would be supported by Canary Wharf Management Team. If a full evacuation was not subsequently practicable and an order to seek refuge in upper floors was given, the Canary Wharf Management Team would also have a role in communicating that message to companies and in doing all they could to support those stranded by flood water.
- 8 If people became trapped inside buildings, emergency services would attempt to rescue the most vulnerable individuals (for example, those with pre-existing health issues etc) as soon as possible after the flood water inundates the area. However, specialist resources would be extremely stretched across the UK, and recovery of those in a place of relative safety would not be an immediate priority; hence rescues could take a number of days to complete.
- 9 There is a practical and commercial element in the 'stay or evacuate' decision for companies. Businesses could remain open until the last possible moment and take the risk of becoming trapped. If they do so, staff may well be stranded without power, food, water or sanitation for a number of days. When staff are subsequently rescued or the flood water recedes, there is likely to be some business disruption before staff are in a fit state to be relocated. Conversely, it may be more productive to accept an element of business disruption so that staff can be evacuated and relocated to work from alternate locations in a managed way before the flood impacts.

Telecommunications and utilities

Relevant scenario information:

The following services are experiencing problems and at best, working intermittently: voice and data, mobile networks, power, landline networks and Internet.

Q: What assurance can be provided on the resilience of the Broadband network? Is this affected by regional variations?

A: The BT Broadband Network is inherently a resilient mesh network of interconnecting BT Access nodes that extend out to outlying BT exchanges across the country. This core network is designed so that no single point of failure can affect service delivery. This is achieved via diverse routing and equipment duplication. The Broadband services that are provided by BT retail extend to consumers and Business and have varying SLAs and Guarantees associated with these products and services.

BT is currently in the process of rolling out Super Fast Broadband to 2.5 million homes by 2012, delivered by fibre access locally, however the vast majority of BT Broadband services are delivered via Copper pairs from the local exchange. In the event of the local exchange or copper services being affected by extreme environmental conditions, BT will endeavour to meet its SLA obligations at all times: however, if there is catastrophic damage caused then services will be restored in order of priority, i.e. hospitals, emergency services etc.

As with any catastrophic environmental event, if the regional BT staff are unable to get to work, then resources from other regions would be deployed to assist in service restoration.

If an exchange was totally made unusable, BT would activate the Site Specific Restoration Plan for that exchange and deploy the appropriate elements of its extensive fleet of containerised restoration equipment to replicate the lost services.

Q: What resilience is available on the mobile network both for voice and mobile internet connectivity? Is this affected by proximity to a particular 'mast' or whether other 'masts' can 'take over' from a damaged or inoperable transmitter?

A: Many base stations have a degree of overlap, and while a customer is moving around an area the mobile handset will track the strongest signals that it can receive. This information is passed back into the network and allows the call to be handed over to a base station with a stronger signal while being disconnected from one where the signal is weakening.

If a base station has become inoperable for any reason, other base stations in the area will carry the traffic provided that (a) they have sufficient capacity to do so and (b) that the handset itself is within coverage of at least one working base station. During peak traffic hours and during major incidents this may well result in network congestion.

Think of it like the diversion of traffic following a road accident – the diversion route may become congested, and also you have to get to it before you can use it.

In urban areas, the likelihood of one base station failure leaving a hole in the network is much less than in rural areas, so in urban areas you still have a good chance of getting a connection, but in rural areas it may be less easy. If several base stations fail in an area, then the hole in the network will be more difficult to fill, and customers may have to retry several times in order to make a successful call or move elsewhere to be within coverage of a working base station.

Another point to remember is that if a base station fails with calls in progress, those calls will almost certainly be disconnected. Comment about the scenario – repair to external plant (especially masts and towers) will take much longer in severe weather situations. It is not usually possible to consider climbing up a mast or tower until the wind speed has lowered considerably and has ceased gusting and it is also almost impossible to climb a mast or tower when it is covered with ice. The simple act of getting an engineer to a remote site when fallen trees are blocking roads and traffic is heavily congested becomes a logistical nightmare.

Q: With financial institutions placing ever greater emphasis on remote-working/trading, what steps are being taken to improve the resilience of mobile and internet services and, as critically, improve broadband speeds to match those common in other major financial centres?

A: BT have continued to develop BT Openzone which is a Wireless Broadband access network. BT's wireless broadband footprint, including BT Openzone, BT Fon and BT Openzone at Business Hub hotspots now totals 700,000 locations. And thanks to roaming agreements between global Wi-Fi operators, our customers have access to over 60,000 sites globally.

BT is also investing in the rollout of Super Fast Broadband services delivered via Fibre and available to 2.5 million premises by 2012 at average speeds of 100Mbps.

For Business Internet Services, BT Net is the dedicated ISP service. This service can be delivered in flexible bandwidths and secure and resilient delivery methods, with targeted availability of 100%.

Q: What is the internet capability for the country? Do you have any plans to assist with this during a crisis at times when it will be needed for remote-working e.g. stopping large file downloads?

A: Internet capacity is managed by the BT capacity management team against predefined Service Level Agreements and aligned to upper and lower control limits; augmentation is triggered when upper control limits are exceeded.

The network is segregated dependent upon the service the customer buys (IPstream, Datastream, etc) and speed requirements are run at best endeavours, but the fill of the virtual pipes (VPs) is monitored and expanded up to a maximum limit. When this

limit is reached, exception reports are generated and action taken to move customers within the exchange equipment to balance the load. Within the inner core all VPs are monitored and churned as required to match capacity. We have c28,000 VPs in the Broadband network and less than 0.5% are currently experiencing capacity issues.

BT is an active supporter of remote-working and our people do not experience significant issues moving large amounts of data around the Broadband network.

Q: What is the probable outage time for impacted landlines and broadband services?

A: BT has a tried and trusted Incident Response Process: however, the outage time resulting from an incident will be dependent on whether our people can access the area of the problem, and the extent and nature of the damage. However, for the purposes of this exercise: once access is acquired, priority customers would typically be expected to be restored within 12 hours.

Q: During a real incident we would be trying to contact our supplier to gauge if transformers that supply us power are likely to go down. Is this the correct response?

A: Suppliers would advise you to contact your local distribution network operator via their loss of supply or general enquiries helpline.

The network operator would be able to advise where there are known power supply problems, but would not make predictions about local circumstances.

Many larger customers have local transformers within their (or adjacent) buildings which could be subject to local flooding.

High winds and debris are only likely to affect overhead or outdoor equipment in more rural areas and incidents would occur with no notice.

If there is a risk of power supplies having to be shut down to a larger area due to flooding of a substation, the network operator would endeavour to notify customers if there was sufficient notice, usually using local radio stations, or possible direct calls to very large customers with dedicated high voltage supplies.

Q: Please clarify the impact of reduced internet bandwidth as a result of more people being at home e.g. due to school closures: many home users have multiple PCs running at home through a single internet connection, so would the impact be equivalent to a bad Sunday evening?

A: During the period where environmental emergency conditions persist, the broadband remote access server (BRAS or BBRAS) that routes traffic to and from the digital subscriber line access multiplexers (DSLAM) on an internet service provider's (ISP) network would limit the traffic flow where traffic exceeds set thresholds.

The BRAS sits at the edge of an ISP's network and aggregates user sessions from the access network. The BRAS is the first Layer 3 hop in the ISP network and as such is the

first place an ISP can invoke policy management and use IP Quality of Service (QoS). In essence the analogy of a bad Sunday evening could be expected at certain exchanges.

Recovery sites

Relevant scenario information:

None.

Q: With financial institutions being encouraged to have their DR sites outside the M25 or at least some distance from their production sites, what assurances can be given that transport – train, bus and road – can support these sites in event of major disruption?

A: Recovery Site Providers do locate sites carefully with serious consideration to a wide range of factors, including diverse accessibility options, such as road, rail and air links and this risk is reviewed in relation to transport links and networks. Recovery Site Providers can't guarantee the availability of transport links, as this falls under the responsibility of the category 1 & 2 organisations under the Civil Contingencies Act 2004, which promotes resilience of UK Critical National Infrastructure, including transport.

Q: Would Recovery Site Providers allow companies to invoke shared services whilst they were still able to remain in their own premises?

A: No pre-emptive invocations are allowed if usual customers' sites are accessible and available, but this should not prevent customers from putting their Recovery Site Provider on standby if they anticipate an adverse event to be imminent.

Q: In the event that our primary recovery locations were unavailable, what is the process for deciding which available location would be allocated to us and the number of positions that would be made available to us?

A: The exact conditions vary: those applied by each supplier to multiple invocation responses are explained in their own contract terms. Other recovery locations could not be guaranteed unless part of a customer contract.

Generically, the approach is to provide alternative facilities at another location from your Recovery Site Provider's locations portfolio under a 'reasonable endeavours' basis, influenced by many unpredictable variables that establish the prevailing situation. Our duty is to fulfil all customer contractual requirements and then undertake 'reasonable endeavours' support. The risk of loss of primary site can be mitigated by proactive multiple site selection by specifying such requirements in the service contract.

Q: How resilient and responsive are third part DR facility providers, particularly when it comes to getting their staff to sites quickly following invocation to set up communications, networks and IT? How long can their generators work if there are power failures? How resilient is their telecommunications?

A: The technology centres have resilient electrical infrastructure (UPS and generation power) to protect against power supply disruption. The stand-by power systems are designed to run for several days at a time if necessary. The centres are 24x7 and staffing levels required are covered via maintaining shift patterns and use of local hotels. Support staff are proactively resourced to enable remote-working via secure network access if necessary. Diverse telecommunications is a key design consideration for all Recovery Site Providers. It should be noted that telecommunications providers themselves are classed as category 2 responders under the Civil Contingencies Act 2004 and form part of the Critical National Infrastructure.

Payments infrastructure

*Relevant scenario information:
Severe weather had disrupted a few cash centres, and disrupted one organisation preparing payments for Bacs. All payment systems completed their work on time.*

Q: Who would relax/review the 2-4-6 clearing cycle rules?

A: The 2-4-6 clearing cycle and other regulations regarding the clearing of cheques are managed by the Board of the Cheque and Credit Clearing Company.

Q: What use of Payments Council/BBA would be made to escalate issues going forward?

A: Payments Council would cooperate with the BBA to respond to any media queries. Each payment system has arrangements for handling contingencies and there is, within the Payments Council, a procedure for liaison between payment schemes when, for example, there is likely to be disruption to customers generally.

Q: If RTGS was down and there was impending flooding of London City and Canary Wharf, would the financial markets be suspended for the day or close down early?

A: Decisions about market opening times or other market restrictions would be taken by the appropriate institution(s), e.g. the infrastructure provider and the Tripartite Authorities. Any decision taken by the Tripartite Authorities would be done in consultation with the appropriate infrastructure providers and market participants.

Q: If there were industry Bacs problems resulting in salary payment delays could firms request a list of originators?

A: Yes – where salary payments are delayed Bacs would normally be aware of which organisations are affected. We have an established communications mechanism for advising Bacs member banks of which organisations are affected and when late salary payments are expected to be made. We would ask that all member banks treat affected employees sympathetically. We only communicate directly with Bacs member banks and we don't maintain contact points at Agency Banks, but where appropriate, member banks may pass on the information to their sponsored agency banks.

Tripartite Authorities

Relevant scenario information:

Severe weather has adversely affected transport throughout the UK: many firms are very short staffed. In addition to this, a number of firms are at risk of flooding and/or have moved to their Disaster Recovery sites. Payments infrastructure has been disrupted, as have utilities, connectivity and telecommunications services. Remote-working is intermittent due to these issues. The public is concerned, particularly about the availability of cash.

Q: What are the FSA's expectations regarding compliance with all regulatory requirements during the disruption?

A: Whilst we would expect firms to make every effort to continue to comply with regulatory requirements, there are provisions in the Handbook covering emergency situations – GEN 1.3.

Q: Would the FSA issue a communication to all banks acknowledging the situation and agreeing some dispensations or leeway regarding regulatory requirements?

A: The FSA would communicate with all firms, acknowledging the situation. This would probably be via a statement on the FSA and/or FSC website. We would also be open to requests from firms for dispensation or leeway from regulatory requirements that they might require. Initially, each request would be judged on its merits and may lead to a general dispensation being given (extending the deadline for the submission of returns, for example).

Q: In this situation we would want to issue communications to customers, relating to the disruption to the UK banking system. What guidance would the FSA provide in relation to these communications?

A It is up to firms to decide how best to communicate to their customers about the disruption. Firms are still required to treat their customers fairly and it is in the firm's own interest that their customers are kept informed about which services are

available. However, the FSA would be happy to receive a draft in advance (please discuss with your usual supervisory contact in the first instance), so that we can ensure consistency with the communications that the FSA, the Tripartite Authorities and other firms are producing.

Q: In a real disaster, would the Tripartite Authorities act as a centralised group to disseminate key impacts to the financial sector, e.g. phones, power, water, status of financial sector, etc? And how would this be disseminated, e.g. via the FSC website with associated alerts via email?

A: In the event of an incident, the Tripartite Authorities would aim to use the FSC website, and our other methods of communication with the sector, as a means of communicating key messages about the impact on the financial sector. Whilst we will attempt to obtain and disseminate the most up to date information on impacts to other critical sectors (such as telecommunications and power), we cannot guarantee that our information will be as accurate as that which could be obtained from the leading authorities in those sectors. Thus, we prefer to include relevant links (rather than plain text) on the FSC website to sites where the most up to date information can be obtained, such as the Civil Contingencies Secretariat, London Resilience Team, the City of London Police, the Environment Agency, the Department of Health, etc (depending on the nature of the particular incident). Similarly, we would, where possible, obtain and share information from the relevant experts to pass directly to the sector; for example, a government expert was invited to speak at the May CMBCG call held in response to the swine flu outbreak.

Q: What key actions were undertaken by the Tripartite Authorities during the crisis?

A: In response to the severe weather, the Tripartite Standing Committee Business Continuity Sub-Group convened at 10am on 17 November to assess the impact on the financial sector. At this point, Sub-Group agreed to activate their response framework (which provides plans and processes to enable the Tripartite Authorities to deliver an effective and coordinated Tripartite Authorities' response to a disruptive event). Sub-Group continued to hold regular meetings throughout the course of the exercise and regularly updated Standing Committee on events.

In accordance with the Tripartite Authorities' response framework, the FSA and Bank of England initiated regular liaison with the sector and HM Treasury received regular advice and updates from relevant Government bodies. Following a Money Markets Liaison Group meeting on the morning of the 17th, the Bank decided to cancel/postpone its corporate bond auction at 11am and the gilt auction in the afternoon to allow firms to focus on critical trading activities.

As the operator of RTGS, the Bank was heavily involved in efforts to restore the system (following the outage at 8.30am on day 1) and the workarounds put in place later in the day. Following the outage, attempts were made to fall back to the back-up site at 10am but this was unsuccessful. The Bank subsequently advised that RTGS would

remain down for the rest of the day but was likely to be restored by the morning of Wednesday 18 November. It was decided after midday to move to ‘bypass mode’, with end-of-day net settlements for CHAPS and CREST (which operated in recycle mode for most of the day) and any remaining schemes being effected across the contingency database. This took place on schedule at 4.20pm.

On 20 November, the FSA and Bank of England continued liaison with the sector and HM Treasury received advice and updates from relevant Government bodies. The Tripartite Sub-Group met at 11.30am and subsequently updated Standing Committee on events. No further specific action was required.

Q: When will the Tripartite Incident Response Framework be stood down and return to BAU?

A: In response to an incident or event that could lead to or has had significant impact on the UK financial sector, the Tripartite Authorities, under the direction of the Tripartite Standing Committee (TSC), can invoke its emergency response plan, the Tripartite Incident Response Framework (TIRF). The TIRF provides plans and processes to enable the Tripartite Authorities to deliver an effective and coordinated Tripartite response to a disruptive event. As part of that invocation, Sub-Group meet on a regular basis and the decision to subsequently stand down the TIRF is a standing agenda item for those meetings. In line with the triggers for its invocation, any decision to stand down the TIRF would be based on a continuing assessment of the current incident and its likely impact on the stability of the UK financial sector.

Sector Groups & Trade Bodies

Relevant scenario information:

None.

Q: How do the Tripartite Authorities see the role of Trade Unions in such a scenario – i.e. how might they react to actions taken by organisations that might impact directly on staff welfare and/or working practices?

A: It is for firms to engage their Trade Unions on BC issues, and it is considered good practice to do so. It is not for the Tripartite Authorities to engage with trade unions or try to advise firms how trade unions may react to actions taken by the firms.

Sector Groups and Trade Bodies

Summary of organisations

ABI (Association of British Insurers)	Represents the UK insurance industry in relation to issues of common aims, interests (including public policy issues) and high standards of customer service in the insurance industry. Has around 400 member companies who between them provide around 90% of domestic insurance sold in the UK. ABI members account for almost 15% of investments in the London stock market.
BBA (British Bankers' Association)	Represents 223 banking members from 60 countries on the full range of UK and international banking issues. Members make up the world's largest international banking centre and contribute £50 billion p.a. to the UK economy.
BSA (Building Societies Association)	Trade association for all UK building societies with total assets of £375 billion, approximately 15 million savings accounts and 2.9 million home loans.
CMBCG (Cross Market Business Continuity Group)	Provides a forum for the authorities, infrastructure providers and key firms to pool information in the event of disruption and so inform decision-making by the authorities, exchanges, etc. It is not a decision-making body. It can also help to facilitate private sector decisions and workarounds to alleviate pressures on the system.
FXJSC (Foreign Exchange Joint Standing Committee)	Forum for banks and brokers to discuss market issues, particularly issues of common concern to different participants in the foreign exchange market and good market practice. Chaired by the Bank of England.
ISBCG (Insurance Sector Business Continuity Group)	Information and best practice sharing for business continuity managers in the insurance sector. Members comprise major participants in the insurance market.
MMLG (Money Markets Liaison Group)	Forum for discussion of structural issues concerning sterling money markets. Represents the financial services market, trade associations and financial authorities.
PAYMENTS COUNCIL	Sets strategy for UK Payments. Ensures UK payment systems and services meet the needs of users, payment service providers and the UK economy.
RBBCG (Retail Banks Business Continuity Group)	Creates, maintains and develops a business continuity network within the UK financial system. Works with other organisations and financial authorities on business continuity issues. Communicates the views of the retail banking industry business continuity specialists to members and facilitates member cooperation in the event of a major operational disruption.
SIBCMG (Securities Industry Business Continuity Management Group)	Industry group comprising major investment banks who network, share good practice, work together in times of crisis and partner together on business continuity initiatives. Also provides a point of contact for regulators and other official bodies and works with other organisations involved in business continuity.

Responses

In a crisis, would you liaise with any sector groups? If so, which groups and for what reason?	
ABI	Yes: would involve the Chartered Institute of Loss Adjusters and arrange meetings with relevant ministers, officials and other stakeholders. May arrange meetings of the ISBCG if major business continuity issues were identified within the industry itself.
BBA	RBBCG. Also the Payments Council in relation to potentially issuing joint press releases.
BSA	BBA re their media stance on service disruption etc.
CMBCG	Yes. The Tripartite Sub-Group (of which the CMBCG Secretariat is part) would receive updates from all relevant sector groups via the appropriate Tripartite Authority. As the CMBCG is a cross-sector group, in a crisis it gathers information from across all the 'subsectors'.
FXJSC	Yes: CLS, members of the FXJSC, and its sub-groups (including the operations sub-group).
ISBCG	No.
MMLG	Yes: MMLG ops group and, possibly, FXJSC and CMBCG.
PAYMENTS COUNCIL	No: Payments Council has a strategic role, not an operational one.
RBBCG	Not if we were meeting for update purposes only.
SIBCMG	Potentially, yes. The groups we might contact would depend on the nature of the crisis.

What do you see as your role during a major operational disruption?	
ABI	Arrange meetings of relevant members to coordinate the industry's response, facilitate the collection of data on claims, agree media messages etc. Depending on size, scale and location of disruption, ABI may also: visit affected areas; advise and update the media, Government and public; facilitate meetings between members and CILA; facilitate key sector decisions such as the implementation of surge plans and moving to abbreviated reporting of claims by loss adjusters..
BBA	Voice of the financial services industry.
BSA	Promote the continued long term health of the building society sector by PR support to affected building societies, liaison with the media (e.g. clarify reasons for queues outside a branch) and facilitating exchange of information and experience. Would also publish details of members' emergency arrangements on our website as an alternative contact point for the public. Would liaise between members and Tripartite Authorities on addressing customer concerns about the impact of the scenario on their finances. Would not look to assist individual members in operational matters or implementation of their contingency plans.
CMBCG	Provides a forum for the Tripartite Authorities, infrastructure providers and key firms to pool information and so inform decision-making by the Authorities, exchanges, etc. It can also help to facilitate private sector decisions and workarounds to alleviate pressures on the system. It is not a decision-making body.
FXJSC	Would keep updated of developments during a major operational disruption and seek to inform members and establish a two-way dialogue and relevant actions. Also, to inform the Tripartite Authorities of relevant feedback including any actions to be taken.
ISBCG	Information sharing.
MMLG	We would keep updated of developments and seek to inform members and establish a bilateral dialogue and relevant actions. Also, to inform the Tripartite Authorities of relevant feedback including any actions to be taken.
PAYMENTS COUNCIL	CHAPS, Bacs, Cheque & Credit and Link are autonomous but would communicate in the event of a major operational disruption. Apart from a pandemic, and possibly other slow-burning issues, Cash Services Group would not be directly involved in managing a major incident regarding the circulation of cash.
RBBCG	Aims to facilitate business continuity co-ordination and knowledge sharing among members; create and maintain a network of disaster recovery contacts in retail banking industry; and enable development of strategic initiatives, both on a bilateral and multilateral basis. As such, during a major operational disruption, expect to focus on co-ordination and knowledge sharing, bearing in mind regulatory obligation to ensure any discussions are not commercially related.
SIBCMG	Information sharing across member firms and with the Tripartite Authorities.

What communications with the Tripartite Authorities would you expect to have during a major operational disruption?	
ABI	If the disruption compromised the industry's ability to serve its customers, we would immediately contact the Tripartite Authorities.
BBA	Tailored to the incident as appropriate.
BSA	Continued dialogue with the FSA on public perceptions of the sector and of financial services in general and in particular, any issues that might prompt a run on a firm.
CMBCG	The Chair and Secretariat of the CMBCG are representatives of the Tripartite Authorities (Bank primary/FSA as alternate). The CMBCG is briefed when it meets on relevant updates received from Sub-Group (of which the CMBCG Secretariat is part).
FXJSC	(Chair/secretariat) would expect to update the Tripartite Authorities through the CMBCG and would keep Bank of England business continuity area informed of current feedback from the FXJSC.
ISBCG	Advise the FSA on general status and activity of members.
MMLG	We would expect to update the Tripartite Authorities through the CMBCG and would keep Bank of England Business Continuity Area informed of any relevant feedback / actions from the MMLG.
PAYMENTS COUNCIL	Routine engagement with Bank of England regarding cash.
RBBCG	None: expect formal regulatory discussions to take place at individual firm level.
SIBCMG	Tripartite Authorities would contact us as part of their wider assessment of the impact on the financial sector.

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This list covers those who contributed to the design and delivery of the exercise, both in 2008 and 2009.

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