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LONDON RESILIENCE

preparing for emergencies

London Local Resilience Forum

LONDON COMMUNITY RISK REGISTER

Version 1.0

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London Resilience Team
Greater London Authority
City Hall
The Queen's Walk
More London
London SE1 2AA
www.london.gov.uk
enquiries 020 7983 4100
minicom 020 7983 4458

The London Community Risk Register is collectively owned by the Category 1 Responders (as defined by Schedule 1 to the Civil Contingencies Act 2004) within the London Local Resilience Forum area.

Version 0.1 of this Community Risk Register was produced by London Fire Brigade Emergency Planning department, June 2011 prior to transfer of responsibility for the document to London Resilience Team.

Record of Amendments

Date	Version	Author	Changes
Jun 2011		LFB-EP	**Document redundancy:** This London Local Resilience Forum Community Risk Register replaces the six LRF Area Community Risk Registers as follows: Central LRF, North Central LRF, North East LRF, South East LRF, South West LRF and West LRF published April 2011. This reflects the change in the structure of resilience within London and the move from six LRF Areas to one London Local Resilience Forum.
Jun 2011	0.1	LFB-EP	Six existing CRRs amalgamated into one London Community Risk Register. Impact and likelihood scores for individual risks, where scores varied these have been averaged.
July 2011	0.2	LRT	Reformatting and alignment to LRT documentation
Sept 2011	0.3	LRT	Amendments throughout following discussion at LRAG meeting.

Any queries or enquiries should be directed to lrt@london.gov.uk.

Distribution History

Date	Comments	Version
28.06.11	Summary document presented to London Local Resilience Forum (Paper 36 05)	0.1
19.09.11	Draft presented to London Risk Advisory Group (LRAG)	0.2
21.09.11	Draft circulated to London Resilience Programme Board	0.3
10.10.11	Version 0.3 approved by LLRF	1.0

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London Community Risk Register: High-Level Summary

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Risk ID	Short Name	Pg
	providing a service critical to the preservation of life	
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Introduction and Background

The Civil Contingencies Act (2004) requires Category 1 responders *'… from time to time assess the risk of an emergency*[1] *occurring …'* and *'… from time to time assess the risk of an emergency making it necessary or expedient for the person or body to perform any of its functions'*. The Risk Register is then used by the London Resilience Partnership as a method of prioritizing resilience activities towards those risks judged to have a higher rating.

The risks included in the London Community Risk Register represent 'reasonable worst case scenarios' and their inclusion in the register does not mean that they are going to happen, or that if they did do that they would be as serious as the descriptions included here. The Reasonable Worst Case scenarios are nationally developed and informed by historical and scientific data, modeling and trend surveillance and professional expert judgment.

The London Community Risk Register does not include reference to pre-planned events, which are covered under separate guidance and risk assessments. However, in preparation for the 2012 Olympic and Paralympic Games, the London Risk Advisory Group has been closely involved in providing additional detail and local knowledge into the development of the London Olympic Resilience Planning Assumptions (LORPA).

[1] For the purposes of Part 1 of the Civil Contingencies Act 2004 (c.36), 'emergency' is defined by s.1(1) of the Act and means:

a) An event or situation which threatens serious damage to human welfare in a place in the United Kingdom;

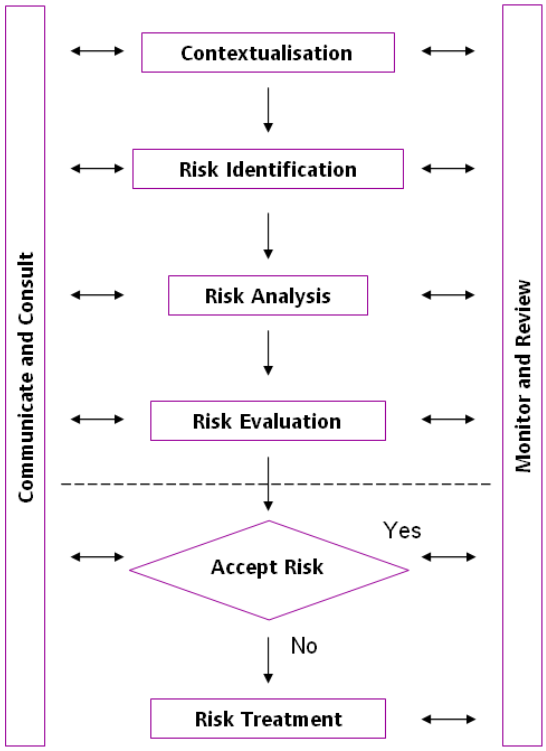
b) An event or situation which threatens serious damage to the environment of a place in the United Kingdom, or

c) War, or terrorism, which threatens serious damage to the security of the United Kingdom.

It must also meet either of the following criteria:

- The threat or hazard is of a sufficient scale and nature that it is likely to seriously obstruct a Category 1 responder in the performance of its functions; and/or
- The threat or hazard requires the Category 1 responder to exercise its functions and undertake a special mobilisation

The 6 Stage Risk Assessment Process



1. Contextualisation

The London Risk Advisory Group have developed the *London Community Risk Register: Policy for Maintenance and Review*, which describes the scope and processes that will be used to undertake risk assessment and outlines the key stakeholders.
The London Risk Advisory Group has also developed *London Risks In Context* – a document which summarises the characteristics of London which influence the assessment of Likelihood and Impact (through an awareness of inherent vulnerabilities and resilience factors).

2. Hazard Identification and allocation for assessment

In line with the Local Risk Assessment Guidance, the London Risk Advisory Group identifies those threats and hazards that, in their view, could give rise to an emergency within London in the next 5 years.

The London Risk Advisory Group has identified lead agencies to undertake the Individual Risk Assessment for each risk prior to multi-agency discussion (and where new risks are included in national guidance, these are allocated to an appropriate responder for assessment). The London Risk Advisory Group has also developed a rolling review programme to ensure that each risk is revisited and, as necessary, updated within a 3-year period.

3. Risk analysis

Drawing on generic assessments (provided by CCS), other research and local knowledge, the lead assessor considers the likelihood of the risk over the next five-year period

The range of potential impacts arising from the risk, as well as any vulnerabilities surrounding these, is proposed and discussed with LRAG.

Individual Risk Assessment is provided to LRAG for evaluation

4. Risk evaluation

LRAG considers the Individual Risk Assessment and confirms or modifies assessments as appropriate.

Agreed assessments are collated and incorporated into CRR.

LRAG incorporates into CRR threat statements provided by central government within the Local Risk Assessment Guidance, but does not assess likelihood or impact.

LRAG highlights existing capabilities and mitigation plans for the hazards and threats and:

- considers the acceptability of risks;
- identifies and recommends options for risk treatment for the LLRF; and
- makes recommendations to the LLRF on risk priorities for hazards and threats.

LLRF reviews the CRR and recommendations from LRAG and determines appropriate action.

5. Risk treatment

Gaps in capability are assessed

Proposed options for additional risk are developed, and agreed by LLRF for inclusion on the LLRF Delivery plan, including the identification of lead agency

6. Monitoring and Review

Formal review of risks on a rolling three year cycle but reviewed and updated as and when appropriate including in response to annual publications of the Local Risk Assessment Guidance, and as a result of exercises and incidents.

In relation to Section 3 of this CRR, the inclusion of the hazard or the particular scenario (ie the outcome description) does not mean that the LLRF believes the risk will materialise, or that if it were to do so that it would be at that scale. The risk scenarios are rather reasonable worse case assumptions upon which our risk assessments are based.

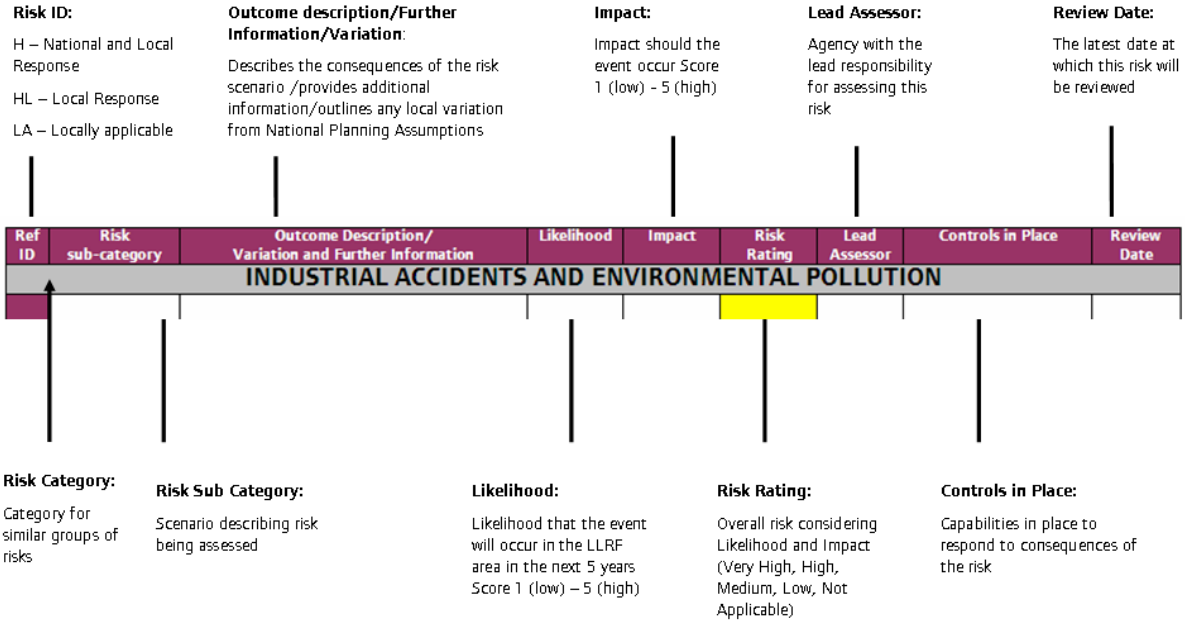
The likelihood assessments relate to the risk occurring over a five-year period at the magnitude reflected within the outcome description. The magnitude is based on an assessment of a reasonable worse case scenario.

As part of the risk assessment process, the London LRF has been considering the likelihood and impact of a range of hazards occurring.

Risk assessment is not a static process and is subject to constant review. The information contained in this CRR will, as a result, be regularly updated.

London Community Risk Register Explained

Each risk identified on the London Community Risk Register is supported with an Individual risk Assessment. These risk assessments are highly detailed and the Community Risk Register presents summary information only.



Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
INDUSTRIAL ACCIDENTS AND ENVIRONMENTAL POLLUTION								
HL 25	Fire or explosion at a flammable gas terminal including LPG/LNG storage sites.	**Outcome Description** Up to 1km around site, causing up to 50 fatalities and 150 casualties. **Variation & Further Information** Gas terminal event likely to be of short duration once feed lines are isolated; event at a storage site could last for days if the explosion damaged control equipments. Impact on environment, including widespread impact on air quality.	Low (1)	Moderate (3)	Medium	LFB		
HL 7	Industrial explosions and major fires	**Outcome Description** Up to 1km around site, causing up to 20 casualties, some of a serious nature. Explosions would cause primarily crush / cuts and bruise-type injuries, as well as burns. **Variation and Further Information** Plant of this nature is assumed to be more or less evenly distributed across the country.	Medium Low (2)	Minor (2)	Medium	LFB		
H4	Fire or explosion at a fuel distribution site or a site storing flammable and/or toxic liquids in atmospheric pressure storage tanks	**Outcome Description** Up to 3km around sire causing (from 10) up to 150 fatalities and (100 to) 2000 casualties. Might be disruption to air transport in the short-term until fuel supply re-directed. Short-term regional excessive demands on health core services. Closure of roads in locality for a short period of time. **Variation and Further Information** A large industrial complex or fuel storage site near to a populated (ie urban area).	Low (1)	Catastrophic (5)	Medium	LFB		
HL 28	Localised fire or explosion at a fuel distribution site or tank storage of flammable and/or toxic liquids.	**Outcome Description** Up to 1km around the site, causing up to 15 fatalities and 200 casualties. **Variation & Further Information** Impact on environment, including widespread impact on air quality.	Medium Low (2)	Moderate (3)	High	LFB		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
H5	Fire or explosion at an onshore fuel pipeline	**Outcome Description** Up to 1km around site causing up to 100 fatalities and 500 casualties. **Variation and Further Information** A release point close to a populated (i.e. urban) area. Impact on environment, including persistent/widespread impact on air quality. Plant of this nature is assumed to be more or less evenly distributed across the country, although there may be clustering in some coastal and industrial areas.	Low (1)	Moderate (3)	Medium	LFB		
H7	Explosion at a high pressure natural gas pipeline	**Outcome Description** Local to site causing up to 200 fatalities and up to 200 casualties. **Variation & Further Information H7 & HL30** Risk is based on the release point close to a populated (i.e. urban) area. Impact on environment, including persistent/widespread impact on air quality. Plant of this nature is assumed to be more or less evenly distributed across the country.	Low (1)	Moderate (3)	Medium	LFB		
HL 30	Localised explosion at a natural gas main.	**Outcome Description** Causing up to 100 fatalities and up to 100 casualties.	Low (1)	Moderate (3)	Medium			
H9	Large toxic chemical release	**Outcome Description** Up to 3km from site of toxic chemical release causing up to 50 fatalities and up to 2000 casualties. This risk could result in environmental contamination with associated environmental impacts. Depending on the nature and extent of the contamination there could be impacts on air, land water, animal welfare, agriculture and waste management. This risk might require remediation and/or decontamination. Excessive demands on health care services locally both short and long term. Water supplies might be at risk. Contamination of farm land could lead to avoidance of certain foodstuffs. **Variation and Further Information** Eg a chlorine release or large industrial complex or bulk storage of chemicals near to a populated (i.e. urban) area. There are some sites of this nature	Low (1)	Catastrophic (5)	Medium	LFB		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		within the M25, and there is 'clustering' of such sites in other parts of the country.						
HL 3	Localised industrial accident involving small toxic release	**Outcome Description** Up to 1km from site causing up to 10 fatalities and up to 100 casualties. **Variation & Further Information** Plant of this nature is assumed to be more or less evenly distributed across the country, although there may be 'clustering' in some coastal and industrial areas.	Medium (3)	Moderate (3)	High	LFB		
H1 1	Accidental release of radioactive material from incorrectly handled or disposed of sources.	**Outcome Description** Up to five fatalities and up to 100 contaminated people requiring medical monitoring. Many worried people may present at hospitals. Radiation may be spread over several km but concentration where source is opened. This risk could result in environmental contamination with associated environmental impacts. Depending on the nature and extent of the contamination there could be impacts on air, land, water, animal welfare, agriculture and waste management. This risk may require remediation and/or decontamination. **Variation & Further Information** Assume radioactive material is a medical source from radiotherapy machine.	Low (1)	Significant (4)	Medium	EA		
H 12	Biological substance release	**Outcome Description** Up to 10 fatalities and serious injuries or off-site	Medium Low	Moderate (3)	High	Health		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
	from facility where pathogens are handled deliberately (e.g. pathogen release from containment laboratory)	impact causing up to 1,000 casualties. **Variation and Further Information** Assume release in an urban area. Biological agent (mainly HG3 & 4 human & animal pathogens) release from containment (e.g. infection of laboratory worker or animal) – example SARS release from lab in China resulted in 2 deaths & several hundred people quarantined. This type of release could be the source of an outbreak that leads to H23-H26 risks.	(2)					
H 46	Biological substance release during an unrelated work activity/industrial process (e.g. Legionella release due to improperly maintained building environmental control systems)	**Outcome Description** Up to 10 fatalities and serious injuries or off site impact requiring up to 1000 casualties. **Variation and Further Information** Specifically related to Legionella disease during an unrelated work activity or industrial process. Inadvertent Legionella contaminant of wet cooling systems such as cooling towers and evaporative condensers, and air conditioning systems such as humidifiers and industrial air scrubbers.	Medium High (4)	Moderate (3)	High			
H 14	Major contamination incident with widespread implications for the food chain, arising from: 1. Industrial accident (chemical, microbiological, nuclear) affecting food production areas eg Chernobyl, Sea Empress oil spill, animal disease. 2. Contamination of animal feed eg dioxins, BSE. 3. Incidents arising from	**Outcome Description** There may be direct animal and consumer health effects arising from this incident. We assume a small number of fatalities (5) and casualties (50), although the public health implications of food incidents vary widely. Additionally, there may be food production/marketing implications, depending on the scale and area affected. Consumer confidence may also be affected leading to lost markets and, where staple products (eg bread or milk) are affected, potential panic buying. **Variation and Further Information** An incident similar to that which occurred in Belgium in which animal feed is contaminated with Dioxins, resulting in contamination of animals and animal products.	Medium High (4)	Minor (2)	Medium	Local Authorities		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
	production processes, eg adulteration of chilli powder with Sudan I dye or melamine contamination of milk.							
H 15	Maritime pollution	**Outcome Description** Spillage of 100,000 tonnes of crude oil into the Thames estuary polluting up to 200 km of coastline. Release of sufficient pollutant into the river, with contamination of embankments and river structures, to result in a Tier 2 or Tier 3 pollution response within the port. Pollution may arise from an incident within the London Resilience area, or from an incident further east with pollution being spread upriver on a series of tidal cycles. **Variation and Further Information** A large fully laden oil super tanker sinks in the approach to a UK port, e.g. the Thames estuary, fully laden and with strong north-easterly winds and with the tide flowing up the Thames estuary.	Low (1)	Minor (2)	Low	MCA		
HL 4	Major pollution of controlled waters	**Outcome Description** Pollution incident impacting upon controlled waters (for example, could be caused by chemical spillage or release of untreated sewage) leading to persistent and/or extensive effect on water quality, major damage to aquatic ecosystems, closure of potable abstraction point(s), major impact on amenity (i.e. tourism) value, serious impact on human health. **Variation and Further Information** For major sewage pollution to occur, this would require the failure of an interdependency like electric supply, affecting either a major plant, or succession of works.	Medium High (4)	Moderate (3)	High	EA		
HL 33	Forest or moorland fire	Forest or moorland fire across up to 50 hectares. Evacuation of up to 100 residential homes required. Up to 5 fatalities and 20 casualties.	Low (1)	Minor (2)	Low	LFB		
TRANSPORT ACCIDENTS								

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
HL 34	Fire, flooding, stranding or collision involving a passenger vessel in or close to UK waters leading to the ship's evacuation or partial evacuation at sea	**Outcome Description** Up to 50 fatalities and up to 100 casualties. **Variation and Further Information** The risk is based on an accident to a typical passenger vessel visiting London, or a large Class V vessel (<600 passengers) operating in central London.	Low (1)	Moderate (3)	Medium	MCA		
HL 8	Fire, flooding, stranding or collision involving a passenger vessel in or close to UK waters or on inland waterways, leading to the ship's evacuation.	**Outcome Description** Up to 50 fatalities and up to 100 casualties **Variation and Further Information** The risk is based on an accident to a smaller passenger vessel on the UK coast or inland waterways.	Low (1)	Moderate (3)	Medium	MCA		
HL 37	Release of significant quantities of hazardous chemicals/materials as a result of major shipping accident	**Outcome Description** Fatalities and casualties unlikely. Significant environmental/ecological damage. **Variation and Further Information** The extent of the impact would depend on substance involved, quantity, nature and location of accident.	Low (1)	Minor (2)	Low	MCA/DfT		
H 16	Aviation accident over a semi-urban area	**Outcome Description** Loss of up to two aircraft and passengers, with debris over a semi-urban area. **Variation and Further Information** Collision of two commercial airliners - death of all passengers and crew on aircraft (600 fatalities), up to 50 fatalities and 300 casualties on the ground. No significant damage to key infrastructure.	Low (1)	Significant (4)	Medium	LFB		
HL 9	Aviation accident	**Outcome Description** Aviation accident causing up to 50 fatalities and up to 250 casualties. **Variation and Further Information** Accident involving one commercial aircraft, probably on take off or landing.	Medium Low (2)	Moderate (3)	High	LFB		
HL 10	Local accident on motorways and	**Outcome Description** Multiple vehicle incident causing up to 10 fatalities	Medium High	Limited (1)	Low	MPS		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
	major trunk roads	and up to 20 casualties (internal injuries, fractures, possible burns); closure of lanes or carriageways causing major disruption and delays.	(4)					
HL 11	Railway Accident	**Outcome Description** Up to 30 fatalities and up to 100 casualties (fractures, internal injuries – burns less likely). Possible loss of freight. Major disruption to rail line including possible closure of rail tunnel.	Medium High (4)	Moderate (3)	High	BTP		
HL 12	Local accident involving transport of hazardous chemicals	**Outcome Description** 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. **Variation and Further Information** Hazardous chemical traffic is not thought to vary significantly at local levels, so likelihood will be similar throughout. However, a high density of hazardous chemical infrastructure in area may affect likelihood scores.	Medium Low (2)	Significant (4)	High	LFB		
HL 14	Local (road) accident involving transport of fuel/explosives	**Outcome Description** 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 fire fighting 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.	Medium Low (2)	Moderate (3)	High	LFB		
SEVERE WEATHER								
H 17	Storms & Gales.	**Outcome Description** 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. Up to 50 fatalities and 500 casualties with short term disruption to infrastructure including power, transport networks, homes and businesses.	Medium (3)	Moderate (3)	High	Local Authorities		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		Variation and Further Information The wind storm event definition is based on Oct 1987 and Burns Day 1990 type events, but more severe than either.						
H 18	Low temperatures and heavy snow.	**Outcome Description** Snow falling and lying over most of the area for at least one week. After an initial fall of snow there is further snow fall on and off for at least 7 days. Most lowland areas experience some falls in excess of 10cm, a depth of snow in excess of 30cm and a period of at least 7 consecutive days with daily mean temperature below -3°C. Up to 1000 fatalities (excess deaths) and thousands of casualties, mainly amongst the elderly and there is likely to be some disruption to transport networks, businesses, power supply and water supply, and also school closures. **Variation and Further Information** The cold/snow event definition is based on a February 1991 type event beating in mind the impact more recent events such as Feb 2009 and Dec/Jan 2009/10 have had.	Medium (3)	Moderate (3)	High	Local Authorities		
H48	Heat Wave.	**Outcome Description** Daily maximum temperatures in excess of 32°C and minimum temperatures in excess of 15°C over most of a region for at least 5 consecutive days. Up to 1000 fatalities and 5000 casualties mainly amongst the elderly. There could be disruption to power supply and transport infrastructure. The heatwave event definition is based on and August 2003 type event, but more severe. There will be subsequent impact on electricity generation and cooling systems. Currently in the London area the summer peak demand is higher than winter due to building air conditioning systems.	Medium High (4)	Minor (2)	Medium	Health		
H 19	Major coastal and tidal flooding affecting more than two UK regions	**Outcome Description** Major sea surge, tides, gale force winds and potentially heavy rainfall. Many coastal regions and tidal reaches of rivers affected. Excessive tide levels	Medium Low (2)	Catastrophic (5)	High	EA		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		and many coastal and/or estuary defences overtopped or failing (breaches). Drains 'back-up'. Inundation from breaches in defence systems would be rapid and dynamic with minimal warning and no time to evacuate. Inundation from over-topping of defences would allow as little as 1 hour to evacuate, widespread structural damage. Flooding of up to 300,000 properties (homes & businesses) for up to 14 days. People stranded over a large area. Up to 150 fatalities, 2000 'missing' persons (ie not accounted for during first 24 hrs) and 2000 casualties. Up to 0.4m evacuees (the people requiring assistance with evacuation is less, 130,000). Up to 40,000 people in need of rescue or assistance in-situ over a 36 hour period. **Variation and further information** **Assumes:** • Up to 4 days of advanced sever weather alerts from the Met Office. • Severe Flood Warnings issued up to 24hrs in advance by the Environment Agency. • Storm tide forecasting service shows risk of over-topping (up to 8hrs lead time). • Rescue can only be by boat, helicopter or high-clearance vehicles. • Emergency services affected if located in the flood zone. • Evacuation warnings given to emergency services (as little as 1 hour). • Multiple failure (breaches) of flood defence systems and significant overtopping. • 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. • Closure of key and essential transport routes for up to 5 days leading to national disruption to commuters and supplies of						

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		goods and services. • There are hospitals, schools, shops and industrial/ commercial premises in the flooded area (& possibly rest centres). • 'Properties' includes occupied mobile homes and caravans sites in low-lying coastal zones (summer tourists). For evacuation and emergency sheltering and accommodation the following assumptions are made: • Of all evacuees, 60% leave the affected area and stay with relative/ friends or holiday-makers return home. 30% use available hotels in safe areas [may need tourists to vacate rooms for local residents]. 142,000 (22%) of people flooded need assisted sheltering for up to 5 days and 25% of displaced households need temporary accommodation for up to 12 months.						
H 21	Severe inland flooding affecting more than 2 UK regions	**Outcome Description** A single massive inland event or multiple concurrent regional events following a sustained period of heavy rainfall extending over two weeks (perhaps combined with snowmelt or intense summer rainfall leading to widespread surface water flooding). The event would include major fluvial flooding affecting a large, single urban area. Across urban and rural areas (with a greater proportion occurring in urban areas) flooding of up to 50,000 properties (homes & businesses) for up to 10 days. Up to 10 fatalities and 500 casualties and 20 missing persons ("missing" means: not accounted for during the first 48 hrs). Up to 55,000 people needing assistance with evacuation. Up to 6,000 people in need of rescue or assistance in-situ. (H20 in earlier assessments). **Effects include:** Closure of primary transport routes. Infrastructure failure. Loss of essential services (water, gas, electricity & telecom) to 250,000 homes and businesses for up to 14 days.	Medium (3)	Catastrophic (5)	Very High	EA		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		Sediment movement and disruption to water supplies. Significant regional economic damage. **Variation & Further Information - Assumes:** • Up to 4 days of advanced severe weather alerts from the Met Office • Severe Flood Warnings issued up to 24 hrs in advance by the Environment Agency • Hazard is not evenly distributed across the UK • Rescue can only be by boat, helicopter, or high-clearance vehicles • Emergency services affected if located in the flood zone • Evacuation warnings given to emergency services (up to 12 hrs lead time) • Multiple failure (breaches) of flood defence systems and significant overtopping • 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 • Closure of key and essential transport routes for up to 5 days leading to national disruption to commuters and supplies of goods and services • There are hospitals, schools, shops and industrial/commercial premises in the flooded area (& possibly rest centres) For evacuation and emergency sheltering and accommodation, the following assumptions are made: • Of all evacuees, 60% leave the affected area and stay with relatives/friends or holiday-makers return home. 30% use available hotels in safe areas [may need tourists to vacate rooms for local residents] 142,000 (22%) of people flooded need assisted sheltering for up to 5 days and 25% of displaced						

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		households need temporary accommodation for up to 12 months.						
HL 16	Local coastal / tidal flooding (affecting more than one Region)	**Outcome Description** Sea surge, spring tides, gale force winds, heavy rainfall affecting more than one Region, some defences overtopped or failing at multiple locations. Flooding of 1000 to 10,000 properties for up to 14 days. Up to 20 fatalities, 300 casualties and up to 200 missing persons. Up to 50,000 people (including tourists) in coastal villages and towns evacuated from flooded sites. People stranded over a large area and up to 5,000 people in need of rescue. Up to 10,000 people needing assistance with sheltering for up to 12 months. Multi-agency response invoked, possible large scale evacuation required. Suddenness of failure of defences would not be possible to predict. Tidal inundation would be rapid and wave impact would cause structural damage to properties. Impact on infrastructure includes: widespread disruption for 7-14 days, salt damage, road and bridge damage, debris and contaminated water supplies and pollutants from affected businesses. Rural impacts include: widespread livestock carcasses, waterborne disease. Sewage treatment works flooded. Numerous properties destroyed. Many more uninhabitable for 12 months. **Variation and further information** The flooding event would have a regional impact, translating into loss of lives, severe economic damage and need between 6 and 18 months recovery before business as usual conditions are restored. Significant mutual aid would be deployed from inland counties. **Assumes:** See H19 (Many of the assumptions are the same for a major regional flood as they would be for a major national flood.	Medium Low (2)	Catastrophic (5)	High	EA		
HL 17	Local coastal / tidal flooding (in one Region)	**Outcome Description** Sea surge, high tides, gale force winds affecting the coastline and one Region, a defence system	Medium (3)	Moderate (3)	High	EA		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		overtopped or failing at a single location. Localised impact with infrastructure affected and up to 1000 properties flooded for up to 14 days. Up to 10 fatalities, 150 casualties and up to 100 missing persons. Up to 20,000 people (including tourists) in coastal villages and towns evacuated from flooded sites. People stranded over a large area and up to 2,000 people in need of rescue. Up to 3,000 people needing assistance with sheltering for up to 12 months. Multi-agency response invoked with some local evacuation and cordoning off of affected areas. Tidal inundation would be rapid and wave impact would cause structural damage to properties. Impact on infrastructure includes: localised disruption for up to 7 days, salt damage, road damage, debris and contaminated local water supplies and pollutants from affected businesses. Rural impacts include livestock carcasses, waterborne disease. Some properties destroyed and others uninhabitable for 12 months. **Variation and further information** Mutual aid will be needed within a Region and possibly from neighbouring regions. **Assumes:** See H19 (Many of the assumptions are the same for a significant local flood as they would be for a major national flood.) However, the impact may be specific to one area rather than several sites.						
HL 18	Local / Urban flooding fluvial or surface run-off	**Outcome Description** A sustained period of heavy rainfall extending over two weeks, perhaps combined with snow melt, resulting in flash flooding and steadily rising river levels across entire counties and could threaten a large urban town. Localised flooding of 1000 to 10,000 properties for 2-7 days. Up to 15 fatalities and 150 casualties. Up to 15,000 people evacuated. Up to 500 people stranded over a large area and in need of rescue. There would be major impact on road and rail links, making them impassable for up to 5 days. Impact on infrastructure includes: some buildings collapse, water damage, road and bridge damage. Sediment movement and contamination of water	Medium (3)	Significant (4)	Very High	EA		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		supplies. Loss of essential services (gas, electricity & telecoms) to 20,000 homes for up to 14 days. Widespread disruption for 7-14 days, significant debris and pollutants from affected businesses. Up to 1,000 people needing assistance with sheltering for up to 12 months. Rural impacts include widespread livestock carcasses, waterborne disease. Sewage treatment works flooded. Up to 50 properties destroyed and many more uninhabitable. Up to 2,000 people needing assistance with sheltering for up to 12mths. **Variation & Further Information** The flooding event would have a regional impact, possibly translating into loss of lives, localised economic damage and need between 6 and 18 months recovery before business as usual conditions are restored. The depth and velocity of water flows will vary. Significant mutual aid would be deployed from neighbouring regions, although other regions are also likely to be at risk or impacted at the same time. **Assumes:** See H21 (Many of the assumptions are the same for a major regional fluvial flood as they would be for a major national incident.						
HL 19	Local fluvial flooding.	**Outcome Description** A sustained period of heavy rainfall extending over two weeks, perhaps combined with snow melt, resulting in flash flooding and steadily rising river levels within a region. Localised flooding of 100 to 1,000 properties for 2-7 days. Up to 5 fatalities and 50 casualties. Up to 5000 people evacuated, up to 200 people stranded over a large area and in need of rescue. There would be some impact on minor roads and some A roads and trunk roads impassable for a time. Some main rail lines may need to be closed for a week for repairs etc. Most waterways closed to traffic because of strong currents and high water levels. Impact on infrastructure includes, water damage, road and bridge damage. Sediment movement and contamination of local water supplies. Localised loss of essential services (gas, electricity & telecoms) Up to 5000 for up to 14 days. Up to 250 people needing assistance with	Medium High (4)	Moderate (3)	High	EA		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		sheltering for up to 12 months. Substantial disruption within a county for 7-14 days. Significant debris and pollutants clear-up needed. **Variation & Further Information** The flooding event would have a sub-regional impact, and is a real threat to lives. Localised economic damage and need between 6 and 18 months recovery before business as usual conditions are restored. The depth and velocity of water flows will vary. Significant mutual aid would be deployed from neighbouring counties but the response effort could be contained within a region. Assumes: See H21 (Many of the assumptions are the same for a significant local fluvial flood as they would be for a major regional flood.) However, the impact may be specific to one area rather than several sites.						
HL 20	Localised, extremely hazardous flash flooding	**Outcome Description** Heavy localised rainfall in steep valley catchment leading to extremely hazardous flash flooding (eg high velocities and depths). Likely that no flood defences in place. Probably no flood warning service available / or suddenness of event means timely flood warnings not possible. Flooding of up to 200 properties. (NB: the outcome is essentially the same as H44 - dam or reservoir failure). **Variation & Further Information** **Assumes:** Very little time to evacuate (as little as 15 minutes). Flooding lasts less than 24 hours. Emergency services not pre-warned. Extent of downstream effect could reach 30-50km. Significant local infrastructure damage - gas, electricity supplies, telecommunications, road and rail links.	Medium High (4)	Moderate (3)	High	EA		
H 50	Drought	**Outcome Description** Periodic water supply interruptions affecting 385 000 businesses in London for up to 10 months. Emergency Drought Orders in place authorising rota cuts in supply according to needs of priority users as directed by Secretary of State. The 2.24 million households in London would not be subjected to	Medium Low (2)	Significant (4)	High	EA		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		supply interruptions. A drought of this severity is unprecedented and would take at least 3 dry winters to develop.						
		STRUCTURAL						
HL 21	Land movement (i.e. caused by tremors or landslides)	**Outcome Description** Roads and access routes impassable for a time. Emergency access into/out of large populated areas difficult or impossible; severe congestion over wide geographical area. Loss of power and other essential services over wide geographical area. Potential for a number of persons to be trapped or missing either in landslides itself and/or in collapsed structures. Up to 5 fatalities depending on the size and location of land movement. **Variation and further information** Such incidents are rare within the UK with some areas being more prone to landslides than others. Geography and climatic conditions will determine likelihood.	Low (1)	Moderate (3)	Medium	LFB		
HL 22	Building Collapse.	**Outcome Description** Collapse of low rise building, or part thereof. Potential for a number of persons to be trapped or missing. Localised loss of power and other essential services. Local access routes affected due to road closures. Up to 5 fatalities and 20 casualties depending on the size and construction of building, and occupation rates. **Variation and Further Information** A number of such incidents annually within the UK. Some areas will be more at risk than others due to age of local building stock.	High (5)	Minor (2)	Medium	Local Authorities		
HL 22a	Large Building Collapse	**Outcome Description** Collapse of a large building (high-rise block, shopping mall etc). Up to 100 fatalities depending on the size and construction of building, and occupation rates, and 350 casualties. Potential for a number of persons to be trapped or missing. Localised loss of power and other essential services. Local access routes affected due to road closures.	Medium Low (2)	Moderate (3)	High	Local Authorities		
HL 23	Bridge Collapse.	**Outcome Description** Roads, access roads and transport infrastructure	Low (1)	Moderate (3)	Medium	Local Authorities		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		impassable for considerable length of time. Severe congestion over wide geographical area. Emergency access into / out of large populated areas severely restricted. Potential for a number of persons to be trapped or missing. **Variation and Further Information** It is considered that such incidents are rare within the UK.						
H 44	Major reservoir dam failure/collapse	Collapse without warning resulting in almost instantaneous flooding. Significant movement of debris (including vehicles) and sediment. Complete destruction of some residential and commercial properties and serious damage of up to 500 properties. Several thousand other properties could be flooded. Up to 200 fatalities, up to 1000 casualties. Up to 50 missing persons and people stranded. Hazardous recovery amongst collapsed infrastructure and debris. Water supply to homes and businesses is lost. Up to 200 people need temporary accommodation for 2 – 18 months. **Variation and Further Information** Assumes: No time to evacuate, flooding lasts less than 24 hours. Emergency services not pre-warned. Extent of downstream effect could reach 50-60km. Significant damage to gas, electricity supplies, telecommunications, road and rail links.	Low (1)	High (5)	Medium	Local Authorities		
HL 105	Complex Built Environments	**Outcome Description** A consequence of a major incident affecting large buildings / complex built environments. Incidents in these facilities have the potential to trigger a complex chain of events that lead to serious consequences for public.	Medium Low (2)	Moderate (3)	High	Local Authorities		
HUMAN HEALTH								
H2 2	Influenza Type Disease (Epidemic).	**Outcome Description** A serious epidemic of much greater severity than the usual seasonal flu. Weekly GP consultations for new episodes of flu-like illness likely to exceed 400 per 100,000 of population at the peak (compared with a peak of around 200 per 100,000 population per week in an average year).	Medium High (4)	Moderate (3)	High	Health		
H 23	Influenza Type Disease (Pandemic).	**Outcome Description** Each pandemic is different and the nature of the virus and its impacts cannot be known in advance.	Medium High (4)	Significant (4)	Very High	Health		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		Previous pandemics have led to markedly 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. **Variation and Further Information** Clinical attack rate of 25 to 50% spread over one or more waves with case fatality of up to 2.5%. This means, at the upper end of assumptions, up to some 750,000 excess deaths in the UK across the whole period of the pandemic and over 10,000 healthcare contacts per 100,000 population per week at peak. Probable peak in weeks 6 to 8 following first case, with 22% of total cases occurring at this time.						
H 24	Emerging infectious diseases	**Outcome Description** Precise impact will depend upon the effectiveness of antibiotics and antivirals 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 travelers and their families and close contacts, with spread to health care workers within hospital setting. • Short term disruption to local hospital intensive care facilities • Possible disruption of several weeks to elective procedures • Public concern about travel, within and beyond the UK and possible international travel restriction advice. **Variation & Further Information** • New infection can spread rapidly from person to person and has done so before the first case(s) is identified • The new infection dies not originate within	Medium (3)	Moderate (3)	High	Health		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		the UK but rapid global spread to UK via air travel • Viral infection for which there is no effective treatment other than patient management through some effect from antivirals if given swiftly • The possibility of spread within a hospital setting, prior to the infection being identified in the patient For an outbreak of a new infection such as H5N1 avian influenza, which does not spread rapidly from person to person, this is equally likely and will give a lower level of casualties, but could have a higher fatality rate amongst cases of around 50%. Such an infection gives a longer period in which to put effective contrail measure in place to prevent spread.						
HL 24a	Legionnaires Disease.	**Outcome Description** A point source outbreak of Legionnaires' disease, a serious form of atypical pneumonia caused by poorly maintained water systems. In highly populated areas of London an outbreak caused by a cooling tower could exceed a 1000 (extrapolated from Barrow) with dates of onset over a prolonged period of time (several days - weeks).	Medium High (4)	Minor (2)	Medium	Health		
HL 24b	Meningococcal Disease.	**Outcome Description** Cluster of cases of meningococcal disease caused by Neisseria Meningitidis which could cause up to 10 fatalities and 50 casualties.	Medium High (4)	Minor (2)	Medium	Health		
HL 102	Oak Processionary Moth (OPM)	**Outcome Description** Infestation of Oak Processionary Moth (OPM) caterpillars to plague proportions causing severe defoliation of trees and epidemic numbers of people requiring medical treatment. **Variation and Further Information** The caterpillar form of the OPM can cause irritation and allergic reaction if people touch the caterpillars or if the hairs are blown by wind into people's eyes, ears, nose, throat or skin. The irritation can require medical attention especially in people with conditions such as asthma, including hospitalisation	Medium High (4)	Minor (2)	Medium	Local Authorities		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		in extreme cases. The hairs can also affect animals including cats, dogs and horses. Previous outbreaks (Europe) have required small areas of countryside or villages to be quarantined.						
ANIMAL HEALTH								
H 25	Non-zoonotic Notifiable animal diseases (e.g. foot and mouth disease (FMD), classical swine fever, blue tongue and Newcastle disease of birds).	**Outcome Description** The most serious disease in this category is FMD which drives the risk and outcome descriptions. Assessment based on the need to cull and dispose up to 4 million animals across GB with up to 900 infected premises. For FMD whole of Great Britain is likely to be declared a 'controlled area', prohibiting the movement of all susceptible livestock unless licensed. Disruption to rural communities, local economies and the environment. Significant impact on farm incomes and allied industries. For a major outbreak many rural industries, including tourism will be affected, impacts on tourism believed to have been overstated in previous assessments and current assessments assess this impact at £100 million. £400 million losses to the agriculture and food chain industry. Loss of disease free status resulting in EU and third country import bans on livestock and livestock products from susceptible animals. The major outbreak and realistic worst case scenarios are of much greater scale than that experienced in the most recent outbreak in 2007 but less than that experienced in 2001 due to changes in movement regimes and control policies. **Variation & Further Information** Although the impact of a disease outbreak will vary between areas, the likelihood of a disease incursion cannot be differentiated between areas. FMD is one of the most infectious animal diseases known to man and spread by direct and indirect contact it may be also spread by windborne means. For the realistic worst case scenario, disease is introduced into a predominantly sheep area and infected animals which are not yet exhibiting clinical symptoms are sold at market or moved to other	Medium (3)	Minor (2)	Medium	Local Authorities		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		premises before disease is detected resulting in widely dispersed multiple outbreaks. Economic assessments are based on a major incident; minor incidents (most likely) would have a much lower economic impact.						
H 26	Zoonotic Notifiable animal diseases (e.g. Highly Pathogenic Avian Influenza (HPAI), rabies and West Nile virus).	**Outcome Description** The most significant disease in this category is Highly Pathogenic Avian Influenza (HPAI) which drives the outcome descriptions, although all these diseases can result in human death: AI is largely a disease of birds. The virus does not easily cross from birds to infect humans, although there is a theoretical risk of influenza virus reassortment if people with seasonal flu become co-infected with AI. Potential human health threat (255 deaths from 408 cases worldwide since December 2003[correct at 24/02/09]). Realistic worst case scenario based on the need to cull and dispose of up to 30 million poultry across GB. Loss of disease free status resulting in EU and third country import bans on poultry, captive birds and poultry products. Disruption to rural communities, local economies, tourism and the environment. Economic impacts for a major outbreak assessed at £60 million. The major outbreak scenario is of much greater scale than that experienced in any of the recent outbreaks of avian influenza in the UK, where the disease has been contained and has been limited to one or two infected premises plus associated contact premises. **Variation & Further Information** The realistic worst case scenario involves Highly Pathogenic Avian Influenza (H5N1) being found widely in birds resulting in numerous outbreaks on poultry (particularly ducks and geese) farms throughout the country. Economic assessments are based on a major incident; minor incidents, (most likely) would have a much lower economic impact.	Medium (3)	Minor (2)	Medium	Local Authorities		
INDUSTRIAL ACTION								
HL	Loss of cover due	**Outcome Description**	Medium	Moderate	High			

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
42	to industrial action by workers providing a service critical to the preservation of life (such as emergency service workers).	A number of three day strikes with significant support over a two month period affecting a single emergency service. **Variation and further information:** Likelihood and impact will vary between, and geographically within, emergency services.	High (4)	(3)				
H 30	Emergency services: loss of emergency fire and rescue cover because of industrial action.	**Outcome Description** A series of strikes by fire fighters takes place, spread over a period of two months, perhaps lasting up to 48 hours each. **Variation and further information:** Chief Fire Officers would all deploy the emergency cover they could make available in line with an optimum response to their locally assessed risk profiles. London, and possibly other metropolitan areas, would have only very thin cover. A number of fire and rescue authorities (FRAs) would be self sufficient in the provision of emergency cover. Assumes no military assistance.	High (5)	Moderate (3)	High	LFB		
H 31	Significant or perceived significant constraint on fuel supply at filling stations e.g. industrial action by tanker drivers, or effective fuel blockades at key refineries/ terminals by protesters, due to the price of fuel	**Outcome Description** Filling stations, depending on their locations, would start to run dry between 24 - 48 hours. Panic buying would exacerbate the situation. Replenishment of sites would take between 3 - 10 days depending on location much would depend on whether drivers from other companies would be prepared to cross picket lines, whether companies judged that they were able to maintain safe operations in the presence of picket lines or protests, and the extent of the supply of fuel from other locations.	Medium (3)	Minor (2)	Medium	MPS		
H 35	Industrial action by key rail or London Underground workers.	**Outcome Description** 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 > 3 days. Greater impact if action occurs in a co-ordinated manner. L Underground. Industrial action lasting a week.	Low (1)	Minor (2)	Low	BTP		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
INTERNATIONAL EVENTS								
H 37	Influx of British Nationals who are not normally resident in the UK.	**Outcome Description** Up to 10,000 British nationals not normally resident in the UK, returning to UK within a 4 – 6 week period following conventional war, widespread civil unrest or sustained terrorism campaign against British and other Western nationals.	Medium High (4)	Minor (2)	Medium	Local Authorities		
INDUSTRIAL TECHNICAL FAILURE								
H 38	Technical failure of a critical upstream oil/gas facility, gas import pipeline terminal, or Liquefied Natural Gas (LNG) import reception facility leading to a disruption in upstream oil and gas production	**Outcome Description** Catastrophic accident destroying all parts of a critical upstream facility and, in the worst case, taking months or more to restore to normal levels of service. This could potentially result in <11% loss of gas supply to the UK which could impact on power generation if demand were high. As 40% of power is generated by gas fired stations then a reduction in generation might be felt. Downstream oil would not be immediately so adversely affected given alternative means of supply.	Medium Low (2)	Significant (4)	High	LFB		
H 39	Failure of water infrastructure or accidental contamination with a non-toxic contaminant.	**Outcome Description** Loss of or non-availability for drinking, of the piped water supply, for up to 50,000 people, for more than 24 hours and up to 3 days. **Variation and Further Information** Domestic, industrial, commercial and agricultural premises without piped water. Fire tenders cannot be refilled from hydrants within the affected area. Water Companies required to provide at least 10 litres per person per day until supply restored. This is done by means of water tankers supplying bowsers on the street and bottled water. Priority is given to vulnerable customers and those with special needs, who may be provided individually with bottled water, which has to meet drinking water standards. Liaison with local health and social services ensures that details of such customers are complete at the time of the incident. Water companies are also required to give priority to hospitals and schools. Also required to have due regard for livestock and essential food industries. However, it may not be possible to continue a full	Medium High (4)	Moderate (3)	High	LFB		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		service at hospitals, schools and businesses etc that do not maintain their own on-site water storage. Water companies can manage the response with the support of mutual aid from other water companies for which arrangements are in place.						
H 49	Loss of drinking water supplies due a major accident affecting infrastructure	**Outcome Description** Loss of or non-availability for drinking, of the piped water supply, for a population of up to 350,000 for more than 24 hours and up to 2 weeks. **Variation and Further Information** An incident of this size would be a regional event. Domestic, industrial, commercial and agricultural premises without piped water. Fire tenders can not be refilled from fire hydrants within the affected area. Water companies required to plan to provide domestic customers with alternative water supplies of at least 10 litres per person per day until normal supply restored. For such a large population affected over a period of a week this will cause severe logistical difficulties in order to enable alternate supplies of bottled water and/or keep water bowsers regularly topped up and Mutual Aid from other water companies will not be sufficient response. This requires a multi-agency response coordinated by Gold command due to the prolonged nature of outage and logistics. Could lead to suspension of services at hospitals, schools and businesses etc which do not maintain their own on-site water storage, even though priority is given to hospitals and schools. Due regard is given to livestock and essential food industries. However, food industries within the impacted zone may close. Supplying livestock premises may require input from NFU, RSPCA, SVS as human population will be given priority by water company.	Low (1)	Significant (4)	Medium	EA		
H 40	No notice loss of significant telecommunications infrastructure in a localised fire,	**Outcome Description** Loss of service to up to 100,000 people for up to 72 hours **Variation and Further Information** Building damage to a large urban telecoms facility.	High (5)	Minor (2)	Medium	MPS		

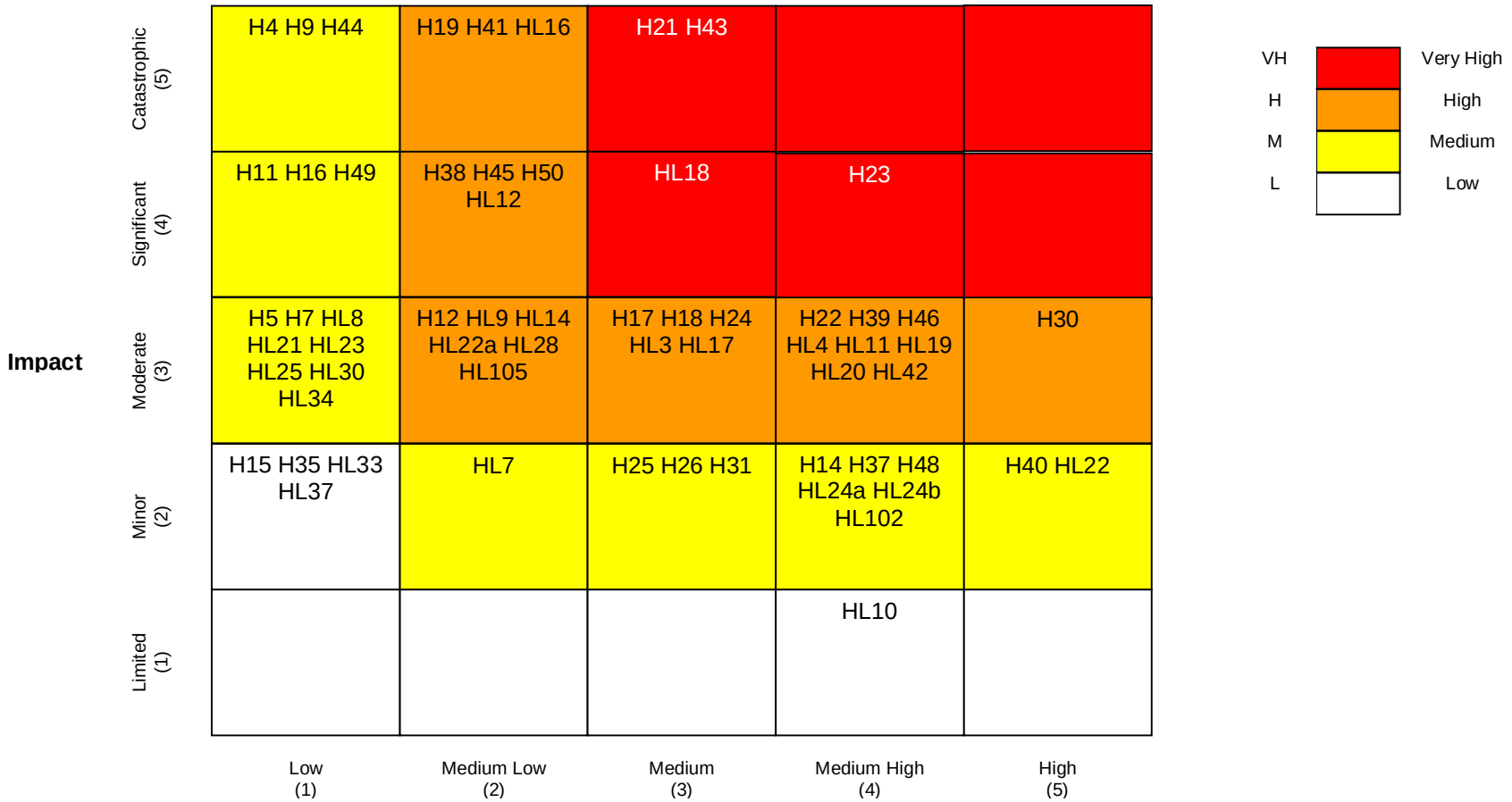
Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
	flood or gas incident.	Possible impact on emergency services including disruption to proposed Emergency Services Control Centres. Possible accidental cutting of submarine cables.						
H 41	Technical failure of national electricity network (Blackstart)	**Outcome Description** Total blackout for up to 3-5 days due to loss of the National Grid. Three days is best time. If there is damage to the network (i.e. 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. Back up generators available for limited time for individual businesses and emergency services in some instances. **Variation and Further Information** Occurs in winter and blackout lasts for up to 3 days. Isolated rural areas reconnected within a few hours. "Power Islands" created over the first day. Most of the country reconnected within three days, London late on in the process. Peak demand not able to be met after three days.	Medium Low (2)	Catastrophic (5)	High	LFB		
H 43	Telecommunication infrastructure - human error.	**Outcome Description** Widespread loss of telecommunications (including public land line and mobile networks) at a regional level for up to 3 days. **Variation and Further Information** Assume Greater London as a reasonable worst case scenario. Assume emergency services' communication systems are also affected.	Medium (3)	Catastrophic (5)	Very High	LFB		
H 45	Technical failure of electricity network due to operational error or bad weather causing damage to the system.	**Outcome Description** Total shutdown of the electricity supply over an entire region of the UK occurring during working week and lasting for 24hours. **Variation and Further Information** Assume Greater London as a reasonable worst case scenario. Impact would vary depending on the region involved and the availability of resources within that region to maintain vital services. Mutual aid would be available from other regions therefore it is unlikely that resources/services would be overwhelmed.	Medium Low (2)	Significant (4)	High	LFB		

Ref ID	Risk sub-category	Outcome Description / Variation and Further Information	Likelihood	Impact	Risk Rating	Lead Assessor	Controls in Place	Review Date
		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. Stations in the affected area were able to perform a black start and the transmission network was re-established within 24 hrs. it should be noted that widespread damage to distribution overhead lines meant that many customers remained without a supply for several days before repairs could be completed.						

A number of risk are currently considered by the London Risk Assessment Working Group to be not applicable to the London Local Resilience Area at the current time, these are listed below. As risk assessment is a dynamic process the status of these risk is re-assessed on a regular basis.

ID	Risk category	Risk sub-category	Rationale for Not Applicable Status	Last Reviewed
H1	Industrial Accident & Environmental Pollution	Fire or explosion at a gas LPG or LNG terminal or flammable gas storage site.		
HL 1	Industrial Accident & Environmental Pollution	Fire or explosion at a gas terminal or involving a gas pipeline.		
H2	Industrial Accident & Environmental Pollution	Fire or explosion at an onshore ethylene gas pipeline.	Deemed not applicable to London due to no ethylene gas pipelines	April 2008
HL 26	Industrial Accident & Environmental Pollution	Localised fire or explosion at an onshore ethylene gas pipeline	Deemed not applicable to London due to no ethylene gas pipelines	April 2008
H3	Industrial Accident & Environmental Pollution	Fire or explosion at an oil refinery	Deemed not applicable to London due to no oil refineries	Sept 2011
HL 27	Industrial Accident & Environmental Pollution	Localised fire or explosion at an oil refinery	Deemed not applicable to London due to no oil refineries	Sept 2011
H6	Industrial Accident & Environmental Pollution	Fire or explosion at an offshore oil/gas platform	Deemed not applicable to London due to no offshore Oil or gas platforms	Sept 2011
H 103	Industrial Accident & Environmental Pollution	Fire or explosion at a gas LPG or LNG terminal (or associated onshore feedstock pipeline)	The nearest gas terminal to a London LRF is Bacton, Norfolk, Therefore this risk is not applicable to London.	May 2008
HL 104	Industrial Accident & Environmental Pollution	Fire or explosion at a gas LPG or LNG terminal (or associated onshore feedstock pipeline)	The nearest gas terminal to a London LRF is Bacton, Norfolk, Therefore this risk is not applicable to London.	May 2008
H8	Industrial Accident & Environmental Pollution	Very large toxic chemical release		
HL 2	Localised industrial accident involving large toxic release	Localised industrial accident involving large toxic release (e.g. from a site storing large quantities of chlorine).	Not Applicable as incorporated in H4, H9 and HL3	Sept 2011
H 10	Industrial Accident & Environmental Pollution	Radioactive substance release from a nuclear reactor.	Deemed not applicable to London due to no nuclear reactors	Sept 2011
HL 31	Industrial Accident & Environmental Pollution	Limited radioactive substance release from a nuclear accident.	Deemed not applicable to London due to no nuclear reactors	Sept 2011
H 42	Transport Accidents	Rapid accidental sinking of a passenger vessel in or close to UK waters.		
HL 13	Transport Accidents	Maritime accident or deliberate blockage resulting in blockage of access to key port, estuary, maritime route for more than one month		
H 33	Industrial Action	Unofficial strike action by prison officers		

Summary of Risk Ratings



See Appendix 2 for an explanation of the matrix and risk categories

Appendix 1 – Likelihood and Impact Scoring Scales

Impact scoring scale – qualitative measures

Level	Descriptor	Categories of Impact	Description of Impact
1	Limited	Health	• Limited number of injuries or impact on health.
		Social	• Limited number of persons displaced and insignificant personal support required. • Limited disruption to community services, including transport services and infrastructure.
		Economic	• Limited impact on local economy.
		Environment	• Limited impact on environment.
2	Minor	Health	• Small number of people affected, no fatalities, and a small number of minor injuries with first aid treatment.
		Social	• Minor damage to properties. • Minor displacement of a small number of people for < 24 hours and minor personal support required. • Minor localised disruption to community services or infrastructure < 24 hours.
		Economic	• Negligible impact on local economy and cost easily absorbed.
		Environment	• Minor impact on environment with no lasting effects.
3	Moderate	Health	• Sufficient number of fatalities with some casualties requiring hospitalisation and medical treatment and activation of MAJAX, the automated intelligent alert notification system, procedures in one or more hospitals.
		Social	• Damage that is confined to a specific location, or to a number of locations, but requires additional resources. • Localised displacement of > 100 people for 1-3 days.
		Economic	• Limited impact on local economy with some short-term loss of production, with possible additional clean-up costs.
		Environment	• Limited impact on environment with short-term or long-term effects.
4	Significant	Health	• Significant number of people in affected area impacted with multiple fatalities, multiple serious or extensive injuries, significant hospitalisation and activation of MAJAX procedures across a number of hospitals.

		Social	• Significant damage that requires support for local responders with external resources. • 100 to 500 people in danger and displaced for longer than 1 week. Local responders require external resources to deliver personal support. • Significant impact on and possible breakdown of some local community services.
		Economic	• Significant impact on local economy with medium-term loss of production. • Significant extra clean-up and recovery costs.
		Environment	• Significant impact on environment with medium- to long-term effects.
5	Catastrophic	Health	• Very large numbers of people in affected area(s) impacted with significant numbers of fatalities, large number of people requiring hospitalisation with serious injuries with longer-term effects.
		Social	• Extensive damage to properties and built environment in affected area requiring major demolition. • General and widespread displacement of more than 500 people for prolonged duration and extensive personal support required. • Serious damage to infrastructure causing significant disruption to, or loss of, key services for prolonged period. Community unable to function without significant support.
		Economic	• Serious impact on local and regional economy with some long-term, potentially permanent, loss of production with some structural change. • Extensive clean-up and recovery costs.
		Environment	• Serious long-term impact on environment and/or permanent damage.

Explanation of categories of impact

Category	Explanation
Health	Encompassing direct health impacts (numbers of people affected, fatalities, injuries, human illness or injury, health damage) and indirect health impacts that arise because of strain on the health service.
Social	Encompassing the social consequences of an event, including availability of social welfare provision; disruption of facilities for transport; damage to property; disruption of a supply of money, food, water, energy or fuel; disruption of an electronic or other system of communication; homelessness, evacuation and avoidance behaviour; and public disorder due to anger, fear, and/or lack of trust in the authorities.
Economic	Encompassing the net economic cost, including both direct (*eg* loss of goods, buildings, infrastructure) and indirect (*eg* loss of business, increased demand for public services) costs.
Environment	Encompassing contamination or pollution of land, water or air with harmful biological / chemical / radioactive matter or oil, flooding, or disruption or destruction of plant or animal life.

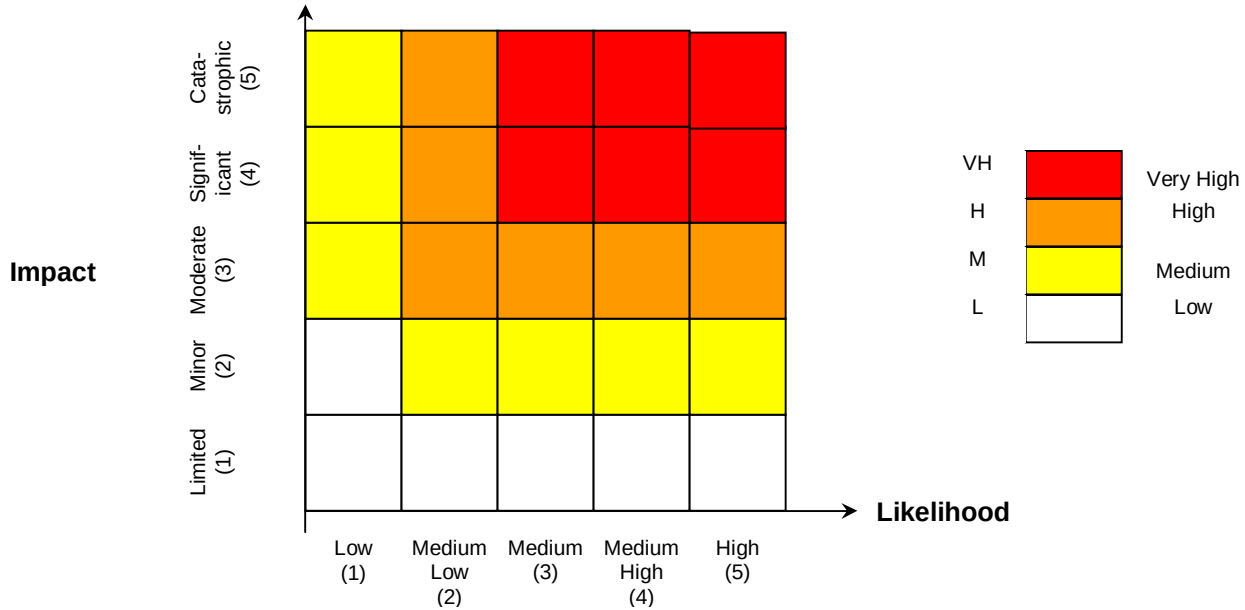
Note:
Strictly, levels 1 and 2 of the impact scale are likely to fall below the threshold for an emergency. Consequently, there may be no statutory requirement to plan for events that score 1 or 2 on the impact scale. This scale recognises that, to demonstrate a thorough analysis, Category 1 responders will wish to include in their risk assessment certain risks with impacts at these levels.

Likelihood scoring scale

Level	Descriptor	Likelihood Over 5 Years	Likelihood Over 5 Years
1	Low	> 0.005%	> 1 in 20,000 chance
2	Medium Low	> 0.05%	> 1 in 2,000 chance
3	Medium	> 0.5%	> 1 in 200 chance
4	Medium High	> 5%	> 1 in 20 chance
5	High	> 50%	> 1 in 2 chance

Based on the model likelihood and impact scoring scales published in Annex 4D of "Emergency Preparedness" (HM Government, 2005)

Appendix 2 – Risk Rating Matrix



Definitions of Nationally Approved Risk Ratings	
Very high (VH) risk	These are classed as primary or critical risks requiring immediate attention. They may have a high or low likelihood of occurrence, but their potential consequences are such that they must be treated as a high priority. This may mean that strategies should be developed to reduce or eliminate the risks, but also that mitigation in the form of (multi-agency) planning, exercising and training for these hazards should be put in place and the risk monitored on a regular frequency. Consideration should be given to planning being specific to the risk rather than generic.
High (H) risk	These risks are classed as significant. They may have a high or low likelihood of occurrence, but their potential consequences are sufficiently serious to warrant appropriate consideration after those risks classed as 'very high'. Consideration should be given to the development of strategies to reduce or eliminate the risks, but also that mitigation in the form of at least (multi-agency) generic planning, exercising and training should be put in place and monitored on a regular frequency.
Medium (M) risk	These risks are less significant, but may cause upset and inconvenience in the short term. These risks should be monitored to ensure that they are being appropriately managed and consideration given to their being managed under generic emergency planning arrangements.
Low (L) risk	These risks are both unlikely to occur and not significant in their impact. They should be managed using normal or generic planning arrangements and require minimal monitoring and control unless subsequent risk assessments show a substantial change, prompting a move to another risk category.

Based on the model risk rating matrix published in Annex 4F of "Emergency Preparedness" (HM Government, 2005)