CabinetOffice

National Risk Register
of Civil Emergencies

2010 edition

CONTENTS

1. INTRODUCTION

How to use the Register

The National Risk Register is intended for those who want to improve their ability to respond to emergencies.

Chapter 2 outlines the risks of civil emergencies, how the Government and Emergency Responders are planning for them, and where you can find further information. For local assessments of how far these and other risks apply in your area, consult your Community Risk Register (or, for Scotland and Northern Ireland, consult the relevant Devolved Administration's website).

For public, private and voluntary sector organisations and businesses: familiarise yourself with the risks outlined in Chapter 2 and then read Chapter 3 which gives advice for organisations on how to prepare for emergencies.

For members of the public: familiarise yourself with the risks outlined in Chapter 2 and then read Chapter 4 which gives advice for individuals, families and communities on how to prepare for emergencies.

How is the risk assessment conducted?

To find out more about how the Government carries out risk assessment, and how the National Risk Assessment and registers are created, read Chapter 5.

If you have any comments please use the feedback form on the Cabinet Office website[1] to tell us what you found useful and what you think could be improved.

1.1. The risks that the UK faces are continually changing: risks emerge, threats evolve and our ability to respond to the disruptive challenges we face improves. The Government monitors the most significant emergencies that the United Kingdom and its citizens could face over the next five years through the National Risk Assessment (NRA). This confidential assessment is conducted annually and draws on expertise from a wide range of departments and agencies of government and is used in planning, including for future events such as the London 2012 Olympic and Paralympic Games. The National Risk Register (NRR) is the public version and this 2010 edition has been produced to reflect the latest iteration of the National Risk Assessment.

1.2. The National Risk Assessment and National Risk Register are intended to capture the range of emergencies that

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[1] http://interactive.cabinetoffice.gov.uk/nrr/feedback.asp

might have a major impact on all, or significant parts of, the UK. These are events which could result in significant harm to human welfare: casualties, damage to property, essential services and disruption to everyday life. The risks cover three broad categories: natural events, major accidents and malicious attacks.

1.3. Much of the information in the National Risk Assessment and National Risk Register is unsurprising, but emergency planners have found it useful because:

- they bring together a great deal of information about potential risks that is relevant and consistent;

- the different risks can be compared on a broadly like for like basis; and

- in an age where there appear to be so many possible kinds of emergency, they help in making decisions about which to plan for and what their consequences are likely to be.

1.4. As well as identifying the risks, the National Risk Register also provides information on how the Government and emergency responders are preparing should these risks materialise. Furthermore, it provides guidance on some steps that organisations, individuals, families and communities might consider taking to prepare for emergencies.

HOW SHOULD A RISK ASSESSMENT BE USED?

1.5. The risk register provides the basic information needed for planning for emergencies:

- In Chapter 2, the register illustrates the types of emergency that can happen in the country as a whole. These are designed to help readers **identify** and visualise the risks. They give examples of the most serious instances in recent history, but the assessment is that they are realistic possibilities and not an implausible 'worst case'.

- Figure 1 gives a broad indication of the relative likelihood, and the relative impact, of each of the main groups of risks in the country as a whole. This is designed to provide a starting point for readers interested in **knowing what the highest risks are**. But the risks will differ in likelihood and impact from place to place within the country, so emergency planners should cross-refer the national assessment with information on local risks published in Community Risk Registers (which can be accessed via www.direct.gov.uk).

- In the event of an emergency, it is often not the events themselves that people have to deal with, but their **consequences**. Many of these consequences are common to a number of quite different kinds of emergency. Chapters 3 (for businesses and other organisations) and 4 (for individuals, families and communities) explain the most common kinds of consequence that can be planned for even though the emergencies are unpredictable.

- But some of the impacts of emergencies may not themselves be so predictable. The register (again in Chapters 3 and 4) identifies not only the direct impacts of common types of emergency, but also the more complex, indirect or knock-on, effects.

NATIONAL RISK REGISTER MATRIX

1.6. Figure 1 summarises the types of risks covered by the National Risk Register. It attempts to illustrate the breadth of the high-consequence risks we face. It also gives an indication of the *relative* likelihood and impact of these types of risks in comparison to each other. In Chapter 2 you will find examples of each type of risk. This information on individual risks gives an indication of the potential impact through reference to historical examples. It is not possible to represent an exact comparison as each risk grouping is a loose representation of a number of specific risks identified within the confidential National Risk Assessment.

1.7. The risk of human pandemic disease remains the highest risk on this matrix. The outbreak of Swine Flu (Influenza A/H1N1) in 2009 did not match the severity of the worst-case scenario that we plan for and is not necessarily indicative of future pandemic influenzas; the three influenza pandemics of the 20th century (1918-9, 1957-8 and 1968-9) all had differing levels of severity. The Swine Flu pandemic does not change the risk of another pandemic emerging (such as a pandemic H5N1) or mean that the severity of any future pandemics will be the same as the 2009 H1N1 outbreak.

1.8. The National Risk Register illustrates the kinds of contingencies that primarily drive planning by government and the emergency responders and for which organisations, individuals, families and communities can reasonably plan if they want to do so. The selection excludes some risks that are classified for reasons of national security. The use of some chemical, biological, radiological and nuclear (CBRN) materials has the potential to have very serious and widespread consequences. An example would be the use of a nuclear device. There is no historical precedent for this type of terrorist attack and it is excluded from the non-conventional attacks grouping on the risk matrix.
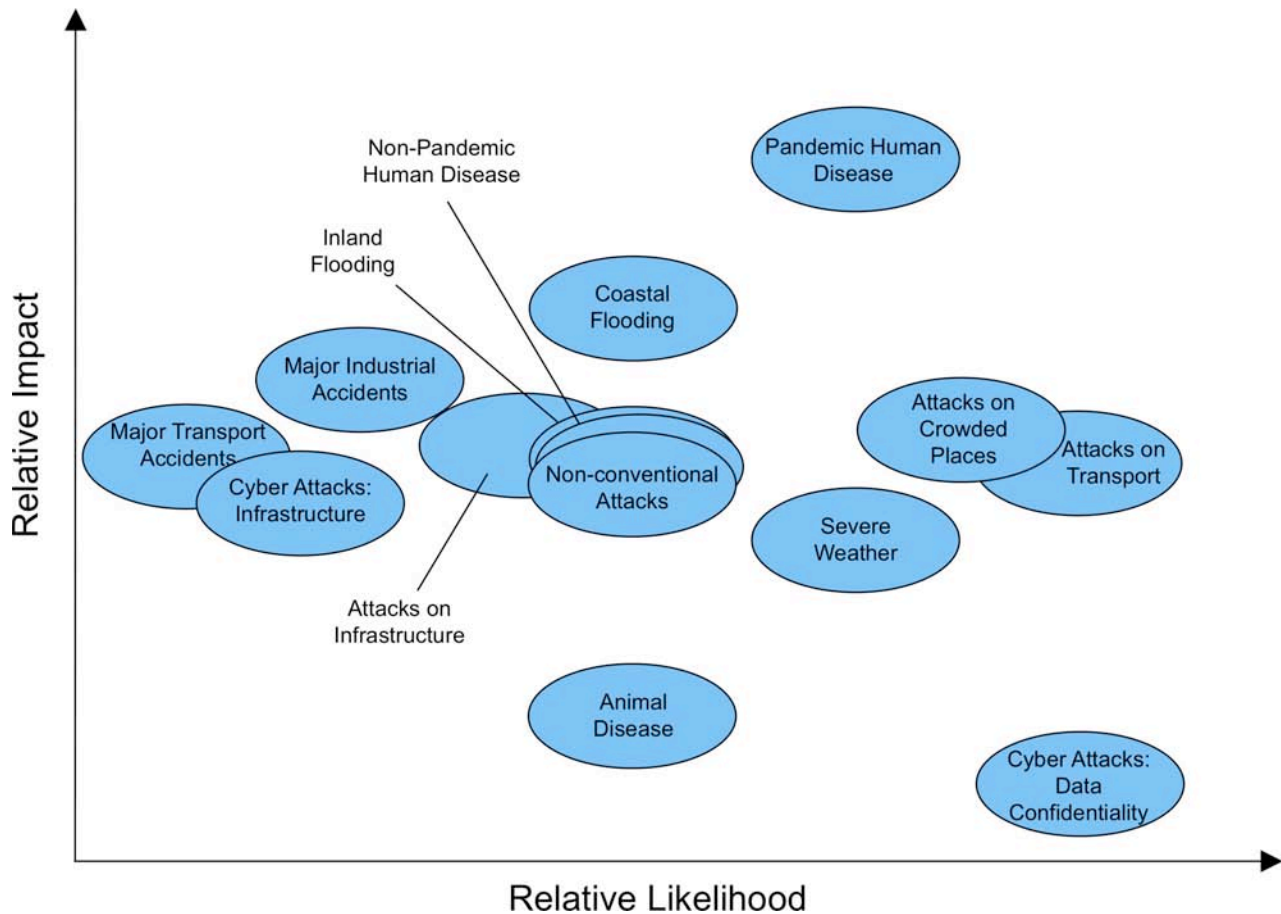
Figure 1: An illustration of the high consequence risks facing the United Kingdom

RISKS IN CONTEXT

1.9. Catastrophes, on the scale of the recent earthquake in the Republic of Haiti, are thankfully rare in the UK. Over the past few years, however, we have seen various emergencies of one sort or another that still have a significant impact on our ability to go about our daily lives. In setting out the risks, their likelihood, and their impact, the National Risk Register is not predicting that any particular type of emergency will happen in the next five years or that, if it were to do so, it would happen on a specific scale. Events have a habit of confounding predictions; prudent emergency planning is based on consideration of a wide range of risks rather than on a forecast that any particular risk will occur.

Further information:

For civil protection practitioners
www.cabinetoffice.gov.uk/ukresilience.aspx

Links to Community Risk Registers and Preparing for Emergencies Guidance
www.direct.gov.uk/en/governmentcitizensan
drights/Dealingwithemergencies/Preparingfor
emergencies

National Security Strategy
www.cabinetoffice.gov.uk/reports/national_s
ecurity.aspx

Information on the Civil Contingencies Act
www.cabinetoffice.gov.uk/ukresilience/prepa
redness/ccact.aspx

World Economic Forum Global Risk Report
www.weforum.org/en/initiatives/globalrisk/index.htm

Scottish Executive
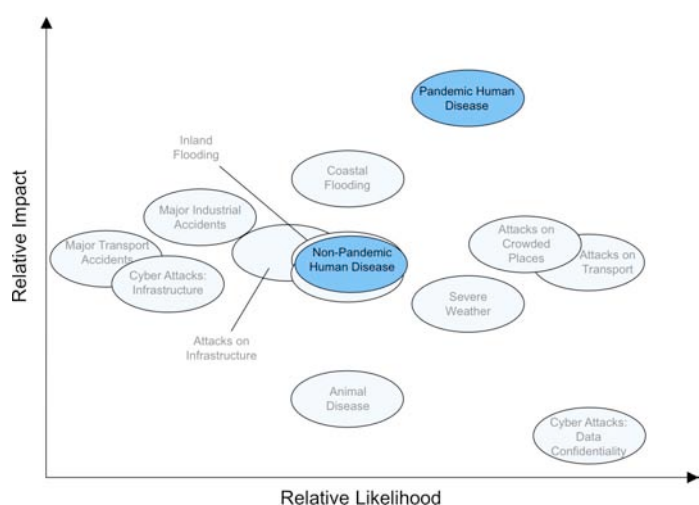www.scotland.gov.uk

Welsh Assembly Government
www.wales.gov.uk

Northern Ireland Executive
www.ofmdfmni.gov.uk/emergencies

2. RISKS

NATURAL EVENTS

Human disease

Risk

2.1.   Human diseases can take a variety of forms and consequently their impacts can vary considerably both in scale and nature. The main types of human disease that represent new or additional risks to the UK are outlined below. The examples have been chosen to give an impression of the range of possible diseases that would have a significant disruptive effect, but are by no means exhaustive.

Background

Pandemic influenza

2.2.   Influenza pandemics are natural phenomena that have occurred from time to time for centuries – including H1N1 (Swine Flu) in 2009 – and three times in the last century. The symptoms are similar to those of seasonal influenza but may be significantly more severe. Influenza pandemics arise as a result of new influenza viruses that are markedly different from recently circulating influenza viruses which means that few people, if any, have immunity. As a result of rapid spread from person to person, pandemics have significant global human health consequences. In addition to the severe health effects, a pandemic is also likely to cause significant wider social and economic damage and disruption.

2.3.   The most notable influenza pandemic of the last century occurred in 1918–19 and is often referred to as 'Spanish flu'. It caused serious illness, an estimated 20–40 million deaths worldwide (with peak mortality rates in people aged 20–45) and major disruption. In the UK alone there were an estimated 228,000 additional deaths. While the pandemics in 1957 and 1968 (often referred to as 'Asian' and 'Hong Kong' flu respectively) were much less severe, they also caused significant illness levels – mainly in the young and the elderly – and an estimated 1–4 million deaths worldwide between them. At the time of writing, the impacts of the H1N1 pandemic are still being felt. To date the H1N1 virus has generally caused mild disease but has caused more severe disease in some people.

Experts agree that there is a high probability of another influenza pandemic occurring, and this probability is unchanged, regardless of the timing of the recent Swine Flu pandemic. It is impossible to forecast its exact timing or the precise nature of its impact. Based on historical information, scientific evidence and modelling, the following impacts are possible:

- Many millions of people around the world will become infected, causing global disruption and a potential humanitarian crisis. The World Health Organization[2] estimates that between 2 million and 7.4 million deaths may occur globally.

- Up to one half of the UK population may become infected and there may be between 50,000 and 750,000 additional deaths (that is deaths that would not have happened over the same period of time had a pandemic not taken place) by the end of a pandemic.

- Normal life is likely to face wide social and economic disruption; significant threats to the continuity of essential services; lower production levels; shortages; and distribution difficulties.

- Individual organisations may suffer from the pandemic's impact on staff absenteeism therefore reducing the services available.

New and emerging infectious diseases

2.4.   An emerging infectious disease can be defined as a disease that has recently been recognised or a disease of which cases

have increased (or look as though they might be on the increase) over the last 20 years, in a specific place or among a specific population.

2.5.   Over the past 25 years, more than 30 new, or newly recognised, infections have been identified around the world. The pattern of known infections also changes as the areas where disease is constantly present expand beyond traditional limits. Most of these newly recognised infections are zoonotic - they are naturally transmissible, directly or indirectly, between vertebrate animals and humans. By their very nature, zoonotic infections can be more challenging to monitor.

2.6.   Although it is unlikely that a new infectious disease would originate in the UK, it is highly probable that one could emerge in another country. Given the ease and speed with which people can travel around the world, it is therefore possible that a new infection could spread rapidly before it is detected, and be transmitted to the UK. New diseases therefore pose a potential threat to the health of the UK population, and may present social and economic challenges.

2.7.   Recent examples of a newly emerged infectious disease are the new H1N1 influenza that has spread extremely widely since its emergence in Mexico in 2009 and a new haemorrhagic fever-associated arenavirus, Lujo virus, which originated in Lusaka, Zambia in September 2008. While disease caused by the Lujo virus was contained - with illness confined to the five cases diagnosed in South Africa – clearly the new influenza was not and so became pandemic. This rapid spread of a new infection is a reminder that new infections

pose a global threat, challenging the whole global public health community, as was SARS (Severe Acute Respiratory Syndrome), which emerged in Asia in November 2002. By the time SARS was contained in July 2003 over 8,000 people had been affected worldwide, of whom over 750 died. The majority of those cases occurred among close family members associated with an initial case, and hospital workers who had cared for SARS patients.

2.8. The likelihood of a new disease like SARS spreading to the UK is low, but if an outbreak of an emerging infectious disease occurred in the UK, and preventative measures were not put in place swiftly, the impact could be on the scale of the SARS outbreak in Toronto, Canada. Toronto had 251 cases of SARS in two waves over a period of several months. For every patient with confirmed SARS, there were, on average, 10 primary contacts of that patient that need to be fully investigated because they might also be incubating disease. These would need to have samples taken quickly and placed in isolation until results were confirmed. A further 100 people would also need to be followed up, though less intensively, in case they too develop symptoms because they were secondary contacts (of the first case and of the 10 primary contacts).

2.9. The emergence overseas of a serious infectious disease may result in a proportion of the British nationals who are not normally resident in the UK (approximately 12 million) choosing to return to the UK. Some returning British nationals would not have the means to support themselves and their return would have a short term but significant impact upon the areas in which they settle.

Planning by Government, the Devolved Administrations, and the emergency responders

Pandemic influenza

2.10. These inter-pandemic years provide a very important opportunity to develop and strengthen preparations for the potentially serious impact of an influenza pandemic. The Government is collaborating actively with international partners on prevention, detection and research, and is taking every practical step to ensure that the UK is prepared to limit the internal spread of a pandemic and to minimise health, economic and social harm as far as possible. This includes purchasing and stockpiling appropriate medical countermeasures. These measures will be further strengthened, where necessary, following the lessons learnt from the 2009 Swine Flu outbreak.

2.11. A stockpile of the antiviral oseltamivir (Tamiflu) to treat up to 80% of the population is already in place after the 25% stockpile was increased during the 2009 Swine Flu pandemic. The level of stocks will be kept under review in light of the scientific evidence.

2.12. Advanced Supply Agreements for the supply of pandemic-specific vaccine will allow for the purchase of vaccine for the entire population, if needed, although delivery of the first batch may not start until four to six months after the pandemic has started. This is because it will take time to identify the strain of influenza responsible and manufacture the appropriate vaccine.

2.13. The UK Government published *The National Framework for Responding to an*

Influenza Pandemic and the *Scottish National Framework for responding to an Influenza Pandemic* was published in November 2007. These frameworks provide information and guidance to assist and support public and private organisations across all sectors in understanding the nature of the challenges and in making the appropriate preparations. The *National Framework* will be updated in 2010, taking into account new information and knowledge about pandemic influenza and, where appropriate, our experiences of the 2009 Swine Flu.

New and emerging infectious diseases

2.14. The Department of Health has developed a contingency plan for dealing with SARS and this would provide the basis for dealing with any future outbreaks should the disease re-emerge. This builds on our generic responses to outbreaks of infectious diseases and the specific lessons learned during the SARS outbreak. The containment of the SARS outbreaks globally reconfirmed that traditional public health and infection control measures can be successful in containing a new infectious disease. Early recognition of a new infection is crucial and international collaboration and the deployment of surveillance and monitoring systems is key for tackling new and emerging diseases. The remit of the Health Protection Agency's (HPA) Centre for Infections includes infectious disease surveillance, detection and diagnosis, and the provision of specialist services. The HPA has plans in place for dealing with any new or emerging infections, whether arising abroad or in the UK, and would co-ordinate the investigation and management of national and unusual outbreaks. The HPA also advises government on the public health risks and the necessary preventative and control measures. The HPA collaborates with other international surveillance bodies and undertakes horizon scanning to enable us to respond rapidly to any international health alerts.

2.15. Government departments work closely to strengthen plans to manage an influx of British nationals that may result from a number of scenarios. The Foreign and Commonwealth Office's website provides information on pandemic influenza for British nationals living overseas, as well as travel advice by country which includes up to date health advice sections.

Further information:

For Pandemic influenza
www.cabinetoffice.gov.uk/ukresilience/pandemicflu.aspx

also

Department of Health
www.dh.gov.uk/en/Publichealth/Flu/PandemicFlu/index.htm

Health Protection Agency
www.hpa.org.uk

Scottish Executive
www.scotland.gov.uk/pandemicflu

Northern Ireland Executive
www.dhsspsni.gov.uk

Health Protection Scotland
www.hps.scot.nhs.uk

Protection Health Agency Northern Ireland
www.publichealth.hscni.net

European Centre for Disease Prevention and Control
www.ecdc.europa.eu/

European Union
http://europa.eu/index_en.htm

World Health Organization
www.who.int/csr/disease/influenza/pandemic/en/

Foreign and Commonwealth Office
Information for British nationals living overseas, as well as travel advice by country which includes up to date health advice sections.
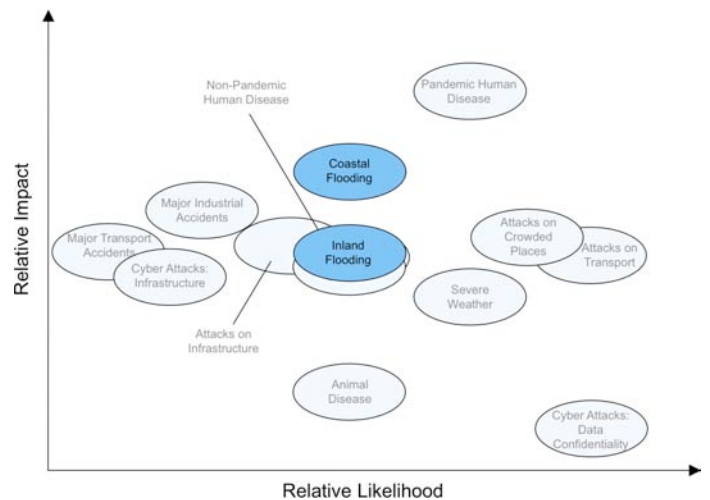http://www.fco.gov.uk/en/travel-and-living-abroad/staying-safe/health/avian-and-pandemic-influenza

http://www.fco.gov.uk/en/travel-and-living-abroad/travel-advice-by-country/

NHS
General information and advice on human health, including information about human diseases, can be found on the NHS Choices website.
www.nhs.uk

Flooding

Risk

2.16. The flooding across England in summer 2007 and in Cumbria and Aberdeenshire during November 2009 highlighted the various forms of flooding the UK faces. It also highlighted the significant and widespread impact on people, businesses, infrastructure and essential services that flooding can cause. The rising temperatures and sea levels associated with climate change are likely to increase the frequency and severity of extreme weather events, and hence the flood risks across the UK. The three main types (or sources) of flooding are from the sea (coastal or tidal), from rivers and streams, and from surface water (caused by excess rainfall before it enters the drainage system). All three forms of flooding could occur during a single storm. A further scenario, major reservoir dam collapse or failure, could bring about rapid flooding and is included in the industrial accidents section. The term 'inland flooding' is used to describe all forms of flooding other than coastal.

Background

Coastal flooding

2.17. Coastal flooding has the potential to have the most widespread impact in a single event.

2.18. The last significant event of this type to affect the UK was in January 1953 when the east coast of England suffered one of the biggest environmental disasters ever to have occurred in this country. Flood defences were breached by a combination of high tides, storm surge and large waves. Coastal towns in Lincolnshire, Norfolk, Suffolk, Essex and Kent were devastated as seawater rushed into the streets. Over 600 square kilometres of land were flooded, 307 people killed and 200 industrial facilities were damaged by floodwater. Over 32,000 people were safely evacuated. A month after the flooding the estimated cost was £40-50 million, the equivalent of around £1 billion today, not including the cost of relocation and interruption of business activity. Since 1953, much work has been done to improve flood defences. Consequently, the likelihood of defences failing or being overtopped by sea tides is now substantially lower. In particular, the construction of the Thames Barrier in London and associated flood defence systems along the east coast of England now means there is a good level of protection against sea and tidal surges. However, the improvements in flood defences have led to significant development of homes, businesses and infrastructure behind them. The consequences of any breach or overtopping of flood defences will now be much greater than previously experienced.

Inland flooding

2.19. The frequency of inland flooding is increasing; this is evidenced by several examples of river and surface water floods over the last few years. Of these, the events of summer 2007 were the most widespread. In June-July 2007, severe rainfall during an extremely wet summer led to the flooding of 48,000 households and 7,300 businesses across England. Other effects of recent flooding have included the closure of primary transport routes, the loss of some critical services such as electricity, telecommunications and water supplies, and large numbers of people requiring evacuation and alternative accommodation. Businesses as well as homes have been made inaccessible for many months while buildings dry out and damage is repaired. The flooding in Cumbria in November 2009 caused six bridges to collapse severing the road network and cutting off communities.

Planning by Government, the Devolved Administrations, and the emergency responders

2.20. The Government has a programme of flood risk management, which aims to reduce the likelihood and consequences of flooding. Local Resilience Forums (LRFs)[3] are required to have planning in place to assess the risk of flooding and develop appropriate contingency plans. These arrangements are constantly under review. In Scotland flooding is a devolved matter and there are equivalent measures in place.

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[3] Local Resilience Forums were established under the Civil Contingencies Act 2004 and are the principal mechanism for multi-agency co-operation and information sharing at the local level on civil protection planning and preparedness work carried out by Category 1 and Category 2 responders and other organisations.

2.21. Both the Met Office and the flood defence operating authorities in the UK maintain sophisticated monitoring and forecasting systems for severe rainfall and river and sea flooding and issue alerts and warnings. For both coastal and inland flooding in England and Wales, the Environment Agency provides the Floodline Warnings Direct system, which enables owners of homes and businesses at risk to receive flood warnings and learn more about what to do before, during and after a flood. The Floodline Warnings Direct system is also provided in Scotland by the Scottish Environmental Protection Agency (SEPA). Other warnings are also used such as sirens and door knocking in some areas.

2.22. We need to continue to learn the lessons each time a serious flooding event occurs. The Government is taking forward recommendations from the Pitt Review[4] into the summer 2007 flooding in a programme of work to reduce the risk and impact of flooding in the future. Priorities include:

- developing better institutional arrangements for surface water management;

- improving overall emergency response capability to respond to flood events, including arrangements to protect critical infrastructure and essential services; and

- ensuring that, where new development is necessary in areas at risk of flooding, appropriate measures are taken to minimise the risk.

Further information:

Environment Agency flood pages
www.environment-agency.gov.uk/homeandleisure/floods/default.aspx

Defra flood pages
www.defra.gov.uk/environment/flooding/index.htm

Scottish Environment Protection Agency (SEPA)
www.sepa.org.uk

Rivers Agency of Northern Ireland
www.riversagencyni.gov.uk/index/flood-emergency.htm

Health Protection Agency guidance on risk to health
www.hpa.org.uk

Protection Health Agency Northern Ireland Flooding Information
http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1158934608011

**Northern Ireland Executive**
http://www.dhsspsni.gov.uk/flooding_guidance.doc#Flooding1_FAQs

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[4] The Pitt Review is an independent comprehensive appraisal of all aspects of flood risk management in England, and contains 92 recommendations addressed to the Government, local authorities, Local Resilience Forums, providers of essential services, insurers and others, including the general public.

Severe Weather
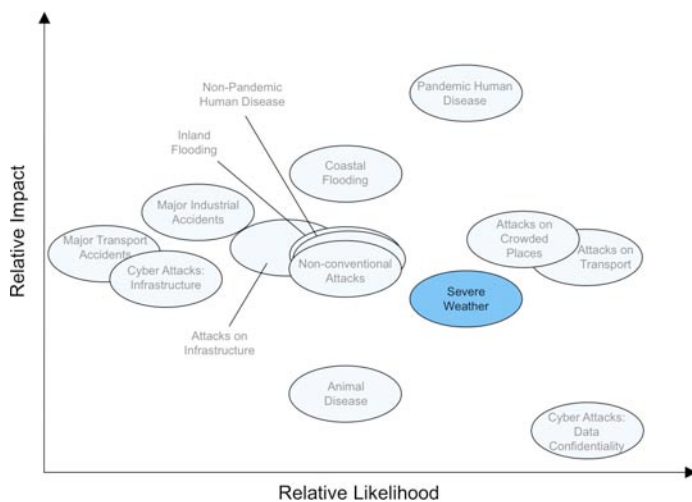
Risk

2.23. As experience has shown, severe weather can take a variety of forms and at times can cause significant problems and disruption to normal life. Over the coming years we are likely to see rising temperatures and sea levels and an increase in the frequency and severity of extreme weather events in the UK. There are many types of severe weather, such as dense fog, that can have a serious local impact in a specific area and some of these are outlined in Community Risk Registers (which can be accessed via www.direct.gov.uk). However, since they do not have a national impact, they are not covered here. The main types of severe weather that we need to plan for at national level include storms and gales, low temperatures and heavy snow, heat wave and drought.

Background

Storms and gales

2.24. The most significant storms in recent decades were those of 16 October 1987

and 25 January 1990. The first brought down an estimated 15 million trees in the southeast of England. As the peak wind speeds occurred overnight, there were fewer deaths and injuries than there might have been, given that the storm crossed such a densely populated area.

2.25. By contrast, the 1990 storm occurred during the daytime, was more extensive and had higher peak wind speeds. The more northerly track meant that the storm crossed areas that were on the whole less wooded than those affected by the 1987 storm. The net effect was a much higher death toll but less damage to trees and property.

2.26. More recently, a storm battered many parts of the UK on 18 January 2007, with gusts of wind up to 77mph recorded at Heathrow. This caused nine deaths and widespread damage to trees and buildings across the UK, along with power disruption.

Low temperatures and heavy snow

2.27. There have been a number of recorded occasions of snow covering large areas of the country for over a week.

2.28. The winter of 2009–10 saw a prolonged spell of cold weather that lasted for approximately a month between mid-December and mid-January. During this time snow fell widely and sometimes heavily across the UK, with notable falls of up to 40 cm recorded in parts of Northwest England, South and Eastern Scotland. Many other areas experienced snow cover of 10 cm or more throughout this period.

2.29. In Northern Ireland in February 2001 strong northeasterly winds and heavy snow caused travel disruption for up to 5 days and brought down power lines (resulting in power cuts to 70,000 homes), mostly in Counties Antrim and Down.

2.30. Less recently, more severe events include periods of snow in 1947 and also in 1962-63, which was the coldest winter in over 250 years. As the climate continues to change, the frequency of more extreme weather events is likely to increase though winters are expected to become milder and wetter on average. Extreme snowfall events may become less frequent in southern Britain in the future.

Heat waves

2.31. Temperatures of 32°C or more (the threshold used by the Met Office to define a heat wave) were most widespread during the heat wave of August 1990, having been recorded in virtually all parts of England and some parts of Wales. 1976 and 1911 were the only other occasions in which at least half of England experienced 32°C. In terms of persistence, 1976 ranks the highest with 32°C being exceeded at one or more places in the UK on 15 consecutive days from 23 June to 7 July.

2.32. The hot summer of 2003 is estimated to have resulted in 2,045 excess deaths (that is deaths that occur above what we would expect for that time of year), mainly among vulnerable populations. Since then, the Heat Health Watch system[5] has been introduced, and during the hot weather of July 2006 significantly fewer (680) excess

deaths were recorded. The Department of Health has set up specific heat wave advice[6].

Consequences of heat waves can be:

• an increased number of admissions to hospital and consultations with GPs, due to sunburn, heat exhaustion, respiratory problems and other illnesses such as food poisoning. This excess demand on the health service may cause the cancellation of elective surgery and routine procedures;

• More vehicle breakdowns, due to overheating engines; and

• Disruption to travel and logistics, due to deterioration of the road surfaces.

Drought

2.33. Droughts are regular events and vary in intensity and duration across the country. A drought does not arrive without warning. Routine monitoring of drought indicators like river or groundwater sites by the Environment Agency in England and Wales, the Northern Ireland Environment Agency in Northern Ireland and Scottish Environment Protection Agency in Scotland picks up indications of any significant deficits developing.

2.34. Periodic restrictions on non-essential water use are an integral part of water resource planning by water companies. The 2004–06 drought in the southeast of England was similar in severity to the worst droughts of the last 200 years, where nine droughts of

[5] www.metoffice.gov.uk/weather/uk/heathealth/

[6] http://www.dh.gov.uk/en/publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_099015

similar severity have been recorded. However, their impact extended only as far as the inconvenience for domestic customers of hosepipe bans and restrictions by one company on further non-essential uses under drought order powers, and then not to the full extent possible.

2.35. Climate change may produce more droughts but not necessarily a more frequent use of restrictions. Water resource and drought planning is dynamic to meet the challenges.

2.36. The Environment Agency in England and Wales provides an example of the work done in the UK to monitor, report and act to reduce the impact of drought on the environment. It has drought plans for all of England and Wales. These set out how they will manage water resources during a drought. These plans aim to balance the competing interests of the environment and the need for public water supply. They contain a range of environmental indicators that determine the action it will take to achieve this aim. Actions to manage drought include increased environmental monitoring, liaising with water companies, public awareness campaigns and assessments of drought permits and orders.

Planning by Government, the Devolved Administrations, and the emergency responders

2.37. The Met Office has responsibility for providing weather warnings for the UK. Advisory messages are issued routinely on the Met Office website, using a traffic-light system that indicates how confident we can be that severe or extreme weather is due.

2.38. Early warnings of severe or extreme weather are issued when the Met Office has 60% or greater confidence that severe weather is expected in the next few days. Flash warnings of severe or extreme weather are issued when the Met Office has 80% or greater confidence that severe weather is expected in the next few hours.

2.39. The Heat Health Watch system operates in England and Wales between 1 June and 15 September each year in association with the Department of Health and the Welsh Assembly. The system comprises four levels of response, based on threshold maximum daytime and minimum night time temperatures. These thresholds vary by region, but an average threshold temperature is 30°C by day and 15°C overnight.

2.40. Water companies' statutory drought plans have trigger points to initiate a range of actions during the various stages of a drought to manage supplies and demand. Only Emergency Drought Orders (EDO) can authorise supply interruptions through standpipes or rota cuts. EDO powers have only been exercised three times in England and Wales since 1945 and not since 1976 when they were used in north Devon and southeast Wales.

Animal disease

Risk

2.41. There has been a number of cases of significant animal disease in the UK with Foot and Mouth Disease and Avian Influenza (Bird Flu) being the most notable recent examples. When considering the likelihood of such outbreaks, scale should be taken into account. There have been a number of more frequent but smaller-scale examples in recent years but the large national outbreaks represented in the matrix (figure 1) in Chapter 1 are less frequent.

Background

Non-zoonotic notifiable animal diseases (e.g. Foot and Mouth Disease)

2.42. Non-zoonotic diseases are those that cannot be transmitted to humans. Swift action is still needed, however, in order to contain the spread of certain listed or notifiable diseases. As well as Foot and Mouth Disease, other examples are Classical Swine Fever, Bluetongue and Newcastle Disease (of birds).

2.43. Foot and Mouth Disease is spread both through direct and indirect contact – it can even be windborne. In countries like the UK, the accepted policy is to stamp it out by culling all affected stock and any others which have been exposed to such risk of infection that it is reasonably certain that they would develop the disease if left alive. In addition vaccination may be used in some circumstances to control the outbreak. Movement restriction regimes and on-farm controls will also limit the spread of disease. Measures for reducing the risk of introduction include effective control on imports of meat, other animal products and susceptible animals.

2.44. There are two forms of Swine Fever: Classical Swine Fever, which has been recorded in the UK, and African Swine Fever, which has not. Classical Swine Fever is a very contagious disease of pigs and the measures for control and restriction are similar to those for Foot and Mouth Disease.

2.45. Bluetongue was recorded in the UK for the first time in 2007. The disease is spread between susceptible animals by infected midges. Sheep are most severely affected by the disease. Measures to reduce the risk of introduction include controls on imports of cattle and sheep – though this is less effective than for Foot and Mouth Disease since movements of midges obviously cannot be controlled. Vaccination is the most effective form of control and there are currently vaccination programmes in place in England, Scotland and Wales.

Zoonotic notifiable animal diseases (e.g. Highly Pathogenic Avian Influenza)

2.46. Zoonotic notifiable animal diseases are those diseases that can be transmitted naturally between vertebrate animals and humans. They are named in section 88 of the Animal Health Act 1981 or in an Order made under that Act. The ease with which zoonotic disease transmission occurs varies by disease; for Highly Pathogenic Avian Influenza (H5N1 – an Influenza A virus), for example, it is relatively uncommon and requires specific circumstances. Only intense exposure of a person to birds that are infected with Highly Pathogenic Avian Influenza is likely to allow transmission of this disease to humans.

2.47. Highly Pathogenic Avian Influenza has been recorded in poultry in the UK several times over the last few years. Migratory wild birds can spread and introduce it by direct and indirect contact. It can also be introduced by mechanical transmission, that is, physically carried by infected material. For disease in poultry, the control measures include culling of birds on infected premises. There is no policy to cull wild birds. Vaccination has not been used as a control option given the success of other means of eliminating the disease.

2.48. West Nile Virus is a viral infection mainly of birds, horses and humans, spread by the bite of infected mosquitoes which can cause encephalitis (inflammation of the brain) or meningitis (inflammation of the lining of the brain and spinal cord). Infection by West Nile Virus has never been identified in horses or humans in the UK. The virus historically occurs in Africa, mainland Europe, the Middle East, West and Central Asia and for the first time in the

USA in 1999 where it is now considered endemic.

2.49. Rabies is a fatal viral disease of the nervous system that can affect all mammals including humans. The disease is usually spread by saliva from the bite of an infected animal. Classical Rabies has long been eradicated from the UK. Controls on the import of susceptible animals, including the pet travel scheme and quarantine, help protect against infected animals entering the UK.

Planning by Government, the Devolved Administrations, and emergency responders

2.50. The UK Government works to provide effective guidance to prevent an outbreak of animal disease occurring in the first place, but it also tries to predict local and global trends in order to prepare effectively. This includes:

- monitoring disease outbreaks around the world, and reporting on the latest developments and risks;

- working with partners to provide warnings and rapid detection of UK disease threats; and

- talking face to face with businesses at livestock markets across the country.

MAJOR ACCIDENTS

Major Industrial accidents
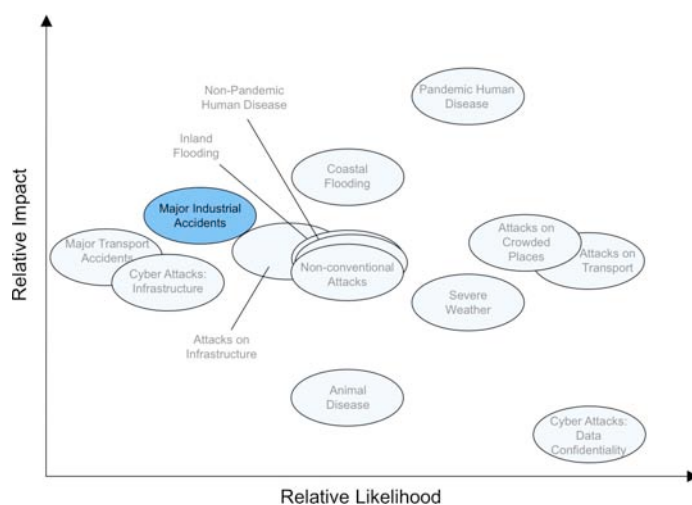
Risk

2.51. Much has been done in the UK both to help prevent industrial accidents and to minimise their effects, but they can still occur. Industrial accidents can take a wide variety of forms and consequently their impacts can vary considerably both in scale and nature. In most cases they will have no or very limited impact outside the industrial plant and can be dealt with locally. But, as the examples from around the world detailed below show, in rare cases it is

possible for there to be more significant consequences.

Background

Fires

2.52. Fire can either be a risk in its own right or because of the damage that it can cause. For example:

- On 14 November 1990, a fire in a telephone exchange led to the failure of all lines in the Scarborough area, including those of the coastguard, other emergency responders and the public utilities. Some cash dispensers and computer systems linked to the telephone network also failed.

- In December 2005, the largest peacetime fire in Europe occurred at the Buncefield Oil Storage Terminal in Hemel Hempstead. There were no deaths but a number of injuries. In the short term, the surrounding area was evacuated. Some businesses in the immediate vicinity as well as the site itself experienced much longer-term disruption to operations.

Contamination

2.53. Contamination can take many forms. While there are extensive arrangements in place to prevent and detect any contamination before it reaches the general public, accidents can still occur. Some of the more extreme examples drawn from around the world are detailed below:

- In February 2005, over 400 products were taken off the shelves in UK supermarkets due to concerns over the contamination of food products with Sudan 1 (a colouring agent used in the food industry).

- In 1997 in Scotland and 2006 in England, water supply areas were accidentally contaminated with diesel. The event in February 2006 affected 2,500 properties in the Exeter area. The water company enacted emergency procedures and distributed alternative supplies of drinking water while the incident was investigated and resolved. The Drinking Water Inspectorate[7] conducted an assessment and made recommendations and suggestions for measures to mitigate against a repeat of such incidents.

- In 1976, an accident occurred at a chemical plant manufacturing pesticides and herbicides in Seveso, Italy. This led to the release of poisonous and carcinogenic dioxins into the air. The contamination affected ten square miles of land and vegetation. More than 600 people had to be evacuated from their homes and as many as 2,000 were treated for dioxin poisoning.

- In September 1987, a lead canister containing caesium-137 (a radioactive isotope) ruptured in Goiania, central Brazil. The contamination was spread by human contact, wind and rainwater runoff and resulted in 4 deaths from exposure and contamination of 244 people, 7 major properties and 42 residences.

2.54. In some cases an accident may have large impacts on local wildlife and the surrounding environment. For example:

- In 1996, the crude oil tanker Sea Empress grounded off South West Wales, spilling

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[7] www.dwi.gov.uk

approximately 72,000 tonnes of oil into the sea, which had a short-term effect on some marine life. In 2007, the MSC Napoli was beached in Lyme Bay after suffering serious structural failure. A small amount of oil leaked into the sea, and some cargo washed ashore on nearby beaches. In March 2008, the Ice Prince sank off the Devon coast, shedding around 2,000 tonnes of timber, much of which subsequently washed up on beaches along the south coast.

Technical failure

2.55. Probably the most extreme, but one of the least likely, scenario in this section, is the nationwide loss of electricity. The high voltage electricity transmission network in Great Britain has never experienced a complete shutdown in its history. Nevertheless, because of our reliance on electricity for so many aspects of our lives, even localised losses of electricity can have a significant impact on those affected. A loss of gas supply could also be significant for those who rely on gas for heating and cooking. For example:

- On 27 October 2002, a storm swept across England and Wales which resulted in interrupted electricity supplies to two million customers. Most were reconnected within two days, but a very small percentage were disconnected for up to 10 days.

- A major accident at a gas processing facility on 25 September 1998 severely disrupted gas supplies to the State of Victoria in Australia. Householders lost their gas supplies for heating, cooking and hot water, as did hotels and restaurants. Industry that used gas had to close and their suppliers

lost business due to the decreased demand. Gas supplies were restored to major users on 5 October and to householders in the following days.

Other examples of technical failure include:

- In April 2007, a major pumping component at a waste water treatment plant serving 800,000 customers in Edinburgh failed, causing 1,000 litres a second of partially diluted untreated sewage to be pumped into the Firth of Forth.

- The Malpasset dam on the Reyran River in southern France was breached on 2 December 1959. The breach created a wall of flood water 40m high, moving at 70 km/h. It destroyed two small villages and, in 20 minutes, reached Fréjus, 7km to the south, where it was still 3m high. The resulting flood killed over 400 people and caused widespread damage.

Planning by Government, the Devolved Administrations, and the emergency responders

2.56. The Government, the Devolved Administrations, industry, regulators and emergency responders work closely to reduce the chance of any incident occurring.

2.57. Following the Seveso incident, detailed above, there were major changes to European law, which is now regularly reviewed. The current legislation is the Control of Major Accident Hazard Regulations 1999 (COMAH) and Control of Major Accident Hazard Regulations (Northern Ireland) 2000 under which major hazard sites are regulated and inspected in

accordance with the regulations. Their main aim is to prevent and mitigate the effects of major accidents involving dangerous substances[8].

2.58. Following the accident at the nuclear power plant at Chernobyl in 1986, the Government prepared a National Response Plan for dealing with the effects of overseas nuclear accidents on the UK population and infrastructure[9] and set up the Radioactive Incident Monitoring Network (RIMNET)[10]. The RIMNET system is a network of 91 monitoring stations[11] around the UK which hourly measures radioactivity dose levels in the UK and is designed to deliver the co-ordination of consequence management and the authoritative central science response to any overseas incident.

2.59. The UK Government has also worked to reduce the opportunity for any accident involving radioactive sources to occur, such as the Goiania incident. The High-activity Sealed Radioactive Sources & Orphan Sources (HASS) Regulations 2005 mean sources are constantly tracked, and 6,000 surplus sources have been removed from circulation by a UK-wide initiative.

2.60. In the event an industrial accident involving hazardous materials does take place, there is a well-developed capability among the emergency responders to deal with it. The emergency responders receive specialist training and are provided with protective equipment and the relevant supplies to enable them to operate in hazardous environments and to rescue and treat any

casualties. Both the Ambulance and Fire and Rescue Services have means to decontaminate people affected by such an incident and local authorities have plans in place to open reception centres for those caught up in the incident or displaced from their homes. Where necessary, decontamination of the area of any incident can be undertaken by contractors drawn from a framework established by the Government Decontamination Service[12] so that it can be returned to normal use.

2.61. The response to any incident involving hazardous materials, whether accidental or deliberate, requires a well co-ordinated multi-agency response. Accordingly, there is planning for such events at national, regional and local level and regular testing of the plans through exercises.

Sector specific planning includes: electricity

2.62. There are comprehensive plans in place for handling both a complete national outage and regional outages. In the event of a national outage (which has never occurred), and provided there had been no damage to the system, the objective would be to restore supplies throughout Great Britain within three days.

Water and sewerage

2.63. The Security and Emergency Measures (Water and Sewerage Undertakers) Direction of 1998 places a series of statutory requirements on water companies in England and Wales (the Security and Emergencies Measures Direction 2002

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[8] www.hse.gov.uk/comah
[9] www.defra.gov.uk/corporate/about/what/contingency/topics/environment.htm
[10] www.defra.gov.uk/evidence/statistics/environment/radioact/radrimnet.htm
[11] http://www.defra.gov.uk/evidence/statistics/environment/radioact/radrimnet.htm

[12] www.defra.gov.uk/gds

applies in Scotland) in relation to their emergency planning functions. All water companies have plans in place to provide alternative water supplies as well as trained and experienced personnel and suitably equipped permanent or mobile accommodation to act as command and control centres.

2.64. Where the piped mains water cannot be used, supplies of drinking water that meet the prescribed standard are required. These may be provided from other parts of the company's network not affected by the emergency, or from neighbouring companies. They may be supplied to customers in bowsers or bottles.

Gas

2.65. Most high-pressure gas pipes form part of an overall network. This means gas supplies can often be rerouted, reducing the potential for national disruption to the domestic network.

Communications

2.66. All major communications service providers (CSPs) have their own arrangements in place to constantly monitor their networks and take remedial actions in the event of significant service degradation or failure. In the event of a major incident that affects telecommunications, the major CSPs work together to reinstate services. Telecommunications are a fundamental enabler and, as a consequence, all organisations' business continuity plans should address their dependence on telecommunications. The Government has developed a strategy for enhancing the

resilience of our responder community's telecommunications arrangements, and this is equally applicable to other organisations[13]. This strategy is based around layered and diverse technologies and improved interoperability and processes. The strategy comprises four broad strands:

- Strand 1. Working with providers and responders to enhance the resilience of everyday commercially available telecommunications.

- Strand 2. Improving the management, take-up and resilience of privileged telecommunications schemes that are only accessible to emergency responders.

- Strand 3. Delivering a High Integrity Telecommunications System (HITS) providing connectivity and services between key responder sites at the national, regional and local level.

- Strand 4. Delivering a means for securely sharing information between all local regional and national responders both in preparing for and in response to an emergency (the National Resilence Extranet).

Fuel

2.67. The Government's National Emergency Plan for Fuel is designed to prioritise fuel resources in the event of major disruption to supply. It includes the possibility of rationing supply to retail customers, and prioritising emergency responders and essential

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[13] Details of the strategy can be found at:
http://www.cabinetoffice.gov.uk/ukresilience/preparedness/resilient_telecommunications.aspx

service providers. If there is sufficient diesel to supply emergency responders and essential service providers then the surplus will be prioritised to truck stops and HGV motorway filling stations to help keep supply chains operational.

Marine pollution

2.68. The Maritime and Coastguard Agency has well practised plans that include all the relevant emergency responders for both major and minor pollution incidents and procedures for handling vessels that are involved in accidents.

Planning for dam inundation

2.69. The Environment Agency enforces the Reservoirs Act 1975 which applies to more than 2,000 reservoirs in England and Wales. It is responsible for maintaining a register of these reservoirs and achieving compliance with the Act. In Scotland, Local Authorities enforce the Reservoirs Act which applies to over 650 reservoirs.

Subsequent to the severe flooding of recent years and Sir Michael Pitt's Review of the 2007 floods, the Environment Agency mapped the extent of the *worst credible case* potential flood zone for each of the 2,000 or so English and Welsh reservoirs regulated under the Act. The maps are now available to emergency planners, reservoir owners and managers, and local and regional responders and others to enable them to put plans in place to deal with any potential reservoir failure.

From summer 2010 it will be possible to view whether an address in England and

Wales is in an indicated flood zone for a reservoir by searching a flood map on the Environment Agency's *What's in your Backyard* website.

Further Information:

Government Decontamination Service
www.gds.gov.uk

**The Government's National Emergency Plan for Fuel**
www.og.decc.gov.uk/downstream/emergencies/down_emerge.htm

Maritime and Coastguard Agency's National Contingency Plan for maritime pollution
www.mcga.gov.uk

Radioactive Incident Monitoring Network (RIMNET)
www.defra.gov.uk/evidence/statistics/environment/radioact/radrimnet.htm

Control of Major Accident Hazards (COMAH)
www.hse.gov.uk/comah/

Major transport accidents

Relative Impact — Relative Likelihood
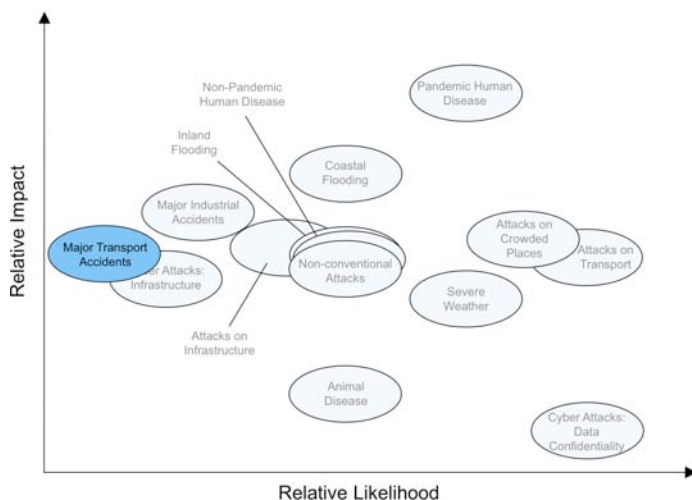
Risk

2.70. Transport accidents occur across the UK on a daily basis, mainly on roads involving private vehicles, and well-practised plans are in place to deal with these at local and regional level. This section is focused on those rare major transport accidents which have such a significant impact that they require some form of national response. Thanks to modern safety regimes, large-scale transport accidents are very rare, nevertheless they cannot be entirely ruled out as the following examples demonstrate.

Background

Air

2.71. There have not been any major air accidents in the UK since the Kegworth incident in 1989, when a Boeing 737 crashed close to the M1 Motorway, resulting in the death of 47 passengers, with no loss of life on the ground. A more recent incident was the loss of power to a Boeing 777 on approach to Heathrow in

January of 2008; this emergency landing caused one serious injury and no deaths.

Maritime

2.72. The last major accident involving a UK flagged ship was the sinking of The Herald of Free Enterprise in March 1987. The ferry capsized shortly after leaving Zeebrugge on route to Dover, resulting in 187 deaths. The sinking of the Estonia in the Baltic Sea in 1994, which led to 850 deaths, also demonstrates the potential for loss of life on a massive scale when flooding of a vessel occurs.

2.73. In December 2002, the Tricolore was hit by a container ship in French waters in the English Channel and sank. The hazard that this created in part of the Channel resulted in some disruption to shipping as other vessels were required to steer clear of the site.

Road and rail

2.74. While accidents do occur much more frequently on the UK's road networks than on other modes of transport, the scale of even the largest such incident would not be sufficient to warrant a co-ordinated central government response. Similarly, continuing improvements to rail safety regimes and infrastructure over recent years have led to a substantial reduction in both the frequency and impact of rail accidents. As with road accidents, it is highly unlikely that an incident of this kind would require a co-ordinated central government response.

Planning by Government, the Devolved Administrations, and the emergency responders

2.75. Individual transport sectors are, mostly, subject to regulation of their provision of services. All transport sector operators have plans that cover a range of possible outcomes, including those most likely to create a wider impact. These plans include the diversion of resources where possible (based on safety and operational requirements).

2.76. The response by the emergency responders to such events is covered by their existing arrangements for responding to other types of major incidents.

Further information:

Department for Transport
www.dft.gov.uk

Civil Aviation Authority
www.caa.co.uk

Transport Scotland
www.transportscotland.gov.uk

Traffic Scotland
www.trafficscotland.org

Northern Ireland Public Transport
www.translink.co.uk
www.drdni.gov.uk/index/public_transport.htm

MALICIOUS ATTACKS

2.77. As the 2009 update to the National Security Strategy outlined, the UK faces a serious and sustained threat from terrorism. At the time of publication the national threat assessment stands at 'severe'. Many of those networks and individuals who are judged to pose a terrorist threat share an ambition to cause large numbers of casualties without warning. Some have aspirations to use non-conventional weapons such as chemical, biological, radiological and nuclear substances. Others aspire to attack our national infrastructure using both traditional methods and more novel methods such as cyber attack.

2.78. The Government's updated counter terrorism strategy, CONTEST is an integrated approach based on four main work streams, each with a clear objective to reduce the risk to the UK from international terrorism. The National Risk Register is focused on preparing for emergencies and mitigating the impact of terrorists attacks (the Prepare work stream of CONTEST), but has links with all of the CONTEST work streams outlined below:

- Pursue: stopping terrorist attacks

- Prevent: stopping people becoming terrorists or supporting violent extremism

- Protect: strengthening our protection against terrorist attack

- Prepare: where an attack cannot be stopped, mitigating its impact

2.79. Under CONTEST, comprehensive plans have been developed to protect sites critical

to our national infrastructure, crowded places such as sports venues and shopping centres, and the UK's borders. Thousands of emergency responders, workers and key officials have been trained and equipped to deal with a terrorist incident, including those involving chemical, biological and radiological weapons. This ensures our response to an attack is as effective, co-ordinated and speedy as possible, so that the primary aim of saving life can be achieved, as well as effectively managing the impact of such an attack to ensure a quicker return to normality.

2.80. As the National Security Strategy Update 2009 made clear, terrorism is not the only malicious threat we face. Organised crime has a significant impact on the daily lives of UK citizens; the Home Office estimates some £20 billion a year of social and economic harms to the UK are attributable to serious organised crime. Crime types are evolving and criminals continue to take advantage of new crime markets, technology and emerging opportunities across the world.

2.81. The National Security Strategy Update 2009 confirms the assessment in the 1998 Strategic Defence Review that, while we cannot rule out the re-emergence of a major state-led threat, for the foreseeable future, no state will have both the intent and capability to threaten the independence, integrity and self-government of the UK mainland. Instead, states may seek to threaten the UK's stability and freedom to act through non-military threat means using levers such as cyber attack, espionage or significant economic or trade pressure.

Further Information:

Security Service – MI5
www.mi5.gov.uk

Serious and Organised Crime Agency (SOCA)
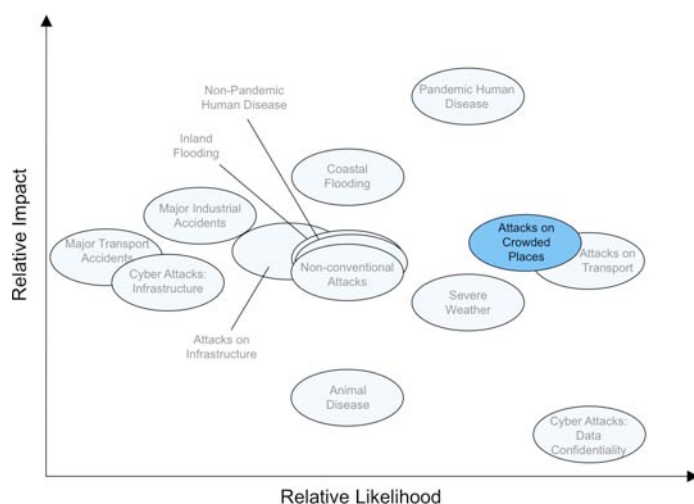www.soca.gov.uk

SOCA – UK Threat Assessment
www.soca.gov.uk/assessPublications/UKTA 0809.html

National Security Strategy
http://www.cabinetoffice.gov.uk/reports/natio nal_security.aspx

Attacks on crowded places

Risk

2.82. Whilst there have been attacks against well protected targets around the world, crowded places remain an attractive target for a terrorist attack.

Background

2.83. Although the UK has faced a variety of terrorist threats in the past, Al Qaida and related terrorist groups have shown a level of ambition and willingness to carry out indiscriminate terrorist attacks. They do not give warnings, they have shown a readiness to use suicide tactics and the majority of their attacks have as a primary intent the deaths of large numbers of people. While there have been attacks against well protected targets around the world, the trend is for terrorists to attack crowded public places, which represent targets with little or no protective security. Beach bars in Bali, hotels and restaurants in Egypt, rush hour trains in Madrid and armed assaults in Mumbai have offered terrorists the prospect of high impact attacks with large numbers of casualties.

Planning by Government, the Devolved Administrations, and the emergency responders

2.84. Longstanding and regularly activated major incident plans and structures are in place across government. The adaptability and expertise of the emergency responders provides an extremely solid basis for handling a mass casualty incident. For example, ambulance trusts and other NHS organisations have an excellent track record in dealing with major incidents and regularly exercise their major incident plans. The Urban Search and Rescue (USAR) capability for the Fire and Rescue Service, provided through the New Dimensions programme, has now been fully rolled out across the service.

2.85. Considerable work is underway, led by the Home Office, in conjunction with the National Counter Terrorism and Security Office (NaCTSO) and local police Counter Terrorism Security Advisers (CTSAs), and with the close engagement of local partners, to put in place a consistent framework for reducing the vulnerability of crowded places across the UK. This has included putting in place a standard way for CTSAs to assess vulnerability to terrorist attack of crowded places which will enable local partnerships to prioritise their work and evaluate its protective impact.

2.86. The framework entitled '*Working Together to Protect Crowded Places*' and guidance entitled '*Crowded Places: The Planning System and Counter Terrorism*' a supplement to '*Safer Places – the Planning System and Crime Prevention*' and '*Protecting Crowded Places Design and Technical Issues*' were published in March 2010[14]. These documents seek to encourage greater partnership working, provide advice on counterterrorism measures to consider in the planning process and provides a practical guide on how to design in counter terrorism measures in new developments.

Further Information:

Fire and Resilience – Urban Search and Rescue
www.communities.gov.uk

www.scotland.gov.uk/Topics/Justice/public-safety/fire-and-rescue-services

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[14] http://security.homeoffice.gov.uk/news-publications/publication-search/protect/crowded-places-guidance/index.html
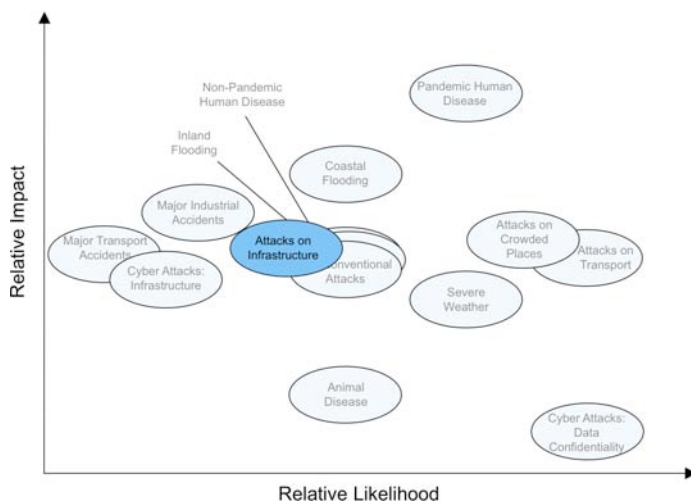
Attacks on infrastructure

Risk

2.87. The national infrastructure comprises those facilities, systems, sites and networks necessary for the functioning of the country and the delivery of the essential services upon which daily life in the UK depends. These fundamental services, such as electricity and water supply, underpin daily life and ensure the country continues to function socially and economically.

2.88. Many of the impacts which could result from industrial accidents, technical failure or severe weather could also result from a terrorist attack on infrastructure. The risk and impact varies according to the importance of the specific infrastructure asset attacked.

2.89. Cyber attacks on infrastructure and attacks on transport systems are dealt with in subsequent sections.

Background

2.90. Terrorists in the UK have previously attacked, or planned to attack, national infrastructure. Attempts were made to attack electricity substations in the 1990s. Bishopsgate, in the City of London, was attacked in 1993 and South Quay in London's Docklands in 1996. These attacks resulted in widespread damage and disruption but relatively few casualties. Elsewhere in the world, terrorists have carried out attacks against energy infrastructure (in Algeria and Yemen in 2007 and 2008) and against financial institutions and government buildings (such as the attacks on the World Trade Centre in 1993 and 2001).

Planning by Government, the Devolved Administrations, and the emergency responders

2.91. As with attacks on crowded places, longstanding and regularly activated major incident plans and structures are in place across government. Planning for the impacts of attacks on infrastructure is in many cases the same as for accidents or technical failure. The previous section on major industrial accidents outlines a range of these plans which, in addition to businesses' continuity plans for losses of essential services, should help anticipate and minimise the effects of any disruptions.

2.92. A comprehensive and well established programme of work to protect the national

infrastructure from terrorism and other national security threats is also in place, along with robust mechanisms to ensure an effective response by the range of government departments involved. The Centre for the Protection of National Infrastructure (CPNI) is the government authority that provides protective security advice to businesses and organisations across the national infrastructure. CPNI provides integrated advice on physical, electronic and personnel security, aimed at reducing the vulnerability of the national infrastructure to terrorism and other national security threats.

> **Further information:**
>
> **Centre for the Protection of National Infrastructure**
> www.cpni.gov.uk

Attacks on transport systems
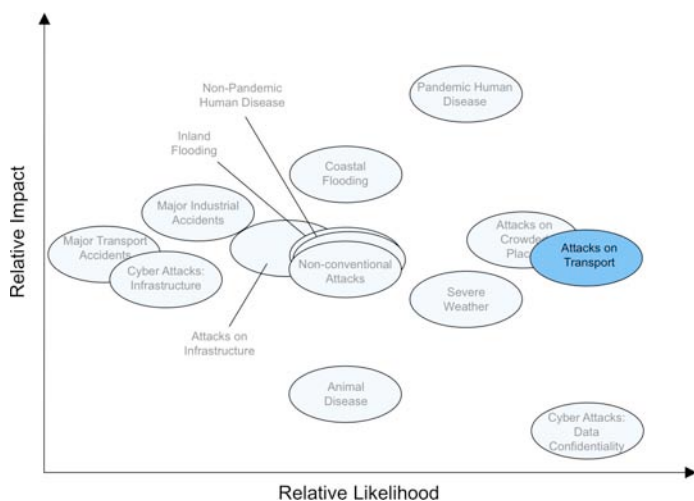
Risk

2.93. Of the different malicious attacks outlined in this document, conventional attacks on

transport systems are judged to be some of the more likely to occur, although the likelihood of them affecting any one individual is still extremely low. This assessment is supported by the many examples of this type of attack perpetrated by different groups across the globe. As the recent incidents outlined below indicate, attacks on transport systems can take different forms with different levels of impact.

Background

Rail and underground

2.94. Stringent security measures are applied at airports. Rail and underground networks, however, are open systems, which is likely to make them attractive potential targets for terrorist attacks. As a result, there have been several successful attacks on rail networks worldwide.

2.95. On 7 July 2005, the London transport system was attacked with four explosions (three on underground trains, one on a bus). This was followed by unsuccessful attacks against the London transport system two weeks later. There have also been a number of recent examples in other countries of successful attacks against underground systems (e.g. Moscow, 2004) and mainline rail services (e.g. Madrid, 2004).

Air

2.96. Over the past 20 years there have been a number of attacks by terrorists against the aviation industry. These include the 1988 Lockerbie attack involving a Pan Am flight,

the deliberate use of hijacked planes to attack the World Trade Centre and the Pentagon in September 2001, and the attempted attack using explosives concealed in shoes on a transatlantic flight in 2001. Despite this ongoing threat, the number of attacks has remained relatively small, due in part to the work of the police, security and transport safety authorities and the to development of appropriate security measures at airports. Operation OVERT, the 2006 liquid bomb plot, which targeted multiple transatlantic airliners, demonstrated both the profile of commercial aviation as a terrorist target, and the capacity of some terrorists to devise innovative methods to circumvent security.

2.97. A more recent example of this was on 25 December 2009 when an attempt was made to detonate a device by a Nigerian citizen on a Northwestern Airlines flight from Amsterdam to Detroit in this incident. The device used had clearly been constructed with the aim of making detection by existing screening methods extremely difficult. While there are a number of security screening methods in place no technology can be 100% effective, but it is clear that body scanners can help to detect devices such as the one used in this incident. It therefore makes sense that they be deployed as swiftly as possible to add to the capabilities we already have for detecting possible threat items. Accordingly body scanner technology was introduced on 1 February 2010 at Heathrow Airport and Manchester Airport. A wider rollout is likely in the coming months.

Maritime

2.98. To date, no attack against maritime interests in the UK has been mounted by Islamist extremists. The introduction of the International Shipping and Ports Facility Security Code has served to improve maritime security in the UK and this is likely to have a deterrent effect, although maritime attacks like those seen overseas (for example, USS Cole attack in 2000), cannot be ruled out in the UK in the future.

Planning by Government, the Devolved Administrations, and the emergency responders

2.99. Individual transport sectors are, mostly, subject to regulation of their provision of services. All transport sector operators have plans that cover a range of possible scenarios including those most likely to create a wider impact. Those plans include the diversion of resources where possible (based on safety and operational requirements) to ensure some form of public transportation is available.

Rail and underground

2.100. These remain popular targets for malicious groups due to the high number of people that travel on these systems each day and the ease of access to the general public. Security for the national rail network, as well as London Underground, the Docklands Light Railway and the Glasgow Subway, is regulated and monitored by the Department for Transport. As open networks, these systems will always be more vulnerable to attack than closed systems such as aviation. Both Network

Rail and London Underground have robust plans in place to respond to emergencies and these are regularly tested and updated. The British Transport Police are responsible for policing British rail networks and are closely involved in contingency planning, as well as working with industry and the Department for Transport on security issues.

2.101. Eurostar services through the Channel Tunnel are subject to a more stringent security regime similar to that which exists at airports, under which all passengers and their baggage are currently subject to screening.

Air

2.102. Stringent protective security measures exist at UK and EU Member State airports. Airlines and airports are required to carry out a range of specified measures. These include the following measures to mitigate the risk of attack:

- screening of passengers and their bags, as well as of all staff working in restricted areas;

- physical security measures including the separation of incoming international passengers from all outbound travellers; and

- background checks on staff in sensitive posts.

2.103. Security measures are also in place to protect aircraft in flight, such as the compulsory locking of cockpit doors. These security regimes are regularly inspected by the Department for Transport's Transport

Security and Contingencies Directorate (TRANSEC) to ensure compliance. In addition, TRANSEC provides advice to UK airlines operating overseas on measures needed at their foreign stations.

Maritime

2.104. Stringent protective security measures exist (including tightly controlled access) for cruise ships and ferries serving the UK. New rules for domestic ferries came into effect on 1 July 2007 as domestic sea-going ferries now fall within the scope of the EU regulation for enhancing ship and port facility security.
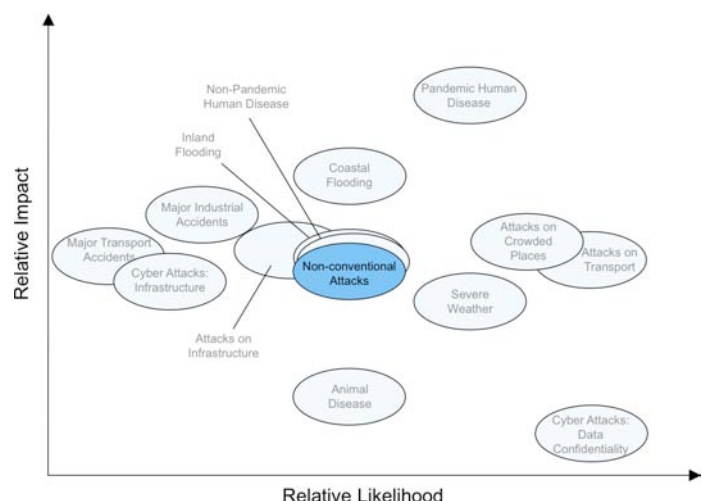
Further information:

Department for Transport
www.dft.gov.uk

TRANSEC
www.dft.gov.uk/pgr/security

Non-conventional attacks

Risk and Background

2.105. To date there have been relatively few examples of non-conventional attacks perpetrated using chemical, biological, radiological and nuclear (CBRN) materials. However, we still need to plan for them. The potential scale and nature of any impact will be dependent on the type of substance used, as the following examples demonstrate. The most probable types of terrorist attack would use devices containing explosives of some sort.

2.106. Chemicals can be combined with explosives to increase their impact and may be used as small-scale (assassination or poisonings) or large-scale (mass-casualty) weapons. Chlorine gas, an industrial chemical, was used during the First World War to kill or debilitate troops. In the Second World War, sophisticated chemicals (such as nerve agents) were developed to be used as munitions for the battlefield. Their subsequent use during the Iran-Iraq war had a devastating impact.

2.107. Biological weapons may be used for similar purposes. Naturally occurring bacteria can be cultured for use in an attack. This could take the form of food or water poisoning or the spread of infectious diseases. Anthrax was developed and tested in the First World War as a means to contaminate animal feed but it can be developed to be used in attacks on humans. The terrorist group, Aum Shinrikyo, responsible for the chemical nerve gas attack on the Tokyo subway in 1995 is also believed to have released anthrax throughout the city. The accidental release of anthrax spores from a military research laboratory in the former Soviet Union in 1979 is believed to have killed

over 60 people. Anthrax attacks in the US in 2001 killed 5, infected 17 and are believed to have cost the US Government over $1 billion to clean up.

2.108. Radiological material could also be combined with explosives to produce a radiological dispersal device (RDD). The impact will be greater than from the use of explosive material alone because of the contamination of people and buildings that occurs from the spread of the radioactive material.

2.109. Nuclear or fissile material may be used to develop a nuclear weapon – the most devastating of all CBRN devices.

2.110. Contamination makes recovery from a CBRN attack significantly more challenging than recovery from other terrorist atrocities. The clean-up process may be protracted as well as unfamiliar and untested.

Planning by Government, the Devolved Administrations, and the emergency responders

2.111. The UK Government's overall priority, as detailed in the UK's Chemical, Biological, Radiological and Nuclear (CBRN) Strategy for Countering International Terrorism, is to protect lives by preventing a CBRN attack from occurring. Should an attack take place, we need to minimise the risk of loss of life or injury and return to normal as quickly as possible. Significant work has been, and continues to be, undertaken to address both the likelihood and impact of the terrorist use of CBRN. In particular, a great deal of work has taken place on responding promptly and effectively to an

attack, and recovering as quickly as possible from its impact.

2.112. Effective, co-ordinated and speedy response to an attack can save lives, and it is vital to manage the immediate impact of a CBRN attack effectively. Over the past five years, the UK has concentrated much of its resource and funding into improving the level of preparedness so that the emergency responders can respond quickly and safely in what could be life-threatening situations.

2.113. There is a well-developed capability among the emergency responders and other responder agencies to deal with CBRN incidents, and accordingly, there is planning for such incidents at national, regional and local level and regular testing of the plans through exercises. The emergency responders receive specialist training and are provided with protective equipment and the relevant supplies in order to enable them to operate in hazardous environments and to rescue and treat any casualties. Both the Ambulance and Fire and Rescue Services have means to decontaminate people affected by such an incident and local authorities have plans in place to open reception centres for those caught up in the incident or displaced from their homes.

2.114. The response to any incident involving hazardous materials – whether accidental or deliberate – requires a well co-ordinated multi agency response. Accordingly, there is planning for such events at national, regional, and local level and regular testing of the plans through exercises.

Further information:

Government Decontamination Service
www.gds.gov.uk

Home Office
www.security.homeoffice.gov.uk

Cabinet Office
www.cabinetoffice.gov.uk/ukresilience.aspx

Cyber security
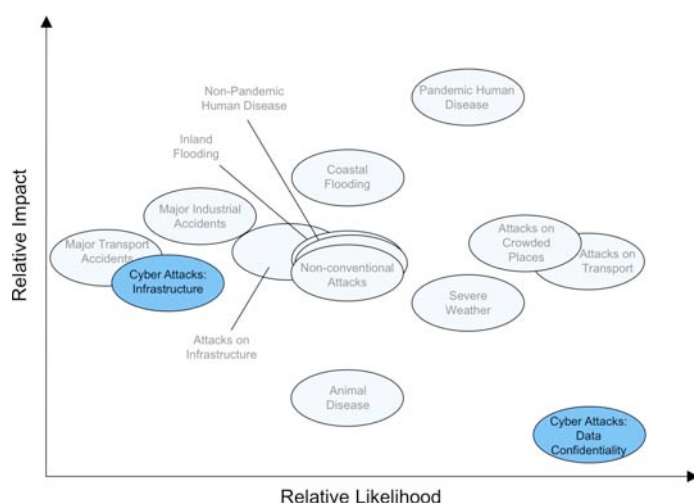
Risk

2.115. The risk and impact of cyber attacks on IT and communication systems varies greatly according to the particular sectors affected and the source of the threat. Cyber attacks have the potential to export, modify or delete information or cause systems to fail.

2.116. There is a known risk to commercially valuable and confidential information in some government and private sector systems from a range of well resourced and sophisticated attacks. Cyber attack may be

used more widely by different groups or individuals with various motives.

Background

2.117. IT systems in government departments and various organisations have been and continue to be attacked to obtain the sensitive information they hold. Some of these attacks are well planned and well executed; others represent relatively unskilled hackers.

Planning by Government, the Devolved Administrations, and the emergency responders

2.118. IT systems are increasingly interconnected with each other and with the citizen using internet technologies. This provides huge benefit in terms of convenience, efficiency and cost saving but also requires that departments effectively manage the associated risks. CESG, the Information Assurance arm of Government Communications Headquarters (GCHQ), uses its expertise in this fast moving arena of internet security to provide help and support to government in dealing with these risks. The Centre for the Protection of National Infrastructure (CPNI) provides advice on protective security measures and direct technical support to organisations within the national infrastructure.

2.119. Business continuity plans obviate the effects of any disruptions as far as possible (see section on government planning for industrial accidents).

2.120. In the wake of the update to the National Security Strategy ('Security for the Next

Generation') the UK's Cyber Security Strategy was published in June 2009. The key tenets of the Strategy are: reduce risk from the UK's use of cyber space; exploit opportunities in cyber space; and improve cyber knowledge, capabilities and decision-making. One of the key recommendations was the setting up of the Office of Cyber Security (OCS) and the Cyber Security Operations Centre (CSOC). The OCS and CSOC now serve to provide strategic leadership in the cyber domain, monitor developments in cyber space, analyse trends and improve collective response to cyber incidents.

Further information:

Centre for the Protection of National Infrastructure
www.cpni.gov.uk

CESG (National Technical Authority for Information Assurance)
www.cesg.gov.uk

Get Safe Online
www.getsafeonline.org

Central Sponsor for Information Assurance
www.cabinetoffice.gov.uk/csia.aspx

3. CONSIDERATIONS FOR BUSINESSES AND ORGANISATIONS

GENERAL ADVICE ON PREPARING FOR EMERGENCIES

3.1. The incidents described in this document, whether natural, accidental or deliberate, can cause significant disruption to businesses and organisations. Planning for these disruptive events now could be vital to the continuing success or survival of your business or organisation. The Government aims to ensure all organisations have a clear understanding of Business Continuity Management (BCM). BCM can ensure your organisation can handle an emergency, continue to function and recover effectively afterwards. Notably, the Civil Contingencies Act 2004 made it a statutory requirement for all emergency responder organisations, local authorities and NHS bodies, collectively referred to in the act as Category 1 responders, to put in place BCM arrangements.

BS25999 is a code of practice that takes the form of guidance and recommendations. The process, principles and terminology of BCM are outlined in the BS25999 code of practice which provides a basis for understanding, developing and implementing business continuity within an organisation. Further information can be found on the British Standards Institution website[15]. This section outlines the importance of BCM, and discusses how best to achieve business continuity.

A 2009 report by the Chartered Management Institute in conjunction with the Cabinet Office, 'A Decade of Living Dangerously'[16], presents findings of business continuity research. The report demonstrates how BCM can make a real difference by improving an organisation's flexibility, readiness and ultimate viability in the face of an ever-changing risk environment. However, while business continuity has vastly improved over the last ten years, large gaps remain.

3.2. BCM is a holistic approach to protecting your organisation that comprises of three distinct elements:

- The first is a thorough understanding of your organisation, identifying the critical activities that disruptions must affect the least, for example, a 'business impact analysis';

- The second is to plan to ensure that your organisation can continue in these activities during an incident and period of disruption;

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[15] http://www.bsigroup.com/
[16] http://www.cabinetoffice.gov.uk/media/153711/cmibcm_2009.pdf

- The third is the recovery phase that sets the plans to resume to normal activity as soon as possible.

3.3. The BS25999 British Standard sets out six elements to the BCM process[17], which it recommends organisations should follow to implement BCM successfully. These steps, detailed below, can be implemented by organisations of all sizes and in all sectors:

- **BCM Programme Management:** to achieve this, top-level engagement is vital as it disseminates the importance of BCM throughout the organisation.

- **Understanding the organisation** via an 'impact analysis' to identify critical business activities and what impact a disruption may have on them.

- **Determining a BCM strategy** based upon the results of the impact analysis. This should take into account resources such as people, premises, technology, supplies and stakeholders and allows an appropriate response to ensure an organisation can continue to deliver services and products to an acceptable level and within an acceptable timeframe.

- **Developing and implementing a BCM response:** this involves producing the plans that detail the steps to be taken during and after an incident to maintain and restore capabilities.

- **Exercising, maintaining and reviewing:** it is essential to ensure plans are always complete, current and accurate.

- **Embedding BCM in the organisation's culture:** this enables BCM to become part of the organisation's core values and instils confidence in all stakeholders in the ability of the organisation to cope with disruptions. For example, appropriate training should be provided to all staff to ensure they understand their place in the BCM process.
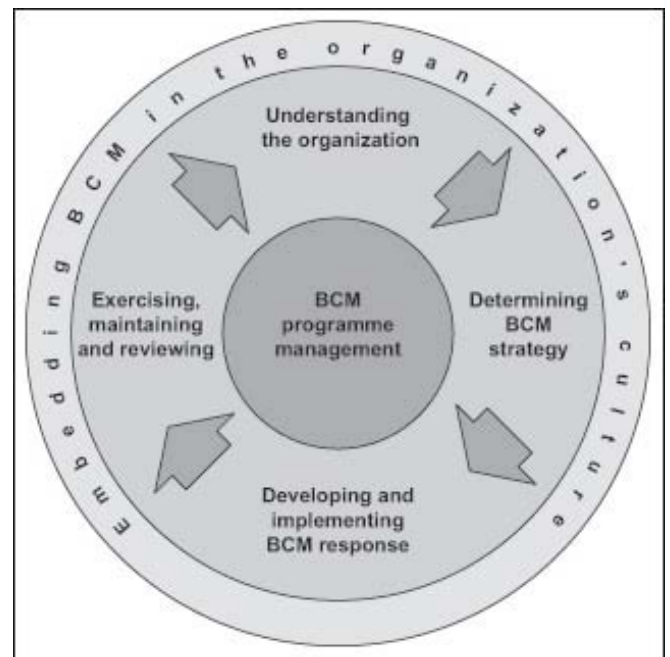
Figure 2. The six steps to embedding BCM within your organisation.

3.4. BCM is an inexpensive but essential area to any organisation and business, it should never be seen as 'done' by those who adopt it but rather a golden thread that runs through all business activities. While there is an investment in initially deciding to introduce the method, this will pay for itself over and over again in offering demonstrable evidence to foster confidence in stakeholders.

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[17] Permission to reproduce extracts BS25999 British Standard is granted by BSI. British Standards can be obtained in PDF or hard copy formats from the BSI online shop: www.bsigroup.com/shop or by contacting BSI Customer Services for hardcopies only: Tel: +44 (0)20 8996 9001, Email: cservices@bsigroup.com.

SPECIFIC CONSIDERATIONS FOR ORGANISATIONS

3.5. The Government offers pragmatic advice on how to prepare for specific scenarios and emergencies on the Business Link website[18]. For example, employers may wish to consider the following questions when developing their business continuity plans.

Loss of staff in an emergency

How would your organisation cope with significant reductions in staff?

3.6. Organisations should aim to put in place measures to maintain essential business activities in the event of high levels of staff absence. Specifically:

- Organisations employing large numbers of people should ensure that plans are capable of handling cumulative staff absence rates of up to 15% over a 2–3 week period.

- Smaller businesses, or larger organisations with small critical teams, should plan for level of absence rising to 30–35% of employees.

  These measures could include:

- Identifying the activities that are critical to their business and those which could be curtailed or stopped during periods of significant staff shortages.

- Calculating the minimum number of staff required to carry out critical activities.

- Identifying the skills and expertise required to undertake the critical activities and develop an inventory of staff skills to assist with staff redeployment.

- Identifying staff that could be moved from non-essential to critical activities and possible training requirements.

- Introducing cross training of skills across a number of individuals.

- Identifying essential posts and individuals whose absence would place business continuity at particular risk, and incorporating succession planning for key personnel.

- Carrying out mapping of business processes to allow staff to undertake different roles. This could involve: describing the flow of materials, information and documents; displaying the various tasks contained within the processes; indicating the decisions that need to be made along the chain; and showing the essential relationships and interdependencies between the process steps.

- Developing or expanding self-service and online options for customers and business partners.

3.7. Organisations may also wish to think about the specific consequences of an influenza pandemic upon their workforce. Relevant

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[18] www.businesslink.gov.uk

information can be found on the Department of Health's website[19].

Loss of transport or business location in an emergency

Does your organisation have adequate business continuity measures in place to cope with significant disruption to transport?

3.8.   Disruption to local, regional or international transport used by staff or for the delivery of supplies may affect critical activities, both directly and indirectly. To minimise the impact of this disruption, employers may wish to consider:

- Recording alternative routes and methods of transport available to staff to assess who may have difficulties getting to work, or travelling for business purposes, and who may be able to work remotely if necessary.

- Examining contingency options so that the impact of a disruption on the delivery of goods and services can be mitigated.

How would denial of access to a site or geographical area affect your organisation?

3.9.   Denial of access to a site or area can arise from a variety of incidents and range from a few hours to many months, for example, due to flooding or the accidental or deliberate release of a harmful substance. During an incident, the emergency responders will provide advice on what action should be taken. This advice should be followed at all times. However, organisations should consider developing

evacuation and invacuation plans in case staff, customers and visitors need to leave or shelter within premises in an emergency. When creating these plans, organisations may wish to:

- Consider in advance under what circumstances the organisation may need to evacuate or invacuate (confine inside) staff.

- Develop safety, first-aid or evacuation assistance teams and plans that can support staff during those circumstances.

- Develop plans to locate and account for those who were on site or in the immediate vicinity and any special arrangements required for vulnerable staff.

- Consider how to provide staff and customer communications and safety briefings in the event of an evacuation or invacuation.

- Think about how staff will be moved from the assembly point to an alternative site, a place of safety or home.

- Ensure there is a robust telephone and/or email cascade system for contacting staff, outside working hours if necessary. This could be used for providing information on where staff will be relocated in an emergency.

- Ensure that data is backed-up and kept off site and test that any backed-up data can be recovered.

- Think about the mechanisms in place to provide information to other stakeholders such as suppliers and key customers.

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[19] www.dh.gov.uk

- Prepare an 'emergency pack' of items that will help your organisation to implement its plans. This could include: copies of business continuity plans, including staff contact information and customer and supplier details; a building site plan; insurance company details; financial information; equipment, such as computer back up disks, USB memory sticks, spare keys and security codes; and a fully charged mobile telephone.

- Consider what other essential items may need to be moved to the alternative site or sites to ensure essential business functions are maintained.

- Ensure members of staff are familiar with evacuation and invacuation procedures and that these are regularly practiced.

3.10. Where possible, employers may also want to arrange an alternative back-up site and consider:

- From what sites (locations or premises) the organisation currently conducts its critical activities.

- What plant, machinery and other facilities are required to carry out critical activities.

- Whether or not the organisation would be able to continue essential activities following denial of access to all physical assets in a particular area.

- What alternative sites the organisation has access to.

- Whether the alternative sites are susceptible to the same (or other) risks as the current site.

3.11. Organisations may need to adapt working practices if premises were to be evacuated. This could involve:

- The displacement of staff performing less urgent business processes with staff performing higher priority activities.

- Remote working (for example, staff working from home or other locations).

- Ensuring that essential information is stored securely (such as in a fireproof safe), and developing plans for salvaging assets and records.

Loss of utilities and communications in an emergency

How would your organisation cope with an unexpected loss of mains electricity?

3.12. Organisations should prepare for the possibility of total loss of electricity for an entire region for up to 24 hours, and to some rural areas for up to one week. Also, in the case of reduced generational capacity, planned four hour rota cuts may be introduced and if there is an unexpected total shutdown of the grid, power will begin to be restored across the grid over three days.

3.13. Loss of mains electricity can affect lighting, heating, air conditioning and electronic equipment, and could result in data loss or corruption. However, if the electricity outage is widespread, the secondary effects can also include loss of mains water and sewerage after six hours; loss of mobile communications after one hour, depending on back-up arrangements; disruption to

financial transactions; and closure of petrol stations.

3.14. Organisations can prepare for this disruption by considering:

- Alternative methods of working which do not require mains electricity.

- Rostering the workforce to match known rota cuts.

- Closing non-essential premises in the event of prolonged loss of electricity.

- Having back-up power supplies (for example, standby generators or uninterruptible power supplies).

- Backing-up data regularly.

How would your organisation be affected by disruption to the supply of mains water and sewerage?

3.15. Organisations should have plans in place for the mains water and sewerage systems to be disrupted for up to three days. To prepare for such disruption, businesses may wish to consider:

- The health and safety needs of staff (such as the requirement for drinking water and sanitation).

- How water critical services would be affected (for example, air conditioning or computer cooling systems).

Is your organisation prepared for disruption to the availability of oil and fuel?

3.16. In certain scenarios, such as industrial action by fuel contract drivers, fuel distribution may be disrupted. To prepare for possible disruption, organisations should consider:

- The impact of fuel unavailability on supply chains and operations.

- Limiting the use of existing fuel to critical activities.

- Whether you have access to existing back-up supplies.

- The impact on staff travel arrangements.

- Encouraging flexibility in staff working practices, including increased working from home, car sharing and the use of public transport by staff.

3.17. In the event of very significant fuel disruption, the Government may implement the National Emergency Plan for Fuel, which would prioritise transport fuel resources to blue light organisations and other essential service providers, with the possibility of rationing supply to retail customers.

How would a temporary disruption to gas supplies affect your organisation?

3.18. Organisations should prepare for loss of gas supplies, which may occur following a failure or severe damage at a main gas terminal. Industrial accidents can cause short-term losses to localities; however, supply should normally be restored within days. Organisations can prepare for a loss of gas supplies by considering:

- Availability of alternative heating sources.

- Alternative methods of working such as closure of non-essential premises and movement of essential services to unaffected locations.

3.19. Loss of gas supplies could also lead to loss of electricity (with associated consequences as described above).

How would a loss of telecommunications affect your organisation?

3.20. Many organisations use telecommunication services that are reliant on the same physical infrastructure, technology and suppliers. Organisations should prepare for concurrent disruption to mobile phones and landline networks, messaging systems, internet access and video conferencing lasting up to five days. Organisations can help themselves prepare for such disruption by:

- Avoiding reliance on a single technical solution (for example, not relying solely on mobile phones for critical communications).

- Maintaining up-to-date contact details to ensure non-standard communication methods can be employed.

- Focusing on identification and maintenance of critical users' access to communications where possible.

How would your organisation cope with the loss of, or disruption to, IT systems?

3.21. Most organisations today rely on some form of IT system to perform their critical activities. To prepare for possible disruption to these systems, organisations may wish to consider:

- Which IT systems are needed to carry out critical activities.

- What information is needed to carry out critical activities.

- How this information is stored and how it is accessed.

- Maintaining the same technology at different locations that will not be affected by the same disruption.

- Ensuring data is backed-up and copies are kept securely off site.

Does your organisation have plans in place to cope with the disruption affecting key suppliers or partners?

3.22. Even if your organisation is not directly affected by an emergency, disruption to key suppliers or partners can have significant effects on your business. To minimise the impact of this disruption you may wish to consider:

- Identifying the key suppliers or partners who you depend upon to undertake your critical activities.

- Determining whether your business has any reciprocal arrangements with other organisations.

- Checking whether suppliers have arrangements in place to sustain their own service provision.

- Identifying alternative sources of supplies.

3.23. Additional guidance on how to develop business continuity plans is available on the Government's Direct Gov Website[20].

The Emergency Planning College runs courses on risk assessment and BCM.

Further information:
More information on how businesses can prepare for emergencies is available on the following websites.

General advice:

UK Resilience
www.cabinetoffice.gov.uk/ukresilience.aspx

Wales Resilience
www.walesresilience.org

Scottish Preparing for Emergencies and BCM Guidance
www.scotland.gov.uk/Topics/Justice/emergencies

Northern Ireland Civil Contingencies
www.ofmdfmni.gov.uk/emergencies

British Standards Institution
www.bsigroup.co.uk/bs25999

Emergency Planning College
http://www.cabinetoffice.gov.uk/epcollege.aspx

Specific advice across the UK:

Road traffic
www.highways.gov.uk

www.trafficscotland.org
www.roadsni.gov.uk

Rail
www.nationalrail.co.uk
www.translink.co.uk

Fuel and gas
www.berr.gov.uk
www.detini.gov.uk

Electricity
www.berr.gov.uk
www.detini.gov.uk

Water supply
www.defra.gov.uk
www.environment-agency.gov.uk
www.sepa.org.uk
www.drdni.gov.uk
www.niwater.com

Food
www.food.gov.uk

Human diseases
www.dh.gov.uk
www.nhsdirect.nhs.uk
www.scot.nhs.uk
www.dhsspsni.gov.uk
www.publichealth.hscni.net
www.hscni.net
www.cabinetoffice.gov.uk/ukresilience/pandemicflu/guidance/business.aspx

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[20] www.direct.gov.uk/en/Governemntcitizensandrights/Dealingwithemergencies/Preparingforemergencies

Animal diseases
www.defra.gov.uk
www.scotland.gov.uk/Topics/farmingrural/Agriculture/animal-welfare/Diseases
www.dardni.gov.uk

Telecommunications and IT
www.cpni.gov.uk

Health and safety
www.hse.gov.uk
www.hseni.gov.uk

Schools
www.teachernet.gov.uk/emergencies
www.scotland.gov.uk/Topics/Education/Schools
www.deni.gov.uk

Severe weather
www.metoffice.gov.uk

Flooding
www.environment-agency.gov.uk
www.sepa.org.uk
www.riversagencyni.gov.uk

Fire
www.communities.gov.uk/fire

Useful telephone numbers:

Floodline (England and Wales)
0845 988 1188

Flood Incident Line (Northern Ireland)
0300 2000 100

Scottish Environment Protection Agency Floodline service

0845 988 1188

Highways Agency – 24 hours traffic
08700 660 115

Highways Agency Information Line
08457 50 40 30

Traffic Scotland
0800 028 1414

Traffic Watch (Northern Ireland)
0845 712 3321

National Rail Enquiries
08457 48 49 50

Translink (Northern Ireland)
028 9066 6630

Foreign Office & Commonwealth Office
Travel Advice
0870 606 0290

NHS Direct (England & Wales)
0845 46 47

NHS 24 (Scotland)
08454 24 24 24

4. PREPARING YOURSELF, YOUR FAMILY AND YOUR COMMUNITY FOR EMERGENCIES

4.1. Emergencies can take many different forms, from road accidents and house fires affecting a small number of people through to widespread loss of electricity supply, flooding or an explosion affecting many thousands of people. In general, we should prepare for the impacts of all emergencies, but it is important to be aware of the specific risks we face, and understand how they could affect us so we can become more prepared to deal with their impacts. This chapter provides information on how individuals, families and communities can make themselves more prepared to deal with the impacts of emergencies.

4.2. There is a lot you and those around you can do to prepare for an emergency. Are you the sort of person who writes a list before you go on holiday to make sure you pack everything you need? Do you make arrangements with friends, family or neighbours to feed the cat, water the plants or look after the children? If you do these things as part of day-to-day life, you should also be prepared to do them to help yourself prepare for emergencies.

GENERAL ADVICE ON PREPARING FOR EMERGENCIES

4.3. What should I do in an emergency?

- **Call 999 if there** is a threat to life

- Follow the advice of local emergency responders

- Think before you act

- Never put yourself or others in unnecessary danger

- Try to get to a safe place if possible (this may not be your home)

- Check for injuries – remember to help yourself before attempting to help others

- Try to reassure others around you

If you are not involved in the incident, but are close by or believe you may be in danger:

Go in – go inside and stay away from doors and windows

Stay in – stay inside for as long as it is safe to do so

Tune in – tune in to your local radio, TV and internet news channels. Local Emergency Responders will use these to give you information about the situation. A wind up radio will mean that you don't have to replace batteries.

Case Study 1: Niki's family

''As a family, we decided that if something is familiar it's less intimidating so we started to draw up emergency plans together. We drew up a list of things we might need if we had to leave the house for a few days. Some of the things on the list were 'needs'; food, water, dry clothing, a wallet. Some of them were there to keep us occupied, such as books and toys. We each packed a bag, that was light enough for us to carry that would see us through a few days. Around 10 months after we had made up our grab bags we had a house fire, so we made good use of their contents then!''

Considerations for individuals and families

4.4.   How can I prepare my family for emergencies?

You can increase your family's ability to cope with and recover from emergencies by being more aware of the risks that could affect you, and knowing what you can do to minimise their impacts upon you:

- Have you identified the risks that might affect you at home and in your local area?

- Do you know what the emergency arrangements are at your work place and child's school?

- Have you identified somewhere your family can meet if you are evacuated or cannot return home?

- Have you identified a friend or relative you can stay with if you need to stay out of your home for a few days?

- Have you gathered essential items to use if you have to leave your home in an emergency?

- Have you gathered supplies to use if you cannot leave your home during an emergency?

- Do you have a written record of your family's contact details, and a way of reaching them if local communication networks are disrupted?

- Have you made arrangements for your pet to be looked after during an emergency if you are not able to do so?

Where can I find out more?

The Preparing for Emergencies Website[21] contains guidance to help you and your family better prepared to cope with an emergency.

Considerations for communities

4.5. How can I prepare my community for emergencies?

Some of the risks we face mean that local emergency responders may not able to get to you and your community immediately in an emergency. Their efforts have to be directed to those of greatest need. During this time, individuals and communities may need to rely on themselves, their assets and resources to ensure they are able to cope with the consequences of the emergency. Previous experience has shown that those who have spent time planning and preparing for this know what to do during, and recover more quickly from, emergencies.

Below are some steps your community can take to become more resilient:

1. Begin by considering who your community is and which communities you belong to
Community resilience is about considering what already exists around you, what you already do, and who you already talk to, or work with and think about how you could work together before, during and after an emergency.

2. Get in touch with existing local networks you can work with
There are many community groups that already work to support and enhance our communities. Think about how you could use the skills, resources and expertise of these groups to make your community more resilient.

3. Choose community emergency co-ordinators
These people represent their local community by providing the link between the community and the statutory bodies who provide emergency response services to them. Think about who would take this role in your community.

4. Establish a Community Emergency Group
There are 'Community Emergency Groups' already established in both rural and urban areas where people have recognised the need to consider what their community might need in an emergency and have set about helping themselves to be prepared. You do not have to establish a new group. You may instead wish to build in and use existing community groups and consider how they might include building community resilience into their activities.

5. Develop a Community Emergency Plan
Your local authority's emergency planning group may be able to provide you with some guidance about how to go about writing a Community Emergency Plan and how you should involve them in it.

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[21]
http://www.direct.gov.uk/en/Governmentcitizensandrights/Dealingwithemergencies/Preparingforemergencies

Where can I find out more?

The Preparing for Emergencies website contains information and a step by step guide to creating a community emergency plan, including a template, to help your community become more resilient.

> **Case study 2: Fairford Emergency Action Group**
>
> "We worked with our town council to form the Fairford Emergency Action Group. It helps us coordinate our community response to the risks that face us. In Fairford, this includes a risk from flooding, accidents blocking our narrow streets and aircraft accidents (from the nearby RAF base). We bought equipment to help in any future crisis and identified premises to be used as a Rest Centre"

Dealing with the impacts of emergencies

4.6. It is important to remember that the consequences of an emergency might be similar, even if the emergency itself is different. For example, a power cut lasting several days could be caused by a severe snowstorm or an industrial accident. However, it is useful to think about what you, your family and community can do to reduce the impact that some specific emergencies have on day-to-day life.

Loss of mains electricity or gas

4.7. Power cuts can affect household appliances, lighting and other electronic equipment. Prolonged loss of electricity can also result in loss of mains water, sewerage and mobile communications. Nationally,

schools and offices may close temporarily unless they can find alternative power sources or may have to alter their hours to accommodate rota cuts.

- Ensure you have back-up arrangements for childcare with friends or relatives in the event of schools being closed.

- Store important contact details separately from your mobile phone.

- Gather essential supplies. This could include bottled water; a battery powered or wind up radio; a torch; tinned food and alternative heating sources.

- Have a spare landline handset that plugs directly into your phone line – handsets that plug into the mains electricity will not work during a power cut.

Fuel shortages

4.8. There are several ways in which you can use less fuel in your car:

- Use alternative methods of transport (such as bus, train, bicycle or foot).

- Share lifts to work or alternate the school run with other parents.

- Plan ahead to try and avoid travelling at peak times when congestion is likely. Sitting in traffic will reduce your vehicle's fuel economy.

- Avoid allowing your car to idle. No matter how efficient the vehicle, idling consumes fuel. One minute of idling uses up more fuel than restarting your engine.

- Use your car's electrics less. Car electrics such as radios and sat navs impose an extra load on the engine, making it work harder and burn more fuel. Air conditioning can increase fuel consumption considerably.

- A poorly tuned engine can also increase fuel consumption. By properly maintaining your car and by following the recommended maintenance schedule in your owner's manual, you can maximise fuel efficiency.

Disruption to telecommunications

4.9. It is important to consider how you might cope if your landline and mobile phone were out of action. You could prepare for this happening by taking the following steps:

- Work out how your friends and family can stay in contact in the event of any disruption.

- Identify default arrangements (for example, for meeting people or collecting children from school) if you cannot get in touch with your family.

Disruption to IT

4.10. Simple measures can help prevent data loss or corruption on your computer (for example, using up-to-date anti-virus software or a firewall). Similarly, some basic steps can be taken to reduce the impact of losing access to data:

- Make back-up copies of important electronic files and store them in a safe place.

- Create paper versions of the important documents stored on your computer.

Disruption to mains water supplies

4.11. There are several measures that can be taken to prepare for disruption to mains water supplies. These include:

- Store some bottled water in your home.

- Make arrangements to use friends' or relatives' facilities if you can't use your own.

- Use water more sparingly.

Transport disruption

4.12. The following considerations may help you prepare for disruption to transport:

- Put in place back-up arrangements for getting to work and for other essential journeys (such as taking the children to school).

- Make arrangements so that you can work from home if required.

- Work out alternative routes to get to your destination before you set off on your journey.

- Tune in to the local radio, switch on the television or search the internet for travel advice before you set off.

Human diseases

4.13. People can adopt simple and basic hygiene measures to protect themselves against disease and to reduce the risk of spreading viruses. Measures may include:

- Stay at home when ill, provided there is no need for you to go to hospital or visit a doctor. You may wish to contact NHS Direct or NHS 24 for further advice on what to do.

- Cover the nose and mouth with a tissue when coughing or sneezing.

- Dispose of dirty tissues promptly and carefully.

- Wash your hands frequently with soap and warm water to reduce the spread of the virus from the hands to the face or to other people, particularly after blowing the nose, disposing of tissues or coming in from outside.

- Regularly clean frequently touched hard surfaces, such as kitchen worktops and door handles.

Loss of access or damage to your home

4.14. Considering the following points may help you prepare for possible loss of access or damage to your home:

- Keep copies of important documents (such as insurance details) stored at another location.

- If your home is as risk of flooding, plan to move valuable items to a higher floor or different location to avoid damage.

- Consider where you might move your car to avoid it being damaged.

- Identify somewhere your family could meet if you cannot return to your home.

- Identify a friend or relative you can stay with if you need cannot stay in your home.

- Make arrangements for your pets.

- Prepare a list of useful numbers (for example, the emergency responders and your insurance company).

- Gather essential items you may need to take with you. This could include personal documents, your insurance policy, emergency contact numbers, a torch, a battery or wind-up radio, mobile phone, first aid kit and blankets.

- Identify neighbours who may be particularly vulnerable and what you could do to help them if they were denied access to their home.

4.15. Specific information on how to prepare for flooding is available on the Environment Agency's website. It includes guidance on preparing your home or business for flooding, including how to access Floodline Warnings Direct to have warnings sent to your landline or mobile phone.

Further information

Information on how to prepare for and respond to emergencies is available on the following websites.

General advice:

The 'Preparing for Emergencies' booklet, translated into 18 languages, is available at: www.direct.gov.uk/en/governmentcitizensandrights/dealingwithemergencies/preparingforemergencies

www.nidirect.gov.uk/index/government-citizens-and-rights/dealing_with_emergencies/preparing-for-emergencies.htm

Specific advice across the UK:

Road traffic
www.highways.gov.uk
www.trafficscotland.org
www.roadsni.gov.uk

Rail
www.nationalrail.co.uk
www.translink.co.uk

Fuel and gas
www.berr.gov.uk
www.detini.gov.uk

Electricity
www.berr.gov.uk
www.detini.gov.uk

Water supply
www.defra.gov.uk
www.environment-agency.gov.uk

www.sepa.org.uk
www.drdni.gov.uk
www.niwater.com

Human diseases
www.dh.gov.uk
www.scot.nhs.uk
www.nhs.uk
www.dhsspsni.gov.uk
www.publichealth.hscni.net
www.hscni.net

Animal diseases
www.defra.gov.uk
www.dardni.gov.uk

Telecommunications and IT
www.cpni.gov.uk

Severe weather
www.metoffice.gov.uk

Flooding
www.environment-agency.gov.uk
www.cabinetoffice.gov.uk/thepittreview
www.sepa.org.uk
www.riversagencyni.gov.uk

Fire
www.communities.gov.uk/fire/

Useful telephone numbers:

Floodline (England and Wales)
0845 988 1188

Flood Incident Line (Northern Ireland)
0300 2000 100

Highways Agency – 24 hours traffic
08700 660 115

Highways Agency Information Line
08457 50 40 30

Traffic Scotland
0800 028 1414

Travel Watch (Northern Ireland)
0845 712 3321

National Rail Enquiries
08457 48 49 50

Translink (Northern Ireland)
028 9066 6630

Foreign and Commonwealth Office Travel Advice
0870 606 0290

NHS Direct (England and Wales)
0845 46 47

NHS 24 (Scotland)
08454 24 24 24

5. THE RISK ASSESSMENT PROCESS

National Risk Assessment

5.1.   Since 2005, the Government has carried out a classified assessment of the risks facing the UK: this is the National Risk Assessment (NRA), and it is the basis for the public National Risk Register.

5.2.   The NRA process uses historical and scientific data and the professional judgements of experts to analyse the risks to the UK. There are three stages to this analysis: identification of risks; assessment of the likelihood of the risks occurring and their impact if they do; and comparison of the risks.

Regional and Local Risk Assessment

5.3.   The risks we face depend upon where we live and work. For example, risks such as coastal flooding will be limited to specific parts of the country while the likelihood and impact of major industrial accidents will depend upon the type of industry in an area. In England and Wales, Government Offices for the Regions, through their Regional Resilience Teams, produce annually a classified regional risk assessment. Similarly, Category 1 responders[22] at the local level in England and Wales are required to carry out a risk assessment under the Civil Contingencies

Act 2004. Both these regional and local risks assessments are informed by the national-level view of risks but produce a specific risk assessment that reflects, as far as possible, the unique characteristics of each region and local area. It is worth noting that there is a two way flow of information: local and regional risk assessments are reviewed and feed back into the National Risk Assessment.

Community Risk Registers

5.4.   The Civil Contingencies Act 2004 also requires emergency responders in England and Wales to co-operate in maintaining a public Community Risk Register. These are approved and published by Local Resilience Forums which include representatives from local emergency responders as well as public, private and voluntary organisations. You should familiarise yourself with both this National Risk Register, which outlines broadly the risks faced by the UK as a whole, and your local Community Risk Register (which can be accessed via www.direct.gov.uk), which will capture how these risks relate to your local area.

What about events outside the UK?

5.5.   The National Risk Assessment, and therefore the National Risk Register, only look at risks of emergencies in the UK, not throughout the world. Many of the risks

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[22] Category 1 responders are listed in the Civil Contingencies Act; they are the main organisations involved in most emergencies at the local level, for example, the emergency services.

outlined in this document, such as those arising from terrorism and major human or animal disease outbreaks, may have origins outside the UK. As the National Security Strategy Update 2009 makes clear, working on a multilateral basis is one of the principles underlying the UK's approach to security challenges overseas. The UK works with international partners and institutions – for example UN agencies like the World Health Organisation, EU members, the G8 and the Organisation for Economic Co-operation and Development – to mitigate the risks and to share best practice on how to respond. Further details of international cooperation in these areas can be found in the National Security Strategy Update 2009, or on the websites of the Foreign and Commonwealth Office and other relevant government departments.

Identifying risks

5.6. The first stage in the National Risk Assessment process is to identify the risks. This is done by consulting a wide range of experts across government, so as to ensure a comprehensive picture of the potential accidents, natural events (hazards) and malicious attacks (threats) that could cause significant harm and disruption to the UK.

Assessing risks

5.7. The next stage is to assess the likelihood and impact of each risk. To assess the likelihood of hazards, historical, statistical and scientific data are used. Where possible, the assessment looks forward to take account of known or probable

developments over the next five years that would affect the likelihood.

5.8. The likelihood of terrorist or other malicious attacks is assessed more subjectively. The willingness of individuals or groups to carry out attacks is balanced against an objective assessment of their capacity – now and, as far as possible, over the next five years – and the vulnerability of their intended targets.

5.9. In each case, the question being asked is: how likely is it that this type of emergency will happen, somewhere in the country, sometime over the next five years? The NRA does not calculate the chances of these events happening in one particular place, or to one particular community or individual.

5.10. In terms of impact, the National Risk Assessment takes account of the following effects:

- **The number of fatalities** that are directly attributable to the emergency

- **Human illness or injury** over a period following the onset of an emergency

- **Social disruption** – the disruption to people's daily lives. Ten different types of disruption are taken into account, from an inability to gain access to healthcare or schools to interruptions in supplies of essential services like electricity or water and to the need for evacuation of individuals from an area.

- **Economic damage** – the effect on the economy overall, rather than the cost of repairs.

5.11. In addition, the National Risk Assessment (but not, at present, Community Risk Registers) also attempts to estimate the psychological impact emergencies may have. This includes widespread changes to patterns of behaviour or anxiety, loss of confidence or outrage that may be felt by communities throughout the country as a result of an emergency.

Comparison of the risks

5.12. In planning for emergencies, local responders have to decide what types of risk, and what levels of consequence, to plan for. Putting a great deal of effort into preparing for risks that are either very unlikely to happen or are likely to cause relatively minor damage is unlikely to be the best use of the time and resources available to prepare. Priority is instead given to high risks: risks that are both relatively likely and could have a serious impact.

5.13. Apart from identifying the highest risks, the Government also provides guidance in the form of planning assumptions, at a national level and to the Devolved Administrations and LRFs, on the range and type of damage and disruption that might result from a selection of the higher risks. This ensures that planning is mostly non-specific and can be adapted to different scenarios when necessary.

5.14. Different types of planning assumptions are needed by different groups:

- Emergency responders, and regional and local government planning for and carrying out their duties in an emergency. Planning assumptions are issued to provide

information, for example on the numbers of casualties that might need treating, or how many people might need to be evacuated or found shelter. These are on a restricted distribution because some of the information they contain is classified for national security reasons.

- Government departments and agencies and the Devolved Administrations who lead on improving the resilience of the country to particular types of emergency. They receive classified planning assumptions designed to provide the basis for assessing whether existing plans, infrastructure, equipment, supplies and training are adequate; and, if not, for introducing capability enhancements in the areas for which they have national responsibility.

- Chapters 3 and 4 of this document now provide similar information for organisations, individuals, families and communities on an unclassified basis.

5.15. At the national level the planning assumptions are used to set the parameters for the UK Resilience Capabilities Programme which co-ordinates planning and capability building for resilience across the UK (more information on this programme can be found on the UK Resilience website[23]).

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[23] www.cabinetoffice.gov.uk/ukresilience.aspx

What the National Risk Assessment does not cover

5.16. The National Risk Assessment and hence the National Risk Register do not cover:

- Longer term or broader global risks – like climate change or competition for energy – that might affect the safety and security of citizens of the UK in the period beyond the five years of the National Risk Assessment. These are the subject of separate programmes of work.

- Risks of major emergencies occurring overseas unless they have impacts that directly and seriously damage human welfare or the environment in the UK, in accordance with the definition of emergency in the Civil Contingencies Act[24].

- Everyday occurrences – like street crime – that can cause extended misery and damage over a long period of time, but are not emergencies that require central government to be directly involved in the response.

Risk assessment in other countries

5.17. An increasing number of countries are undertaking national risk assessments of various types, but as yet few, if any, are as well established and wide in scope as the UK approach.

5.18. The UK will continue to work with other countries and organisations to share expertise and learn from others' experiences in developing risk assessments.

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[24] www.cabinetoffice.gov.uk/media/132428/15mayshortguide.pdf