



City of London Local Risk Register

2016 revised edition

Document History

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Context

Risk assessment is the first step in developing the required capabilities to prepare for and reduce the risk of emergencies. It ensures that emergency responders make plans that are sound and proportionate to the risks faced by the community they serve. The Civil Contingencies Act 2004 places a duty on all emergency responders to carry out risk assessments.

The National Risk Assessment (NRA)

The National Risk Assessment (NRA) is produced every two years and it identifies all the major hazards and threats the UK should prepare for within a five-year horizon. Reasonable Worst Case Scenarios are the basis for the assessment. They are developed by the lead department for each risk and are informed by historical and scientific data, specialist modelling, trend surveillance and expert judgment. This process is led by the Civil Contingencies Secretariat within the Cabinet Office and it involves government agencies, scientists and academics, as well as operators of critical national infrastructure. It covers malicious and non-malicious events that could cause harm and disruption to the UK. The NRA is then used as the basis for capabilities-based planning to support emergency preparedness and response from national to local level.

The NRA is classified at "Secret" and access needs to be arranged via the City of London Police Counter Terrorist and Special Branch. The Cabinet Office also produces a public version of this assessment which is published online ([the National Risk Register](#)).

The pan-London Risk Register

This risk register is used by the London Resilience Partnership as the basis for developing risk based emergency response capabilities, allowing the partnership to prioritise its resilience activities effectively.

The risks included in the London Risk Register are based on the 'reasonable worst case scenarios' developed nationally. The London Risk Register provides an assessment of the likelihood and impact of these scenarios for Greater London.

The London Risk Register is maintained by the London Risk Advisory Group. This group includes local authorities, police forces and other blue light services, the National Health Service, Public Health England, Environment Agency and calls on other as necessary. The London Risk Register is published online by the London Resilience Partnership.

The City of London Risk Register

Introduction

The City of London Risk Register provides information on the most impactful emergencies that could happen in the Square Mile or elsewhere in the UK but with significant impacts on the Square Mile. This assessment includes a details of how likely they are to happen and the impacts if they do. This includes the impacts to people, their houses, the environment and local businesses. This document is designed to inform the Square Mile community about the risks that could occur that could impact their daily activities. It is intended as a tool for driving better preparedness across the whole community.

Looking at all of the risks together can also help emergency services, local authorities and other organisations plan their joint response. This risk register aims to inform the decisions these agencies make on emergency preparedness and disaster risk reduction.

Scope

The City of London Risk Register focuses on serious emergencies that could happen, using the National Risk Assessment and the Greater London Risk Register as the starting point.

An emergency is defined in the Civil Contingencies Act 2004 as:

- An event or situation which threatens serious damage to human welfare in a place in the United Kingdom
- An event or situation which threatens serious damage to the environment of a place in the United Kingdom
- War or terrorism which threatens serious damage to the security of the United Kingdom.

Emergencies covered by this register are divided into two broad categories:

1 Collectively known as **hazards:**

Accidents
Natural events

2 Known as **threats:**

Malicious attacks

Methodology

The City of London Risk Register follows the same method used at a Pan-London level for assessing and prioritising risks. The City of London Resilience Forum, has the overall responsibility for identifying the threats and hazards that, in their view, could give rise to an emergency within the Square Mile in the next 5 years.

The City of London Risk Register, in line with the National Risk Assessment methodology, assesses the impact of risks against a set of impact scales that have been devised to take into account the definition of an emergency given in the Civil Contingencies Act (2004). Five impact dimensions have thus been identified:

- the number of fatalities that are directly attributable to the emergency
- illness or injury over the period following the onset of the emergency
- levels of social 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 such as food, water and fuel, and to the need for evacuation of individuals from an area
- economic harm – the effect on the economy overall, rather than the cost of repairs
- the psychological impact that emergencies may have, including widespread anxiety, loss of confidence or outrage that communities may experience

Each of the dimensions listed above is scored on a scale of 0 to 5 (with 5 being the most significant one). The overall impact, which indicates the relative scale and extent of all the impacts, is the mean of these five scores.

The likelihood of each risk is calculated at a national level, using both historical data and numeric modelling. Scientific expertise is also sought at a National and Pan-London level to inform the development and review of risks.

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 capability – now and, as far as possible, over the next five years – and the vulnerability of their potential targets.

In accordance with current practice across Greater London, each hazard is assigned a Risk ID which is consistent with the one assigned to that risk nationally. For this reason, the numbers for these risks are not consecutive (as some risks that have been identified nationally are not relevant to the City). Threats are assigned a Risk ID which is aligned to the Greater London's Risk Register system.

Risk matrix

		Likelihood				
		1	2	3	4	5
Impact	Catastrophic 5		X5, H41			
	Significant 4		HL12, H45		H23	
	Moderate 3		HL14, H2, H57, X6	H18, H24, X2, X4	HL42, X1	X3
	Minor 2		H19	H9, H35	H17, H56	X7, H30, H40
	Limited 1					
		Low	Medium Low	Medium	Medium High	High

Risk Priority

Very High
High
Medium
Low

Risk ID	Risk Title
H9	Large toxic chemical release
HL12	Accident involving transport of hazardous chemicals
HL14	Road accident involving transport of fuel/explosives
H17	Storms & Gales
H18	Low temps and heavy snow
H19	Major coastal and tidal flooding
H21	Severe inland flooding
H23	Influenza Pandemic
H24	Emerging infectious diseases
H30	Loss of emergency fire and rescue cover because of industrial action
H35	Industrial action by key rail or London Underground workers
H40	Localised telecommunications failure
H41	National electricity failure (Blackstart)
H45	Technical failure of regional electricity network
H48	Heat Wave
H56	Severe Space Weather
H57	Large scale public disorder

Risk ID	Risk Title
X1	Attacks on crowded places
X2	Attacks on Transport Systems
X3	Attacks on Infrastructure
X4	Small scale Unconventional Attacks
X5	Catastrophic Unconventional Attack
X6	Cyber attacks: infrastructure
X7	Cyber attacks: data confidentiality

Common consequences

Through highlighting likely common consequences throughout the top risks identified in this assessment, this document aims to avoid duplication and provide a

Disruption to transport affecting:

- The ability of people to get to work or get home
- Delivery of goods, materials and services (including public services)
- Rail and tube services
- Road traffic

Disruption to utilities affecting:

- Ability to maintain services and a working environment
- Ability to remain at home
- Communication with others (including customers, staff and loved ones)

Financial costs including:

- Cleaning and building maintenance
- Building repairs and site recovery
- Rising insurance premiums and excess
- Legal fees
- Temporary staff replacement and staff welfare
- Emergency aid, assistance and charitable contributions

quick reference guide of those impacts which are common to most risks faced by the Square Mile.

What to prepare for?

Disruption to your own resources:

- Overstaffing/resourcing (staff wishing to stay and help, rather than go home and rest to take over the next shift).
- Understaffing/supply chain disruptions (inability of staff to get to work or unwillingness of staff to go back to the area following an incident).
- Over-exhaustion of staff who have not been able to have enough rest.
- Competing demands for services/supplies required for recovery.

A summary of the top consequences for each risk theme can be found in the Business Resilience Planning Considerations.

Top Risks

Severe Weather

The disruptive effects of specific types of severe weather can vary widely depending on the event. For common consequences of the various types of severe weather, refer to the first section of this document.

The majority of the City of London is classed as being at Very Low risk of flooding from river and sea flooding. However, parts nearer the Thames, including Walbrook Wharf, are identified as Low risk and therefore have a chance of flooding of between 0.1% and 1% in any given year. For the Square Mile, the most relevant type of flooding is the one linked with heavy rain, known as surface water flooding (refer to the City of London Strategic Flood Risk Assessment for further details).

What to prepare for? -Flooding

- Damage to property (water ingress or floating vehicles/debris hitting your building).
- Sewers bursting (contaminated water entering your building).
- Pedestrian subways filled with water.
- In worst case scenarios it could take up to five years to fully recover from the damage to the transport infrastructure (including the Tube).

What to prepare for? -Storms and gales

- Trees blown down blocking streets/access to buildings and crushing cars.
- Collapse of scaffolding, cranes, billboards or other temporary structures.

What to prepare for? -Low temperatures and heavy snow

- Very low temperatures pose a health risk to vulnerable people.
- School closures.
- Ice/snow on pavements and accumulating on surfaces or temporary structures.
- Temperature in offices falling under minimum acceptable limits (around 16°C) and forcing building closures.

What to prepare for? -Heat waves

- Very high temperatures pose a health risk to your vulnerable staff or their family members.
- Increased power demand as a result of building cooling.
- Members of the public seeking refuge in your building's public areas.

What to prepare for? -Drought

- Burst water mains due to lack of water pressure.
- Water shortages leading to building closures due to health and safety concerns.

Electricity network failure

Being part of the critical national infrastructure, the electricity network is built to withstand a series of impacts, including winter weather. Robust emergency plans are in place to help it deal with lightning, strong winds, flooding and other incidents that can sometimes affect power supplies. The resilience of the power network serving the City of London is rated as one of the best in the world, with only a 3% failure rate on any one component.

Recognising this level of resilience, this section deals with the unlikely risk of failure to the electricity supply that could occur as a consequence of industrial accidents, technical failure, severe weather or malicious activity.

What to prepare for?

Some consequences of electricity supply disruption are specific to large-scale disruptions, but most would still be relevant for localised disruptions (which are more likely to occur).

- Widespread darkness (your building might stand out as one of the few buildings with power).
- Excess demand could lead to shortages of fuel for generators.
- Increased calls for people trapped in lifts (emergency services will attempt to recover costs for this type of call).

- Loss of electricity supply to areas not on generators / whole building (if no generators on-site).
- Disruption to key safety features of your building (lighting, fire alarms, public announcements system, CCTV, access control system, etc.).
- Alarms being triggered / security features defaulting to open mode.
- Businesses with sufficient generators could be asked to assist in taking demand off emergency power being sent out by power supply companies.
- Knock-on impacts on other infrastructure (disruption to telecommunications, specially voice-over-IP systems and mobile network; road signals, transport network, petrol stations, etc.).
- Knock-on impacts on other utilities (such as water) and their ability to provide a service.
- Disruption to cash machines and point of sale terminals.
- Staged resumption might see fluctuations in power supply.
- Energy supply shortage or transmission constraints leading to rota disconnections.
- Uncontrolled shutdown of key business systems (leading to data corruption / loss of data).

Telecommunications failure

The key impacts covered in this theme centre on significant disruptions leading to loss of service by more than one provider (including land lines and mobile networks) for several days (mainly as a result of widespread power outages).

Significant disruptions affecting one provider could affect other operators due to the level of interdependencies within the sector. It is also anticipated that a major incident in London will place the mobile telecommunications network under a level of stress similar to those experienced during New Year's Eve, potentially over a longer period of time.

What to prepare for?

- Loss of communications infrastructure may impede your ability to communicate with others or receive instructions from the emergency responders.
- 'Home working' as a recovery solution might be unavailable.

Direct impacts involve the loss of the following:

- Voice communications
- SMS / MMS messaging
- Internet

The community might also experience disruption to the following:

- Machine-to-machine data
- Cash machines
- Chip and PIN machines (and other point of sale terminals)
- Smart metering (gas, electric and water)
- Vending machines - restock information
- Ticket machines - including payment systems

Other systems that could also be affected include:

- Traffic light control and traffic monitoring systems
- Bus monitoring and time information at bus stops
- Water monitoring, in pipes, rivers, reservoirs and at pumping stations
- Electricity use monitoring and remote switching
- Panic alarms for vulnerable people
- Panic alarms for victims of crime
- Electronic TAGs for criminals
- Cash in transit tracking
- Parcel tracking for courier services

Human diseases (including pandemic flu)

Human diseases can present themselves in a wide range of forms. For this reason, the impacts associated with these can vary considerably from one outbreak to another.

Even though the outbreak of H1N1 influenza in 2009 (known as 'swine flu') was milder than the reasonable worst-case scenario that the UK Government's plans considered, this does not mean the severity of future pandemics will be the same as the 'swine flu' outbreak. The reasonable worst-case scenario for assessing the potential impacts of this risk is based on the 1918–19 'Spanish flu' outbreak.

A pandemic is potentially a unique event in terms of planning in that it would result in cases of disease across the whole world. This could have particular challenges for multinational businesses.

Even though pandemic influenza remains the most significant civil emergency risk for the United Kingdom as a whole, seasonal diseases (such as Norovirus) could also present a risk to businesses. These diseases are not likely to cause death but their ability to spread through the workforce and lead to staff absenteeism shouldn't be underestimated.

What to prepare for? - Pandemics:

- Large-scale staff absenteeism (up to 10% of the workforce during the peak, and 50% over the duration).
- A pandemic wave could last 15 weeks, with multiple waves.
- Staff absences could affect key critical business cycles and distribution points.
- Whole teams affected at one time.
- Impacts not limited to a single geographical region (consider impact on international branches of your business/headquarters or the operations of your critical suppliers).
- Staff disruptions in key infrastructure providers could affect delivery fleets, public transport, specialist maintenance contractors, outsourced media relations/press teams, etc.
- Impacts on the wider population could result in the following:
 - School closures and the resulting absence of staff.
 - Key staff unwilling or unable to travel to work (staff who are worried despite being well).
 - More staff requiring time off to care for relatives (not just the traditional staff with caring responsibilities).
 - Staff requiring compassionate leave/counselling for dealing with bereavement.

- Increase in business activity (for companies providing services like health insurance or medical supplies or within specific sections within the business, such as HR).
- Staff shortages in certain business-protection functions could lead to changes in the threat landscape (potential increase in opportunistic attacks seeking to exploit financial, cyber-security or physical security vulnerabilities).

What to prepare for? - Outbreaks of infectious diseases

(including seasonal illnesses such as Norovirus and exotic diseases)

- Disruption usually lasts for 48-72 hours but re-infection is a possibility (staff still in the contagious stage of the illness returning to work).
- Whole teams may be affected at the same time (contagion amongst those working in close proximity).
- Impact could be limited to a single business (so your business might not be able to benefit from a relaxation of rules as there is no wider systemic impact).
- Norovirus is a seasonal illness that occurs every year. Once caught, it results in 48-72 hours sickness, yet return to work should be delayed for 48 hours after last vomiting. Having caught it once does not provide immunity for more than three months. Half of the people exposed to the virus will catch it.

Civil disorder

The risk of public disorder is something most organisations in the Square Mile have been exposed to in one form or another. The ways in which public order incidents manifest themselves can prove challenging to both law enforcers and businesses/organisations. It often occurs following a trigger event, yet it is not always possible to identify it as such at the time it happens. The unrest that is created from this trigger can result in further sporadic actions, which could include rioting, looting, vandalism, protest, violence and arson.

What to prepare for?

- Disruption to deliveries/collections (including mail, office supplies and refuse collections).
 - Interruptions to your supply chain.
 - Presence of trespassers/unauthorised people in your own premises.
 - Demonstrators inside business premises.
 - Public transport disruptions (including heavy traffic).
 - Potential for arson attacks on company vehicles or other corporate assets (including buildings).
 - Broken glass (and other damage to building) at street level and lower floors.
 - Misinformation caused by rumours spread on social media/networking sites, news channels, etc.
 - Staff absences (both linked to the transport disruptions or due to disorder near their homes).
- Additional support required by lone workers or by staff living in affected areas (this could include help with temporary relocation).
 - Reputational impacts of staff taking part in violent disorder (could even be wearing corporate uniforms).
 - Difficulty in gaining access to key markets (like the Lloyd's insurance market).
 - Multiple invocations of recovery sites (this could lead to syndicated space provision not being available).
 - Neighbours protecting their property better could mean your building becomes a more vulnerable target.
 - Difficulties protecting large glass areas, boarding-up properties, fencing areas or deploying crowd barriers at short notice.
 - Blue light services' resources might be tied up dealing with the situation elsewhere or access to premises could be made difficult due to security concerns – the police would need to provide protection to fire brigade and ambulance service crews attending the scene of disorder (these could cause delays to their response).
 - Delays to extra security staff (additional staff required at short notice could be affected by transport disruptions or the supplying company might not have enough resources to meet a peak in demand).

- Following the disorder the following impacts could be expected:
 - Need to arrange for protection to damaged areas of buildings.
 - Extra cleaning costs.
 - Legal costs.
 - Insurance claims / requirement to review cover.
 - Limited availability of specialist glass providers/stocks, leading to delays in replacing damaged glass panels.
 - Similar problems replacing other components of building damaged during the disorder.

Terrorism

The Square Mile is a safe place in which to live and work. Nevertheless, it is prudent to prepare for these rare incidents which could cause significant disruption.

At the time of writing this document, the threat to the UK from international terrorism is severe. This means that a terrorist attack is highly likely, although there is no intelligence to suggest that an attack is imminent.

The UK faces a wide range of threats and attacks could include marauding gunmen, improvised explosive devices (IED), human and vehicle borne devices, suicide attacks or chemical, biological, radiological attacks, to name a few attack modes.

The United Kingdom's counter-terrorism strategy (titled CONTEST) is organised around four work streams:

- Pursue: to stop terrorist attacks.
- Prevent: to stop people becoming terrorists or supporting terrorism.
- Protect: to strengthen our protection against a terrorist attack.
- Prepare: to mitigate the impact of a terrorist attack.

What to prepare for?

- Phone operators receiving bomb threats.

- Members of staff being radicalised and carrying out the attack (insider threat) or being identified as linked to the perpetrators.
- Reception/security staff receiving urgent instructions from the police (including the need to move all staff to a safe area or to evacuate via an alternative route).
- General staff would be required to comply with instructions from the police and other emergency services (even if these seem counterintuitive).
- Increase in staff absences (initially as a result of transport disruption but with time reasons for absence could include fear of future attacks or a significant change of circumstances at home).
- Acute infrastructure disruptions (including outages of the mobile phone network, utilities and public transport).
- Members of staff being directly affected by the incident, including the following related impacts:
 - Dealing with staff (or their family members) being kidnapped or held hostage.
 - Accounting for staff and liaise with Casualty Bureau.
 - Need for staff to provide witness statements for the police.
 - Communicating with next of kin of affected staff.
 - Dealing with multiple bereavements within your workforce.

- Dealing with the psychological impacts of the incident on the workforce.
- Arranging memorial/funeral services for staff.
- Dealing with large quantities of floral tributes delivered to your office.
- Seeing an increase in requests for longer periods of compassionate leave or sick leave.
- Longer-term transport disruptions (if the incident has damaged the highways or the public transport infrastructure).
- Damage to your building or other corporate assets (like corporate cars) – this damage could include structural damage leading to complete or partial loss of a building.
- Disruptions as a result of cordons set up by the police (including buildings being made unavailable even if not directly affected).
- Disruptions as a result of parts of your building becoming crime scenes.
- Cleansing of buildings and other assets, including:
- Disposal of contaminated objects/surfaces following a chemical, radiological or biological attack.
 - Removal of debris and derelict structures.
 - Cleaning of surfaces affected by water or fire/smoke.
- Removal of stains from porous surfaces (including concrete and stone).
- Disruptions to your supply chain.
- Requirement for additional security as a result of an increase in the threat level.
- Sudden increase in workload for companies providing services that might be in higher demand following an incident (such as engineering firms, insurance providers, etc.).
- Damage to your organisation's reputation (caused by comments from estranged employees or images of damaged buildings with your logo on them).
- Effects on customers or clients (they might not feel safe/comfortable visiting or attending meetings at your premises).
- Having to stay in a safe place within your building for a prolonged period of time (including tending to injuries caused by the incident until the emergency services are able to reach you).
- Delays in assistance from the emergency services (at least until their staff can operate in a reasonably safe environment).
- Having a set of basic outline floor plans available for the emergency services in the event they need to navigate your building.

Cyber

The previous iteration of the City Risk Register, in line with the London Risk Register and the National Risk Assessment, recognised a number of risks that could be grouped under the broad heading of "cyber".

These concentrate on cyber attacks targeting various systems considered to be part of the critical national infrastructure. All these risks could have direct consequences that may lead to a civil emergency, as outlined in the Civil Contingencies Act.

Within the financial services industry, the Bank of England's Financial Policy Committee acknowledged the need for the Financial Authorities to work with the relevant Government agencies and industry to improve and test the sector's resilience to cyber attack.

Locally, the City of London Corporation and the Police have been supporting the work of the Financial Authorities and HM Government, as well as the initiatives led by businesses, to make the City more resilient to cyber attacks.

A working group of the City of London Resilience Forum has been convened with the help of the Centre for the Protection of National Infrastructure (CPNI) to:

- review the cyber risks and suggesting those most relevant to the Square Mile;
- identify any gaps in the current assessment;
- communicate the reviewed risks to the wider City community.

A brief generic description of the "cyber" risks has been included in this year's register but an in depth report on these risks is expected to be produced by the working group on Cyber mentioned above in the first quarter of 2015.

Detailed assessments - Hazards

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	impact		
H9	Toxic Chemical Release	<p>This risk assumes a chemical release outside the city with the plume from the incident affecting City residents and workers resulting in up to 50 fatalities & up to 2000 casualties. This risk could result in environmental contamination with associated environmental impacts. This risk might require remediation and/or decontamination.</p> <p>Excessive demands on healthcare services locally both short term and long term. Water supplies might be at risk. Contamination of farm land could lead to avoidance of certain foodstuffs.</p> <p>For example: A chlorine release or a large industrial complex or bulk storage of chemicals near to London. There are some sites of this nature within the M25.</p>	3	2	<p>There are no large industrial complexes or bulk storage facilities within the City of London or near its borders.</p> <p>Impact dependent on wind direction.</p>	<p>London Emergency Services Liaison Panel Major Incident Manual Pan-London Chemical, Biological, Radiological, Nuclear response arrangements.</p> <p>Mobilisation plans for specialist responders.</p> <p>London Emergency Services Liaison Panel Major Incident Manual.</p> <p>Mutual Aid Plan between Metropolitan Police Service (MPS), British Transport Police (BTP) and City of London Police.</p>

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
HL12	Local accident involving transport of hazardous chemicals	Up to 50 fatalities and up to 500 casualties (direct injuries from the accident would be similar to road or rail accidents; indirect casualties are possible, if substance covers wide area). The extent of the impact would depend on substance involved, quantity, nature and location of accident. The assumption is based on phosgene / chlorine.	2	4	The City is at the centre of London's road network, with major thoroughfares seeing significant amounts of heavy vehicle traffic. Upper Thames Street Tunnel is one of the major routes through London for heavy traffic.	Legislation, regulations and guidance on the carriage of dangerous goods. Specialist Emergency Services and other responder equipment and resources. Specific emergency response arrangements for Upper Thames Street tunnel. Generic emergency response plans. Mutual Aid Plan between Metropolitan Police Service (MPS), British Transport Police (BTP) and City of London Police.
			High			
HL14	Local (road) accident involving transport of fuel/explosives	Up to 30 fatalities and up to 20 casualties within vicinity of accident/explosion. Area would require evacuating up to 1 km radius depending on substances involved. Potential release of up to 30 tonnes of liquid fuel into local environment, watercourses etc. Large quantities of firefighting media (foam) could impact on environment. Roads and access routes impassable for a time. Emergency access into/out of large populated areas becomes difficult or impossible.	2	3		
			High			

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
H17	Severe Storms and Gales	<p>Storm force winds affecting most of the South East England region for at least 6 hours. Most inland, lowland areas experience mean speeds in excess of 55 mph with gusts in excess of 85 mph.</p> <p>Up to 10 fatalities and similar number of casualties (chiefly linked to crane collapses) with short term disruption to infrastructure including power, transport networks, homes and businesses.</p> <p>Trees blown down blocking streets/access to buildings and crushing cars.</p> <p>Collapse of scaffolding, cranes, billboards or other temporary structures.</p>	4	2	<p>Impacts on transport infrastructure outside the City of London could lead to significant disruptions within the Square Mile.</p> <p>Collapse of cranes affected by the winds might extend the disruption period, including disruption to working sites and nearby streets.</p> <p>For the Square Mile, the most relevant type of flooding is the one linked with heavy rain, known as surface water flooding (refer to the City of London Strategic Flood Risk Assessment for further details).</p>	<p>Business continuity plans for responding organisations are in place to ensure critical Services are maintained.</p> <p>Police Mobilisation Plans and organisational response plans.</p> <p>Local Authority plans for assisting vulnerable residents.</p> <p>Generic emergency response plans.</p> <p>Severe weather warnings from Met Office.</p> <p>Public Weather Service Advisory messages.</p>

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
H18	Low temperatures and heavy snow	<p>Snow falling and lying over most of the area for at least 1 week. After an initial fall of snow there is further snow fall on & off for at least 7 days. Most lowland areas experience some falls in excess of 10cm, a depth of snow in excess of 30 cm and a period of at least 7 consecutive days with daily mean temp below -3C. Up to 30 fatalities & thousands of casualties, mainly due to slips, trips & falls. However there will be a large number of excess morbidity -mortality above the number in a normal winter. There is likely to be some disruption to transport networks, businesses, power supply & water supply & also school closures.</p> <p>The cold/snow event definition is based on a February 1991 type event, bearing in mind the impact of more recent events such as February 2009, Dec 2009 – Jan 2010 have had.</p>	3	3	<p>There may be an impact on vulnerable residents, particularly the elderly.</p> <p>There is potential for disruption to transport services which may impact on Emergency Services and Local Authority staff being able to get to work.</p> <p>Impacts on transport infrastructure outside the City of London could lead to significant disruptions within the Square Mile.</p>	<p>Business continuity plans for responding organisations are in place to ensure critical Services are maintained.</p> <p>Police Mobilisation Plans.</p> <p>Strategic Salt Protocol (Dept for Transport) for Local Highways Authorities in England (ensures sufficient salt stocks are available).</p> <p>Local Authority plans for assisting vulnerable residents.</p> <p>Generic emergency response plans.</p>

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
H19	Major Coastal and tidal flooding affecting parts of more than two UK regions	<p>Combination high tides and major sea surge, resulting from gale force winds and heavy rainfall. Many coastal regions and tidal reaches of rivers affected by overtopping or failure (breach) of coastal and/or estuary defences.</p> <p>Flooding from breaches in defences would be rapid and dynamic with minimal warning and no time to evacuate. Inundation from overtopping of defences would allow as little as 4 hours to evacuate. Widespread structural damage. Up to 50 fatalities and 400 casualties, including those whose death, illness or injury is an indirect consequence of flooding.</p>	2	2	<p>Due to its geographical location, the City of London is unlikely to be directly affected by Major Coastal Flooding. Flood defence in the form of the Thames Barrier is used to protect central London from such flooding.</p> <p>Knock on impact of disruption to Transport networks may affect Emergency Services and Local Authority staff being able to get to work.</p> <p>Significant added disruption to London's transport infrastructure.</p>	<p>Thames Barrier Flood Defence tested regularly.</p> <p>Flood warnings issued by the Environment Agency and the Flood Forecasting Centre.</p> <p>Major Incident and multiagency flood plans in place.</p> <p>Search and Rescue Plans exist for the Thames area including the Maritime and Coastguards Agency, the Royal National Lifeboat Institution and the MPS Marine Unit).</p> <p>Business continuity plans for responding organisations covering critical services.</p>

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
H21	Flooding: Severe fluvial flooding affecting more than two UK regions	<p>A single massive fluvial event or multiple concurrent regional events following a sustained period of heavy rainfall extending over two weeks (perhaps combined with snow melt and surface water flooding). The event would include major fluvial flooding affecting a large, single urban area. Closure of primary transport routes. Infrastructure failure. Loss of essential services (gas, electricity & telecoms) to over 300 homes and businesses directly affected for up to 14 days. Sediment movement and disruption to water supplies. Significant regional economic damage. U to 10 fatalities and 500 casualties and 20 missing persons (not accounted for in first 48 hours).</p> <p>Assumes damage or failure at several sites of telecommunications, electrical sub stations, water and sewage treatment works, road bridges and rail embankments, rendering these essential services inoperable for up to 14 days.</p>	2	3	<p>The City of London is built mainly on high ground, with lower areas towards the banks of the Thames. The area of Lower Thames Street may suffer fluvial flooding as water runs off from other parts of the City.</p> <p>Knock on impact of disruption to Transport networks may affect Emergency Services and Local Authority staff being able to get to work.</p> <p>Significant added disruption to London's transport infrastructure, with closure of key transport routes for up to 5 days .</p>	<p>Thames Barrier Flood Defence tested regularly.</p> <p>Flood warnings issued by the Environment Agency and the Flood Forecasting Centre.</p> <p>Major Incident and multiagency flood plans in place.</p> <p>Search and Rescue Plans exist for the Thames area including the Maritime and Coastguards Agency, the Royal National Lifeboat Institution and the MPS Marine Unit).</p> <p>Business continuity plans for responding organisations covering critical services.</p>
			High			

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			likelihood	Impact		
H23	Influenza type disease (pandemic)	<p>Previous pandemics have led to different outcomes. Based on understanding of previous pandemics, a pandemic is likely to occur in one or more waves, possibly weeks or months apart. Each wave may last between 12-15 weeks. Up to half the population could be affected. All ages may be affected, but until the virus emerges we cannot know which groups will be most at risk.</p> <p>Assumptions:</p> <p>Up to 50% of the population falling ill, spread over one or more waves. A case fatality ration of up to 2.5% in a reasonable worst case scenario and a corresponding case hospitalisation demand ration of 4%, 25% of which require level 3 critical care. Peak illness rates of 10-12% in each of the weeks in the peak fortnight. Absence rates for illness reaching 15-20% in the peak weeks with significant disruption to essential services such as transport as a result</p>	4	4	<p>Knock on impact of disruption to Transport networks may affect Emergency Services and Local Authority staff being able to get to work.</p> <p>Increase in fatalities – potential for ‘excess deaths’ placing strain on health and Local Authority Services at a time of increased demand.</p> <p>Potential for school closures could increase absence rates. Staff might not be willing to travel on public transport.</p> <p>Potential restrictions on public gatherings and international travel.</p>	<p>Pan London Flu Pandemic Response Framework.</p> <p>Major Incident Plans.</p> <p>Flu Plans for emergency responders.</p> <p>Access to antiviral drugs from the National Stockpile and vaccinations for critical personnel.</p> <p>Business continuity plans for responding organisations are in place to ensure critical Services are maintained.</p>
			Very High			

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
H24	Emerging infectious diseases	<p>Precise impact will depend upon the effectiveness of antibiotics and anti virals in fighting infection. Based upon the experience of the outbreak of Severe Acute Respiratory Syndrome (SARS) in 2002, the worst case likely impact of such an outbreak originating outside the UK would be cases occurring amongst returning travellers and their families and close contacts, with a spread to health care workers within hospital setting.</p> <p>Short Term disruption to local hospital intensive care facilities and possible disruption of several weeks to elective procedures.</p> <p>Infection can spread rapidly from person to person before the first case is identified. The new infection does not originate in the UK but rapid global spread to UK via air travel.</p> <p>Possibility of spread within a hospital setting, prior to the infection being identified.</p>	3	3	<p>Due to the international nature of business conducted within the City of London, increased potential for infected persons to arrive here before illness is identified.</p> <p>Public concern about travel and possible international travel restrictions could cause City-wide impacts beyond those caused by the illness itself.</p>	<p>Emerging Infectious diseases response arrangements.</p> <p>Specialist health sector response arrangements.</p> <p>Major Incident Plans.</p> <p>Business continuity plans for responding organisations are in place to ensure critical Services are maintained.</p>

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
H30	Loss of emergency fire and rescue cover because of industrial action	<p>A series of strikes by fire fighters takes place, spread over a period of two months, perhaps lasting up to 48 hours each.</p> <p>London, and possibly other metropolitan areas, would have only very thin cover. Assumes no military assistance.</p>	5	2	<p>The City of London has a number of high rise buildings that would require specialist responses that could be affected by industrial action.</p> <p>Automatic attendance to fire alarms might be impacted.</p>	<p>Health and Safety at Work Act.</p> <p>Employment Act 1980.</p> <p>Employment Act 1988.</p> <p>Public Order Act 1986.</p> <p>Trade Union and Labour Relations (Consolidation) Act 1992.</p>
H35	Industrial action by key rail or London Underground workers	Strike action resulting in the total shut down of either London Underground or the rail network on a national scale (e.g. action by key rail workers, e.g. infrastructure workers such as signallers) for more than 3 days. Greater impact if action occurs in a co-ordinated manner.	3	2	<p>The Square Mile is heavily reliant on public transport (as most workers across the City live outside of Central London.</p>	<p>Anti-Social Behaviour Act 2003.</p> <p>Organisational Business Continuity Arrangements</p>

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
H41	Technical failure of national electricity network (Blackstart)	<p>Total blackout for up to 3-5 days due to loss of the National Grid. 3 days is best time. If there is damage to the network (say from storms) this timescale could be extended up to 5 days. Possible loss of life support machines, civil unrest, no alarms, street lighting, gas heating, rail transport, water supplies and mobile (PMT) telecommunications etc. Backup generators available for limited time for individual business and emergency services in some instances.</p> <p>Occurs in winter and blackout lasts for up to 3 days.</p> <p>Most of the country reconnected within three days, London late on in process. Demand not able to be met after three days.</p> <p>The high voltage electricity transmission network in Great Britain has never experienced a complete shutdown in its history.</p> <p>The electricity system is resilient. Although</p>	3	4	<p>Potential knock on impact to transport infrastructure and ability of Emergency Services and Local Authority Staff to get into work.</p> <p>Passengers trapped on Underground trains or lifts, gridlock on road network if traffic light management systems fail – leading to increase demand of Police, Fire & Ambulance Services.</p> <p>Impact on Health Services (St Bartholomew's Hospital) although backup systems may mitigate for a short time.</p>	<p>National Grid has in place "Black Start" procedures to re-energise the network in a timely and organised manner following such an occurrence.</p> <p>Business continuity plans for responding organisations are in place to ensure critical Services are maintained.</p>

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
		it is technically possible for a single fault to cascade across the entire system, network safeguards exist to prevent a fault spreading beyond the original source.			Given the reliance of the City businesses on electricity to power IT systems as well as light and heating, the failure of any part of the system could have a significant impact on the City	
HL42	Loss of cover due to industrial action by workers providing a service critical to the preservation of life	A series of strikes by fire fighters takes place, spread over a period of two months, perhaps lasting up to 48 hours each. Assumes no military assistance.	4 Medium	3	London, and possibly other metropolitan areas, would have only very thin cover. St. Bartholomew's hospital could be affected.	Police Act (1996). Royal College of Nursing Code on Industrial Action. Standards of conduct, performance and ethics. Alternative emergency cover protocols for the Fire Brigade Organisational Business Continuity Arrangements

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
H43	Tele-communication infrastructure -human error.	<p>Widespread loss of telecommunications and data services (including public land line and mobile networks) at a regional level for up to 3 days</p> <p>Assumes Greater London as a reasonable worst case. Assume emergency Services communication systems are also affected.</p>	3	4	<p>City of London businesses heavily reliant upon telecommunication infrastructure.</p> <p>Businesses likely to use Disaster recovery sites or fall-back facilities.</p> <p>SME's likely to be affected due to lack of Business Continuity plans.</p> <p>Loss of Emergency Services communications systems would invoke mutual aid.</p>	<p>Satellite phones available Pan London basis.</p> <p>City of London Police have a number of 'Field telephones for local use'</p> <p>Pan-London Telecoms Subgroup to counter the effect on the emergency services.</p> <p>Business continuity plans for responding organisations are in place to ensure critical services are maintained.</p>

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
H45	Technical failure of electricity network due to operational error or bad weather causing damage to the system.	<p>Total shutdown of the electricity supply in Greater London occurring during working week and lasting for 24hours. Damage to distribution overhead lines meant that many customers remained without a supply for several days before repairs could be completed.</p> <p>An event of this kind occurred in October 1987 when severe storms led to the electricity transmission network in the south east being shut down.</p>	2	4	<p>The reasonable worst case scenario assumes Greater London as the region being affected.</p> <p>Similar to the H41 scenario but with a more limited impact.</p>	<p>National Grid has in place "Black Start" procedures to re-energise the network in a timely and organised manner following such an occurrence.</p> <p>Business continuity plans for responding organisations are in place to ensure critical Services are maintained.</p>
			High			

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
H48	Heat Wave	<p>Daily maximum temperatures in excess of 28 C and minimum temperatures in excess of 15C over most of the region for around 2 weeks at least 5 consecutive days where maximum temperatures exceed 32C. Up to 100 fatalities and 500 casualties, mainly amongst the elderly. There could be disruption to power supply and transport infrastructure.</p> <p>Impact on electricity generation due to air conditioning load in large buildings in urban areas.</p> <p>Possible impact on infrastructure such as melting of tarmac and buckling of rails.</p>	4	2	<p>Potential impact on elderly or known vulnerable residents but these are relatively low in number.</p> <p>Knock on impacts on staff caring for vulnerable persons at home.</p>	<p>Vulnerable residents identified by Local Authority & support plans in place.</p> <p>Advice from Transport for London regarding carrying drinking water on the underground and avoiding peak time travel.</p> <p>Business continuity plans for responding organisations are in place to ensure critical services are maintained.</p>

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
H56	Severe Space Weather	<p>Two coastal electrical sub-stations serving approximately 100,000 customers each are severely damaged and unable to supply electricity for two or more months.</p> <p>It is likely that rota-disconnections would be used in the affected areas for the rest of the period until the substations repairs were completed.</p> <p>Disruptions to satellite services for several days, including interruptions and degradations of GPS. This could result in casualties and fatalities as GPS is an integral component of modern automated dispatch systems used by the emergency services.</p> <p>Temporary short term (1hours) nationwide losses of wireless systems including mobile phones, internet and other related services.</p>	4	2	<p>Due to geographical location, The City of London is unlikely to be directly affected by loss of power supply in coastal areas. It may suffer possible knock on impact in relation to travel disruption.</p> <p>Possible significant consequences for health emergency services if communications or GPS affected, leading to greater waiting time for ambulances.</p> <p>Impacts on financial services as a result of loss of GPS constellation.</p>	<p>LESLP and Major Incident Manuals.</p> <p>Pan London Command & control Plan.</p> <p>Generic emergency plans.</p> <p>Business continuity plans for responding organisations are in place to ensure critical services are maintained.</p>

Risk ID	Risk Title	Risk Description	Scoring		City Relevance	Mitigation
			likelihood	Impact		
H57	Large scale public disorder in site(s) in a single city, or in multiple cities, occurring concurrently over several days.	The police will need to coordinate resources nationally, in order to respond to, and manage this scale of disorder. The ways in which public order incidents manifest themselves can prove challenging to both law enforcers and businesses/organisations. It often occurs following a trigger event, yet it is not always possible to identify it as such at the time it happens. The unrest that is created from this trigger can result in further sporadic actions, which could include rioting, looting, vandalism, protest, violence and arson.	2 High	3	<p>Planned protest marches that become disorderly or violent whether in the City or elsewhere that adversely affect business, property or communities.</p> <p>Static disorderly protests that adversely impact on the daily life of the City are a possibility</p> <p>Spontaneous or organised outbreaks of civil disorder that adversely impact on the daily life of the City cannot be ruled out.</p>	<p>Systems are in place to warn and inform the community</p> <p>Generic emergency plans.</p> <p>Business continuity plans for responding organisations are in place to ensure critical services are maintained.</p> <p>Procedures have been reviewed incorporating lessons learned during 2012</p> <p>Guidance and support is provided to businesses and residents on how they can be better prepared.</p>

Detailed assessments - Threats

Risk ID	Risk Title	Risk Description	Scoring		Mitigation
			likelihood	impact	
X1	Attacks on crowded places	Crowded places remain an attractive target for a terrorist attack. Crowded places by their nature are easily accessible and offer the prospect for an impact beyond the loss of life alone. Attacks are often (but not always) carried out without prior warning.	4	3	Major Incident Plans. Pan London Response & Recovery Plans, including Structural Collapse Plan. Work of counter terrorism security advisors to raise awareness and provide training. Physical security measures where appropriate. Emergency services response plans. Emergency services specialist resources.
			High		
X2	Attacks on infrastructure	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 vary according to the criticality of the infrastructure assets affected.	3	3	Major Incident Plans. Pan London Response & Recovery Plans, including Structural Collapse Plan. Work of counter terrorism security advisors to raise awareness and provide training. Physical security measures where appropriate. Emergency services response plans. Emergency services specialist resources.
			High		

Risk ID	Risk Title	Risk Description	Scoring		Mitigation
			likelihood	impact	
X3	Attacks on transport system	Conventional attacks on transport systems are judged to be the more likely (however the likelihood of them affecting any one individual is still extremely low). This is supported by evidence from around the world. Attacks on transport can take different forms and result in different levels of impact. Stringent security measures are in place at airports. Most rail and underground systems are more open and therefore attractive potential targets. To date no attack against maritime interests in the UK has been mounted by terrorists.	5	3	Major Incident Plans. Pan London Response & Recovery Plans, including Structural Collapse Plan. Regulation and security processes of individual public transport sectors. Contingency plans developed by operators in conjunction with responders.
			High		

Risk ID	Risk Title	Risk Description	Scoring		Mitigation
			likelihood	Impact	
X4	Small Scale Unconventional Attacks	The likelihood of terrorists successfully undertaking an attack against a nuclear or chemical facility or obtaining chemical, biological, radiological (CBR) or nuclear materials remains low, but not negligible. If such attacks were successful, their potential impact on the UK would be severe and significantly greater than a conventional attack. The potential impacts of an incident involving CBR agents will depend on a range of factors including type and quantity of CBRN materials used. This could range from small-scale (assassination or poisoning) to mass-impact (widespread dispersion and contamination) which is reflected in the scores. Such attacks could take the form of release of harmful materials in an indoor or outdoor environment or contamination of food or water. Radiological materials could also be combined with explosives to produce a radiological dispersal device that would aim to spread radioactive material over a wide area.	3	3	Major Incident Plans. CBRN Pan London Plans. Pan London Response & Recovery Plans, including Structural Collapse Plan. Well-developed specialist response capability. Access to medical countermeasures.
X5	Catastrophic Unconventional Attack		2	5	

Risk ID	Risk Title	Risk Description	Scoring		Mitigation
			likelihood	Impact	
X6	Cyber attacks: infrastructure	Increasing reliance on cyber space brings new opportunities and new threats. The very openness of the networks presents a vulnerability of compromise or damage to networks from the actions of hackers, criminals or foreign intelligence services. The two assessments cover risks of cyber attack against infrastructure and cyber attacks resulting in a loss of data confidentiality. Impacts of both types of cyber attack could include economic and societal disruption.	2	3	National Cyber Security Programme Additional outreach to businesses and public regarding cyber threats and security (including Cyber Essentials programme) UK National Computer Emergency Response Team (CERT-UK) National Cyber Crime Unit Centre for Protection of National Infrastructure providing security advice (including sector-specific information exchanges)
			High		
X7	Cyber attacks: data confidentiality	While terrorists can be expected to continue to favour high-profile physical attacks, the possibility that they might also use cyber space to facilitate or mount an attack is growing.	5	2	
			Medium		

This document has been produced using best practice from across the public sector and academia including the UK National Risk Register, the Hampshire and Isle of Wight Community Risk Register, the Lincolnshire Community Risk Register, the Greater London Risk Register, the Sutton Community Risk Register and the Cambridge Risk Framework produced by the Cambridge Centre for Risk Studies at the Judge Business School, University of Cambridge.

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