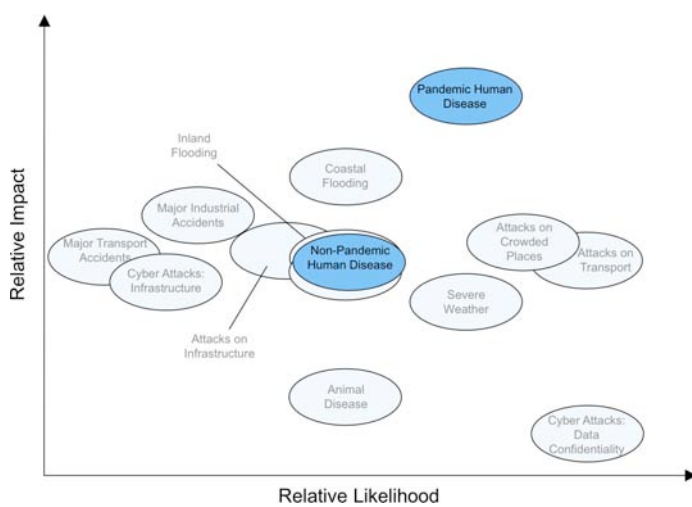


2. RISKS

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 Organization² 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

² www.who.int/

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.

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.

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

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>

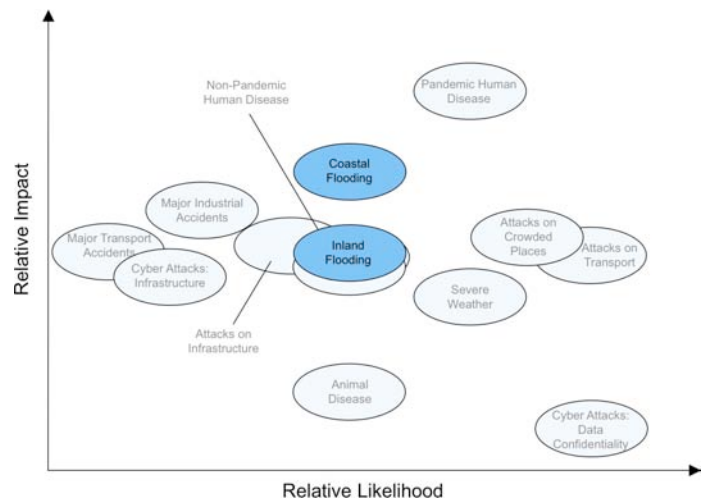
<http://www.fco.gov.uk/en/travel-and-living-abroad/travel-advice-by-country/>

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.

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 Review⁴ 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

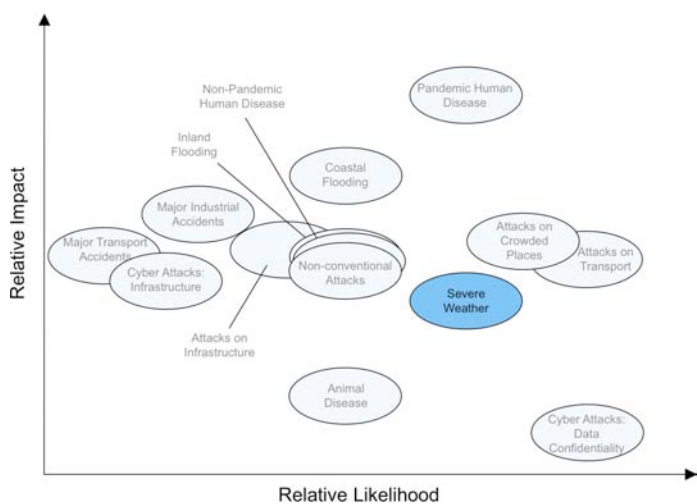
<http://www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1158934608011>

Northern Ireland Executive

http://www.dhsspsni.gov.uk/flooding_guidance.doc#Flooding1_FAQs

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 system⁵ 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 advice⁶.

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.

Further information:

Met Office website for up to date weather warnings

www.metoffice.gov.uk

Advice on what to do when severe weather is forecast

www.metoffice.gov.uk/weather/uk/advice/index.html

Heat Health Watch

www.metoffice.gov.uk/weather/uk/heathealth

Information on water restrictions and what to do in a drought

www.environment-agency.gov.uk/homeandleisure/drought/

Defra

www.defra.gov.uk/corporate/about/what/contingency

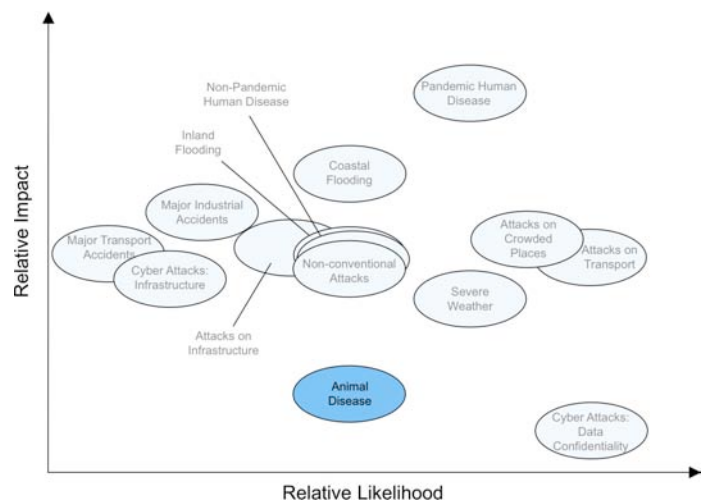
Scottish Environment Protection Agency

www.sepa.org.uk

Northern Ireland Executive

http://www.doeni.gov.uk/index/protect_the_environment/water.htm

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.

www.scotland.gov.uk/Topics/farmingrural/Agriculture/animal-welfare

For health issues relating to zoonotic diseases

www.hpa.org.uk

www.publichealth.hscni.net

For food safety advice

www.food.gov.uk

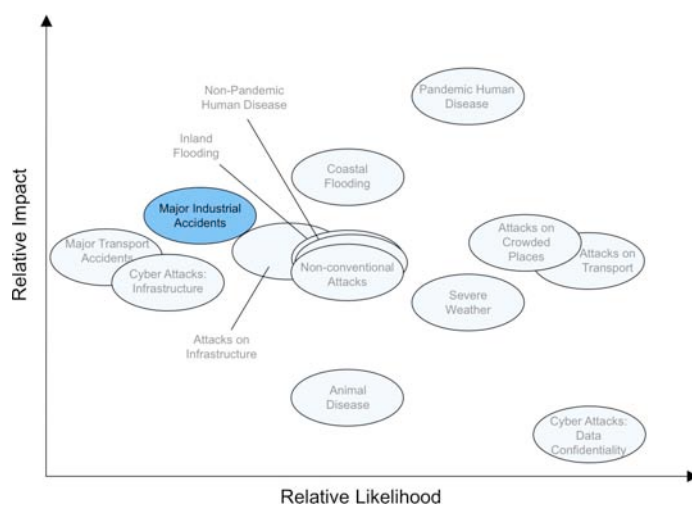
Planning by Government, the Devolved Administrations, and emergency responders

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

Further information:

For animal health and welfare

www.defra.gov.uk/foodfarm/index.htm

www.dardni.gov.uk/index/animal-health.htm

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 Inspectorate⁷ 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

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.

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.

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

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 substances⁸.

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 infrastructure⁹ and set up the Radioactive Incident Monitoring Network (RIMNET)¹⁰. The RIMNET system is a network of 91 monitoring stations¹¹ 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 Service¹² 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

⁸www.hse.gov.uk/comah

⁹www.defra.gov.uk/corporate/about/what/contingency/topics/environment.htm

¹⁰www.defra.gov.uk/evidence/statistics/environment/radioact/radrimnet.htm

¹¹<http://www.defra.gov.uk/evidence/statistics/environment/radioact/radrimnet.htm>

¹²www.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 organisations¹³. 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 Resilience 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

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

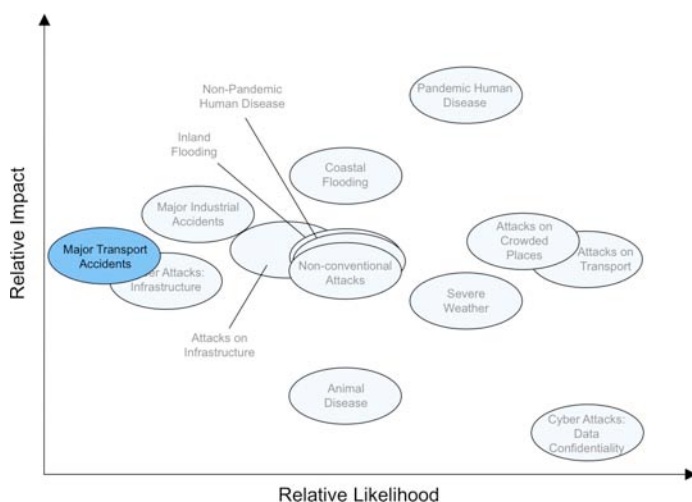
The Government's National Emergency Plan for Fuel
www.og.decc.gov.uk/downstream/emergencies/down_emerge.htm

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



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.drndni.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

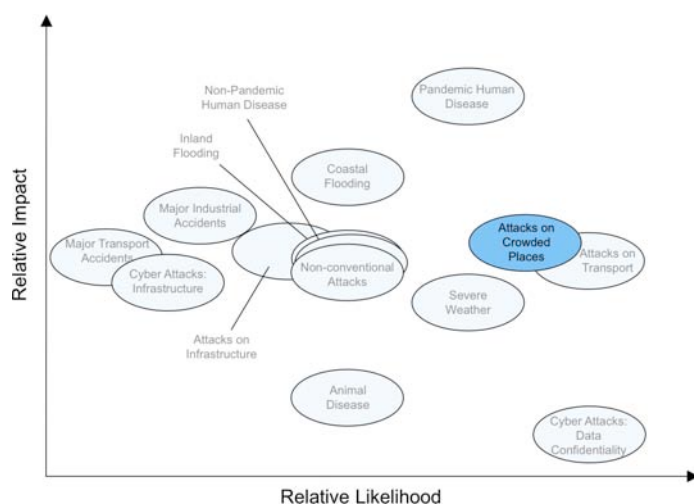
SOCA – UK Threat Assessment

www.soca.gov.uk/assessPublications/UKTA0809.html

National Security Strategy

http://www.cabinetoffice.gov.uk/reports/national_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 2010¹⁴. 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

¹⁴ <http://security.homeoffice.gov.uk/news-publications/publication-search/protect/crowded-places-guidance/index.html>

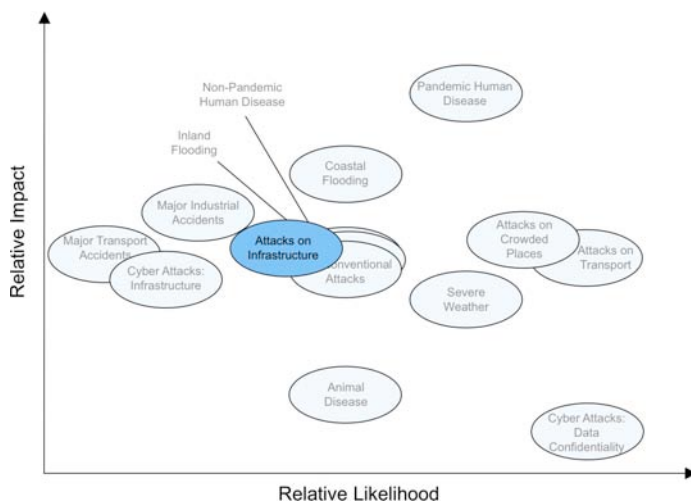
National Counter Terrorism Security Office

www.nactso.gov.uk/crowdedplaces.php

Home Office

www.security.homeoffice.gov.uk

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.

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

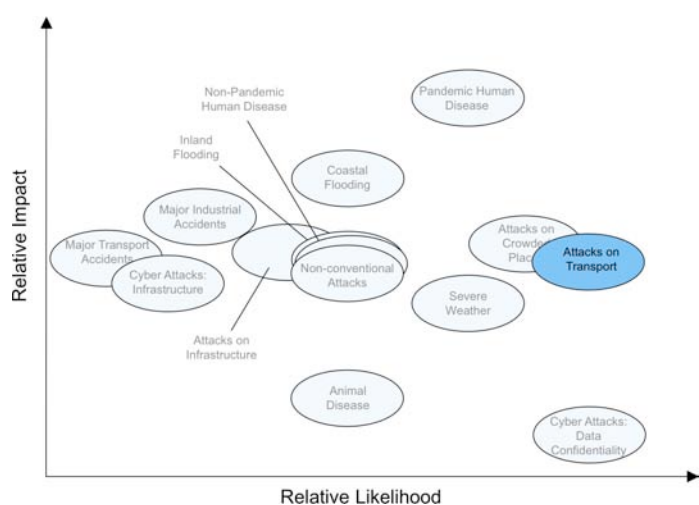
2.96. Over the past 20 years there have been a number of attacks by terrorists against the aviation industry. These include the 1988 Lockerbie attack involving a Pan Am flight,

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

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:

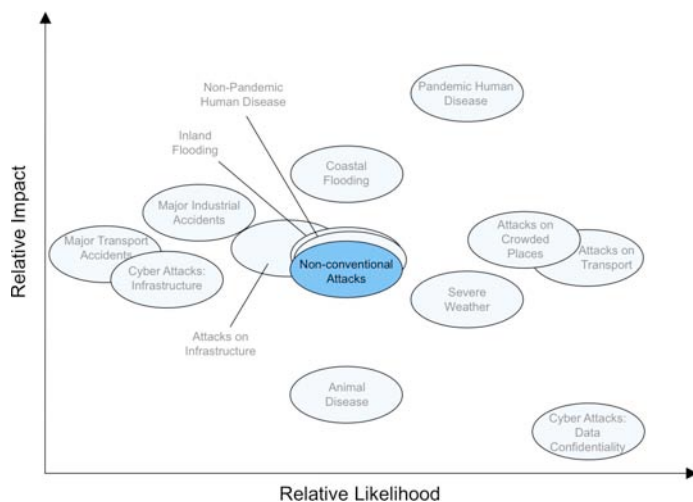
Department for Transport

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

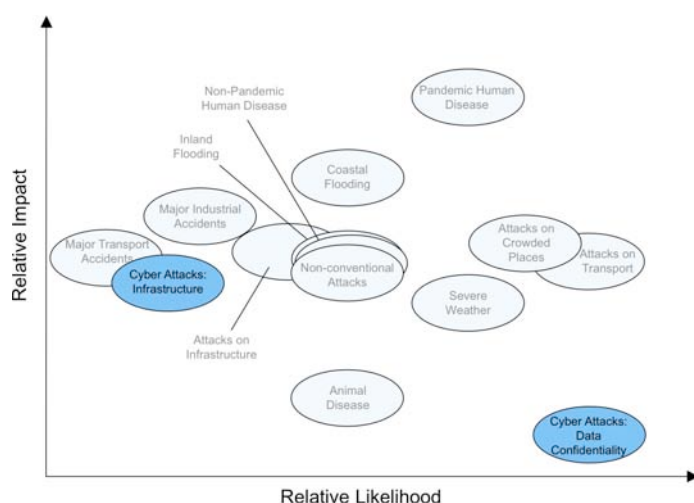
Home Office

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