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Version 2.12
October 2018

Sutton Borough Risk Register

Sutton Borough Resilience Forum

This register is maintained in accordance with Regulation 15(1) of
The Civil Contingencies Act 2004 (Contingency Planning) Regulations 2005.



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Document History

Review Date	Version	Summary of Changes
	1.0	First draft
May 2011	1.1	Revision of risk scores
May 2013	1.2	Revision of risk scores
June 2015	2.1	Reformat and revision of content and risk scores
May 2016	2.2	Revision of risk scores and amendment to risk matrix (page 8)
June 2016	2.3	Revision of risk scores and amendment to risk matrix (page 8)
November 2016	2.4	Revision of risk score and outcome description (page 25)
February 2017	2.5	Removal of H46.
April 2017	2.6	Revision of risk scores and addition of H22
July 2017	2.7	Revision of risk scores for HL22 and HL21, and removal of H22a
December 2017	2.8	Rewording of H37
January 2018	2.9	Full risk register review to align with London Risk Register.
March 2018	2.10	Revision of risk scores
July 2018	2.11	Revision of risk scores and outcome descriptions for H16 and HL11, and addition of H60
October 2018	2.12	Revision of risk scores following Lrag.

Distribution History

Date	Name	Version
November 2009	SIRF	1.0
May 2011	SIRF	1.1
June 2013	SIRF	1.2
July 2015	BRF	2.1
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January 2017	BRF	2.4
April 2017	BRF	2.6

Notes:

This Borough Risk Register is collectively owned by the Category 1 Responders (as defined by Schedule 1 to the Civil Contingencies Act 2004) within the Sutton Borough Resilience Forum area.

Sutton Borough Resilience Forum Borough Risk Register

This Borough Risk Register (BRR) is maintained in accordance with Regulation 15(1) of The Civil Contingencies Act 2004 (Contingency Planning) Regulations 2005.

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1 Sutton Borough Resilience Forum Membership

	Agency
	Category 1 Responders
1	Local Authority – (London Borough of Sutton)
2	Metropolitan Police Service
3	British Transport Police
4	London Fire Brigade
5	London Fire Brigade Emergency Planning
6	London Ambulance Service
7	NHS England
8	Director of Public Health
9	The Environment Agency
10	Public Health England
	Category 2 Responders
11	Sutton Clinical Commissioning Group
12	Utility Companies
13	Transport Companies
14	Health & Safety Executive
	Existing Non-Category 1 or 2 Resilience Forum Representatives
15	Military Liaison
16	Voluntary Sector
17	Faith Sector

2 Introduction and Background

The Civil Contingencies Act 2004 ('The Act') places a legal duty on Category 1 responders to produce a Borough Risk Register. Section 2, sub-section 1 of the Act requires Category 1 responders '*... from time to time assess the risk of an emergency 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*'. This should be linked to individual Category 1 responders' processes of adding to (or modifying) their own individual plans.

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 (s.2(2) of the Civil Contingencies Act 2004).

In the event of an emergency, the Act requires Category 1 responders to activate an emergency plan. Before the activation of such a plan is necessary, two tests should be carried out:

- a) Where the emergency would be likely to seriously obstruct the responding organisations' abilities to perform their functions; and
- b) Where the Category 1 responder considers it necessary or desirable to act to prevent, reduce, control, or mitigate the emergency's effects, or otherwise take action and would be unable to act without changing the deployment of its resources or acquiring additional resources.

This clearly implies that only serious emergencies need to form part of the risk assessment process. The risk assessment process required need not cover large pre-planned events, as a risk assessment should form part of the planning stage.

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The Civil Contingencies Act 2004 (Contingency Planning) Regulations 2005 give the legal requirements in relation to risk assessment in Part 3. These regulations place a responsibility on Category 1 responders to co-operate with each other in maintaining a Borough Risk Register (BRR). Detailed guidance on the risk assessment process can be found within Chapter 4 (and its annexes) of the *Emergency Preparedness* guidance document which has been published by HM Government.

This guidance states that the risk assessment process is the first step in the emergency planning process in order to identify the risks applicable to their area and then plan according to the priorities identified.

The process is divided into six stages; these are:

1. **Contextualisation**

- Define the scope of the project (relate to definition of 'emergency' in the Act – see Section 4) and the process to be followed.
- Identify stakeholders.
- Set out risk evaluation criteria and principles.
- Review or describe social, economic, cultural, infrastructural and environmental issues within local context.

2. **Hazard review and allocation for assessment**

Identification of those non-malicious hazards that present significant risks (ie could give rise to an emergency) in their areas over the next five years. These hazards will be identified on the basis of experience, research or other information. It should then be identified which agency will be the lead assessor to conduct the risk assessment.

- Taking into account centrally provided guidance and drawing on information provided by Category 2 responders, Category 1 responders provisionally identify and describe hazards which might give rise to an emergency in the next five years and those which will not.
- Category 1 responders provisionally agree allocation of lead assessors.
- Local Resilience Forum (LRF) endorses hazards to be assessed and determines lead assessor responsibility.
- Risk Assessment Working Group (RAWG) convenes and reviews hazards identified at LRF for confirmation or possible BRR amendment.
- RAWG confirms appropriateness of lead allocation and identifies any other agencies with key roles.

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- RAWG agrees a project plan with deadlines for assessing individual or groups of hazards.

3. Risk Analysis

- Lead assessor considers the likelihood of hazards' occurrence over five-year period, drawing on generic assessments from central government, other research and knowledge of Category 1 responders.
- Lead assessor suggests the range of potential impacts arising from the hazards as well as any vulnerabilities surrounding these, and discusses with RAWG.
- Lead assessor captures assessment details for each hazard and related reasoning within the individual risk assessment form. This generates a provisional risk statement with likelihood, impact(s) and an overall risk assessment for evaluation by RAWG.

4. Risk Evaluation

- RAWG considers the individual risk assessment forms, compares the results to the risk criteria, and confirms or modifies these assessments as appropriate.
- Agreed assessments are collated and incorporated into BRR.
- Risk matrix is plotted for hazards.
- RAWG incorporates into the BRR threat statements provided by central government within the local risk assessment guidance (LRAG), but does not assess likelihood or impact.
- RAWG 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 LRF; and
 - makes recommendations to the LRF on risk priorities for hazards and threats.
- LRF reviews the CRR and risk matrix in light of the evaluation criteria, and amends as appropriate.
- LRF determines the acceptability of the risks before considering treatment.

5. Risk Treatment

- Review the capability challenges posed by the risks against existing capabilities, mitigation plans or known gaps.
- Set risk priorities.
- Evaluate proposed options for additional treatment of risks and agree risk treatment plan.
- Identify officer or organisation to be responsible for implementation of actions.
- Actions communicated to appropriate working groups.

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.

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

3 High Level Summary

Impact	Catastrophic (5)		Unconventional Attack; Drought	National Electricity Failure; Toxic Chemical Release	Pandemic Disease	
	Significant (4)	Aviation accident	Hazardous Goods Accident;	Surface water flooding; Fluvial Flooding; Regional Electricity Failure;	Severe Space Weather	
	Moderate (3)	Pipeline Fire or Explosion; Building Collapse; Bridge Collapse	Animal disease; Bio release; Road explosives accident; Complex Built Environments; Non-availability of piped water supply; Loss of telecommunications; Aviation accident; Cyber security (Infrastructure)	Railway Accident; Low temperatures and heavy snow; Effusive volcanic eruption; Land Movement; Attacks on infrastructure	Emerging infectious diseases; Groundwater flooding; Heatwave; Inland water pollution; Attacks on crowded places	Essential Service Strike; Attacks on transport system
	Minor (2)		Wildfire; Industrial explosions and major fires; Radioactive material release	Storms and gales; Fuel supply constraint; Transport industrial action	Volcanic ash; Food Chain Contamination; Arrival of British Nationals	
	Limited (1)			Public disorder	Large road accident	Cyber security (Data Confidentiality)
		Low (1)	Medium Low (2)	Medium (3)	Medium High (4)	High (5)
		Likelihood				

4 Contextualisation Statement

The London Borough of Sutton is part of the South West Sub Regional Resilience Forum (SW SRRF) which of comprises the London Boroughs of Richmond, Wandsworth, Merton, and the Royal Borough of Kingston.



Social Factors

According to the 2011 census 19% of the population in Sutton are not born in the UK or Ireland. The Greater London Authority estimates that 6% of Sutton's population don't speak English at home, both these statistics could prove problematic in the event of an evacuation emergency with issues around different cultures and languages present.

In terms of age according to the 2011 census, 7% of people in Sutton are over the age of 75 and 20% are under the age of 16, both these elderly and young people are more likely to be affected by an emergency and may require additional help and care. There are also 86 registered care homes within the borough with an estimated 1000-1200 residents. These establishments are also likely to need additional assistance in an emergency.

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The standard of living in Sutton shows that we are the 6th least deprived borough in London. In the 2010 Index of Multiple Deprivation. The borough was also in the top 30% of least deprived local authorities in the country.

Environmental Factors

Sutton is an outer London borough and is not heavily urbanised, containing more open spaces than its neighbouring boroughs except Surrey, which is less urbanised. Flooding has been identified as a substantial risk from the rivers Hogsmill, Beverley Brook, and the Wandle.

Hazardous Sites

There are no top tier Control of Major Accident Hazard (COMAH) sites within Sutton.

Potential hazards within the borough include the Beddington landfill site and the main hospital in the area, which contains radioactive materials is the Royal Marsden Hospital (a specialist Cancer hospital). The institute of Cancer research also contains radioactive materials.

5 Borough Risk Register

(Note: **Outcome description codes:** 'H' – hazard which will require a national as well as a local response (nationally defined); 'HL' – hazards which would not ordinarily prompt a national response and would usually be dealt with locally (nationally defined); 'L' – hazards which have been added to national outcome descriptions as a result of local considerations (locally defined). All outcome description codes are followed by a sequential numerical suffix (either nationally defined for 'H' and 'HL' codes or locally defined for 'L' codes.)

Risk Ref ID	Risk Sub-Category	Outcome/Description Validation and Further Information	Likelihood	Impact	Risk Rating	Controls in Place	Lead Assessor
Human Diseases/Human Health Diseases							
H 23	Pandemic Human Disease	One or more pandemic waves (weeks or months apart) lasting 12 - 15 weeks. Clinical attack rate of 25 to 50% spread over one or more waves with case fatality of up to 2.5%. Up to 750,000 excess deaths nationally across the whole period of the pandemic. Over 10,000 healthcare contacts per 100,000 population per week at peak. Probable peak 6 to 8 weeks following first UK case, with 22% of total cases occurring at this time.	4	5	Very High	<ul style="list-style-type: none"> - NHS Vaccination Programme (Seasonal and provision for pandemic specific) - Specific NHS capacity and response planning - Comprehensive surveillance systems - London Resilience Partnership Plans 	PHE
H 24	Emerging infectious diseases	Based upon the experience of the outbreak of Severe Acute Respiratory Syndrome (SARS) in 2002, outbreak originating outside the UK with cases occurring amongst returning travellers, their families and close contacts. Possible spread to healthcare workers within hospital setting. Short term disruption to local hospital intensive care facilities. Possible disruption of several weeks to elective procedures. Possible international travel restriction and public concern about travel, within and beyond the UK.	4	3	High	<ul style="list-style-type: none"> - NHS Vaccination Programme - Specialist capability and capacity planning in NHS trusts - Comprehensive surveillance systems and response arrangements - London Resilience Partnership Plans 	PHE

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		Some infections give a longer period in which to put effective control measure in place to prevent spread. Impact also dependant on effectiveness of pharmaceuticals in fighting infection.					
Flooding							
H 21	Fluvial flooding	A massive river flood event or series of concurrent events across multiple geographic regions following a sustained period of heavy rainfall extending over two weeks, possibly combined with snow melt and surface water flooding. The event would include major river flooding predominantly affecting large urban areas. This may also be combined with additional impacts from surface water flooding and sediment movement, resulting in the closure of primary transport routes and other infrastructure issues, with significant regional economic damage. We would expect loss of essential services (gas, electricity & telecoms) affecting up to 250,000 homes and businesses for up to 14 days as well as disruption to water supplies. Up to 328,000 properties (homes and businesses) across urban and rural areas (with a greater proportion situated in urban areas) may be flooded for up to 10 days affecting 363,000 residents. Between 200 to 450 fatalities, over 10,000 casualties and 20 missing persons ("missing" means not accounted for during the first 48 hours, before Police can reunite with family or friends) with up to 68,000 people needing assistance with evacuation (vulnerable communities), 8,000 of these being priority evacuees.	3	4	Very High	<ul style="list-style-type: none"> - Flood and Water Management Act 2010 - Land Drainage Act 1991 - Water Resources Act 1991 - EA Flood Warning Direct service - Met Office National Severe Weather Warning Service - EA inspection of flood defences - London Resilience Partnership Plans 	Environment Agency
H 22	Surface water flooding	Surface water flooding caused by a warm unstable atmosphere, most likely to occur in summer due to the warmer atmosphere having a greater water holding capacity, causing a pattern of convective rainfall events. These events result	4	5	High	<ul style="list-style-type: none"> - Flood and Water Management Act 2010 - The Flood Risk Regulations 2009 - Land Drainage Act 1991 	Environment Agency

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		in pockets of high intensity rainfall in the south east of England and includes rain gauges (in and just outside of London) recording exceptional levels of rainfall over a short duration. Flooding of up to 87,000 properties and 21,000 businesses (108,000 properties in total). Just over 40 fatalities and thousands of casualties. Evacuation of up to 314,000 people (25,000 of which may require additional assistance). Short to medium term shelter requirements for 117,000 residents, people leaving the area create the possibility of disruption and extra policing needed. Closure of schools in affected area for over 1 month.				<ul style="list-style-type: none"> - Water Resources Act 1991 - The London Plan - Civil Contingencies Act 	
L 19	Groundwater flooding	A rapid increase in volume of water in a localised area due to either; heavy rainfall, groundwater emergence or a burst water main which overwhelms the local drainage or river system, collects in low lying areas resulting in flooding of property or infrastructure.	4	3	High	<ul style="list-style-type: none"> - Flood and Water Management Act 2010 - Land Drainage Act 1991 - Water Resources Act 1991 - Environment Agency Floodline and public warnings - Met Office, National Severe Weather Warning Service - Flood Guidance Statements 	Environment Agency
Volcanic Hazards							
H55	Severe effusive (gas rich) volcanic eruption overseas	A severe volcanic eruption, generating large amounts of gas, aerosol and ash over a 5 month period affecting the UK and Northern Europe	3	3	High	<ul style="list-style-type: none"> - Met Office forecasting Category 1 and 2 responder - Business Continuity Plans - Excess Deaths Framework - Health Sector surge and escalation plans 	Greater London Authority

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H 54	Disruption to aviation as a consequence of volcanic ash	Volcanic ash incursions for up to 25 days resulting in sporadic and temporary closures of significant parts of UK airspace for up to a total of 15 days during a 3 month eruption period. The entire UK mainland and potentially other parts of Europe could be affected for up to 10 of these days. A single period of closure within the 3 month eruptive episode may last for up to 12 consecutive days, depending on meteorological conditions.	4	2	Med.	<ul style="list-style-type: none"> - Met Office Volcanic Ash Advisory Centre forecasting - CAA Volcanic Ash Safety Regime - Airline response plans 	Greater London Authority
H 17	Storms and gales	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.	3	2	High	<ul style="list-style-type: none"> - Regular inspections of trees and highways for maintenance. - Met Office National Severe Weather Warning Service - Met Office Hazard Manager service - Responder specialist resources 	Local Authorities
H 18	Low temperatures and heavy snow	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.	3	3	High	<ul style="list-style-type: none"> - Highways Act 1980, Railways and Transport Act 2003 - Government's 'Snow Code' - Specific plans for traffic management and transport resilience - Coordination of gritting and salt stocks - Met Office National Severe Weather Warning Service - Responder specialist resources - RE:NEW retrofitting programme 	Local Authorities

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HL 50	Severe Drought	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 supply interruptions. A drought of this severity is unprecedented and would take at least 3 dry winters to develop.	2	5	High	<ul style="list-style-type: none"> - Water Resources Act 1991 - Floods & Water Management Act 2010 - Progressive restraints on consumption to preserve supply for critical services - Storage reservoirs 	Environment Agency
HL 48	Heatwave	<p>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.</p> <p>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.</p>	4	3	High	<ul style="list-style-type: none"> - Health & Safety at Work Act 1974 - Public Health Act - Heatwave Plan for England - London Resilience Partnership Plans - Climate Change Adaption Strategy for London - Heat-Health Watch – annually June to September - Air quality forecasts 	Health
Structural Incidents							
HL 21	Land Movement	Caused by Landslides or tremors. 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. Such incidents are rare within the UK with some areas being more prone to landslides than others.	3	3	Med	<ul style="list-style-type: none"> - Land use planning restrictions - Building Control regulations enforced by Local Authorities. - Construction, renovation, maintenance and demolition standards 	London Fire Brigade
Severe Space Weather							

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H 56	Severe space weather	<p>Disruption to two coastal electrical substations serving approximately 100,000 customers each for two or more months. Consumers would experience a loss of supply for up to half of this period, and rota disconnections may be used during the following four weeks.</p> <p>Disruption to satellite services for several days including interruptions and degradations to GPS, potentially resulting in casualties and fatalities.</p> <p>Up to 2 weeks disruption to aviation (including increased error rates in flight control and air traffic systems) and temporary loss of wireless systems including mobile phones and internet.</p> <p>Increase in error rate in ground based unprotected digital control systems which are ubiquitous in modern technology, for the duration of the storm.</p>	4	4	Very High	<ul style="list-style-type: none"> - Electricity Industry monitoring and analysis of GIC - Space Weather is assessed as part of the Daily Hazards Assessment - National Grid design standards and response arrangements - Alternative positioning, navigation and timing signal systems - Forecasting through Met Office Space Weather Operations Centre 	Greater London Authority
Severe Wildfires							
H 58 and HL 33	Severe wildfire and forest or moorland fire	Forest or moorland fire across up to 1500 hectares over a period of 7-10 days. Evacuation of between 100 and 3000 homes. Up to 10 fatalities and 100 casualties.	2	2	Med.	<ul style="list-style-type: none"> - London Fire Brigade borough specific rural strategies - Specialist fire fighting equipment and resources 	
Animal Diseases / Animal Health Incidents							
H 25	Non-zoonotic Notifiable animal diseases	<p>Disease introduced into a predominantly sheep area and infected animals sold at market or moved to other premises before disease is detected resulting in widely dispersed multiple outbreaks. Assessment based on the need to cull and dispose up to 4 million animals with up to 900 infected premises across UK.</p> <p>Movement of all susceptible livestock prohibited unless licensed. Economic and reputational 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.</p>	3	2	Med.	<ul style="list-style-type: none"> - Animal Health Act 1981 - Animal Health Act 2002 - Land Movement - Other secondary legislation and EU directives - National disease control strategies 	Local Authorities

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H 26	Zoonotic Notifiable animal diseases	<p>The most significant disease in this category is Highly Pathogenic Avian Influenza. 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.</p> <p>Need to cull and dispose of up to 30 million poultry across UK. Loss of disease free status resulting in EU and third country import bans on poultry, captive birds and poultry products. Disruption to communities, local economies, tourism and the environment. Economic impacts for a major outbreak assessed at £60 million.</p>	3	2	Med.	<ul style="list-style-type: none"> - Animal Health Act 1981 - Animal Health Act 2002 - Other secondary legislation and EU directives - National disease control strategies 	Local Authorities
Major industrial accidents / Industrial and Environmental Pollution Incidents							
HL 4	Major pollution of inland waters	<p>Pollution incident impacting upon inland 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, major impact on amenity (i.e. tourism) value, serious impact on human health.</p> <p>Major sewage pollution could occur as the result of a failure of electric supply.</p>	4	3	High	<ul style="list-style-type: none"> - Environment Act 1995 - Water Resources Act 1991 - Environmental Protection Act 1990 - Pollution Prevention and Control Act 1999 - Control of Major Accident Hazards Regulations 1999 - The Environmental Permitting Regulations (England and Wales) 2010 - Groundwater Regulations 1998 - Anti-Pollution Works Regulations 1999 - Environmental Permitting Regulations 2010 	Environment Agency

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						<ul style="list-style-type: none"> - Inspections and compliance monitoring undertaken by appropriate regulatory body - 24 hour incident hotline and response system - Pollution control equipment and resources 	
HL 12	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	High	<ul style="list-style-type: none"> - Carriage of Dangerous Goods by Rail Regulations 1996 - Packaging, Labelling and Carriage of Radioactive Material by Rail Regulations 2002 - Radioactive Material (Road Transport) Regulations 2002 - Air Navigation (Dangerous Goods) Regulations 1994 - Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1990 - Specialist Emergency Services and other responder equipment and resources 	London Fire Brigade
H60	Accident involving road/rail tanker with dangerous or high consequence goods	TBC	TBC	TBC	TBC	- TBC	London Fire Brigade

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H 9	Large toxic chemical release	Up to 3km from site of toxic chemical release causing up to 50 fatalities and up to 2000 casualties from a large industrial complex or bulk storage of chemicals near to a populated (i.e. urban) area. There are some sites of this nature within the M25. 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 decontamination. Excessive demands on health care services locally both short and long term. Risk to water supplies and contamination of farm land could lead to avoidance of foodstuffs.	3	5	Very high	<ul style="list-style-type: none"> - Control of Major Accident Hazards Regulations 2005 (COMAH) - Regulatory Reform (Fire Safety) Order 2005 - Emergency Services and other responder specialist resources - London Resilience Partnership Plans 	London Fire Brigade
H 12	Biological substance release from facility where pathogens are handled deliberately	Up to 10 fatalities and serious injuries or off-site impact causing up to 1,000 casualties. Assume release in an urban area. Pathogen release from containment – 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	3	Med.	<ul style="list-style-type: none"> - Animal Health Act 1981 - Specified Animal Pathogens Order 1998 - Health & Safety at Work etc Act 1974 - Control of Substances Hazardous to Health Regulations 2000 - Management of Health & Safety at Work Regulations 1999 - Reporting of Injuries Diseases and Dangerous Occurrences Regulations - Carriage of Dangerous Goods (Classification, Packaging and Labelling Regulations - Genetically Modified Organisms (Contained Use) Regulations 2000 	Health

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						<ul style="list-style-type: none"> - Regulation, audit and enforcement of legislation by HSE - London Resilience Partnership Plans 	
HL 14	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 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.	2	3	High	<ul style="list-style-type: none"> - Carriage of Dangerous Goods by Rail Regulations 1996 - Packaging, Labelling and Carriage of Radioactive Material by Rail Regulations 2002 - Radioactive Material (Road Transport) Regulations 2002 - Air Navigation (Dangerous Goods) Regulations 1994 - Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1990 - Specialist Emergency Services and other responder equipment and resources 	London Fire Brigade
HL 25	Fire or explosion at a flammable gas terminal including LPG/LNG storage sites	<p>Up to 1km around site, causing up to 50 fatalities and 150 casualties.</p> <p>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.</p>	1	3	Med.	<ul style="list-style-type: none"> - Control of Major Accident Hazard 1999 (COMAH) Regulations - Pipeline Safety Regulations 1996 cover the pipelines feeding the gas holders. - Site Operators on-site contingency plans - Multi Agency off-site COMAH Plans 	London Fire Brigade

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						<ul style="list-style-type: none"> - Major Accident Hazard Pipeline (MAHP) Plan - Emergency Services specialist resources 	
HL 7	Industrial explosions and major fires	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.	2	2	Med.	<ul style="list-style-type: none"> - Legislation: Control of Major Accident Hazards (COMAH) Regulations 1999 - Regulatory Reform (Fire Safety) Order 2005 - Building design and fire protection systems to prevent or limit the spread of fire - Emergency Services and other responder specialist resources 	
H 7	Explosion at a high pressure natural gas pipeline	Local to site causing up to 200 fatalities and up to 200 casualties. Impact on environment, including persistent/widespread impact on air quality.	1	3	Med.	<ul style="list-style-type: none"> - Pipeline Safety Regulations 1996 - Regulatory and industry measures including provision of maps for excavation - Emergency Services and other responder specialist resources 	London Fire Brigade
HL 30	Localised explosion at a natural gas main	Causing up to 100 fatalities and up to 100 casualties.	1	3	Med.	<ul style="list-style-type: none"> - Pipeline Safety Regulations 1996 - Regulatory and industry measures including provision of maps for excavation - Emergency Services and other responder specialist resources 	London Fire Brigade
H 11	Accidental release of radioactive	Up to five fatalities and up to 100 contaminated people requiring medical monitoring. Many	2	2	Med.	<ul style="list-style-type: none"> - Radioactive Substances Act 1993 	Environment Agency

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	material from incorrectly handled or disposed of sources	worried people may present at hospitals. Radiation may be spread over several km but concentration where source is opened. 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 decontamination. Assume radioactive material is a medical source from radiotherapy machine.				<ul style="list-style-type: none"> - High Activity Sealed Source Regulations 2005 - Arrangements for safe handling and disposal of radioactive sources - Radiation detectors at high risk sites - Environment Agency inspections of all major sources - Emergency Services specialist resources - London Resilience Partnership Plans 	
H 14	Major contamination incident with widespread implications for the food chain	There may be direct animal and consumer health effects arising from this incident. 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 (e.g. bread or milk) are affected, potential panic buying. Could arise from: 1. Industrial accident (chemical, microbiological, nuclear) affecting food production areas e.g. Chernobyl, Sea Empress oil spill, animal disease. 2. Contamination of animal feed e.g. dioxins, BSE. 3. Incidents arising from production processes, e.g. adulteration of chilli powder with Sudan I dye or melamine contamination of milk.	4	2	Med.	<ul style="list-style-type: none"> - EC Directives and Regulations: - Regulation (EC) 852/2004 - Regulation (EC) 853/2004 - Regulation (EC) 854/2004 - Food Safety Act 1990 - Imports monitored - Local Authority Environmental Health Sampling - Public Health England monitoring and surveillance - Food Standards Agency plans 	Local Authorities
Major industrial accidents / Major structural accidents							
HL 105	Complex Built Environments	A consequence of a major incident affecting large buildings / complex built environments. Incidents	2	3	Med.	<ul style="list-style-type: none"> - Health and Safety at Work Act 1974. 	Local Authorities

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		in these facilities have the potential to trigger a complex chain of events that lead to serious consequences for public.				<ul style="list-style-type: none"> - Management of Health & Safety at Work Regulations 1999. - Fire and Rescue Services Act 2004 & guidance pursuant to the Regulatory Reform (Fire Safety) Order 2005. - Safety at Sports Grounds Act 1975 and Fire Safety and Safety of Places of Sport Act 1987 - Local building safety systems and practices - Safety Advisory Groups in place at major sports grounds London Resilience Partnership Plans 	
HL 22	Building Collapse	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. A number of such incidents annually within London	1	3	Med	<ul style="list-style-type: none"> - Building Control regulations enforced by Local Authorities - Construction, renovation, maintenance and demolition standards and enforcement - Emergency Services and other responders specialist resources - London Resilience Partnership Plans 	Local Authorities
HL 23	Bridge Collapse	Roads, access roads and transport infrastructure impassable for considerable length of time. Severe congestion over wide geographical area. Emergency access into / out of large populated	1	3	Med.	<ul style="list-style-type: none"> - Building Control regulations enforced by Local Authorities - Highways Act Regular inspections 	Local Authorities

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		areas severely restricted. Potential for a number of persons to be trapped or missing.				<ul style="list-style-type: none"> - Height and weight restrictions and signs reduce the likelihood of an incident - London Resilience Partnership Plans 	
Major industrial accidents / Technical failures							
H 41	Technical failure of national electricity network - Blackstart	Total blackout for up to 3-14 days due to loss of the National Grid. Possible loss of life support machines, civil unrest, no alarms, street lighting, gas heating, rail transport, water supplies and mobile telecommunications etc. Backup generators available for limited time for individual businesses and emergency services in some instances. "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.	3	5	Very High	<ul style="list-style-type: none"> - Testing and maintenance regime - National Emergency Plans - London Resilience Partnership Plans 	London Fire Brigade
H 45	Technical failure of electricity network due to operational error or bad weather causing damage to the system	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. 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.	3	4	Very High	<ul style="list-style-type: none"> - Testing and maintenance regime - National Emergency Plans - Mutual aid resources available - London Resilience Partnership Plans 	London Fire Brigade
H 38	Disruption in upstream oil and gas production	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	2	4	High	<ul style="list-style-type: none"> - National Emergency Plan for Fuel - National Blackstart Plan - London Resilience Partnership Plans 	London Fire Brigade

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		then a reduction in generation might be felt. Downstream oil would not be immediately so adversely affected given alternative means of supply.					
H 39	Failure of water infrastructure or accidental contamination with a non-toxic contaminant.	<p>Non-availability of piped water supply for up to 50,000 people, for between 1- 3 days.</p> <p>Domestic, industrial, commercial and agricultural premises without piped water. Fire tenders cannot be refilled from hydrants within the affected area. Resupply via bowsers or bottled water. Priority given to vulnerable customers. 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. Due regard required for livestock and essential food industries. May not be possible to continue a full service at hospitals, schools and businesses etc that do not maintain their own on-site water storage.</p>	2	3	Med.	<ul style="list-style-type: none"> - Water Industry Act 1991 - Security and Emergency Measures Direction 1998 - Water companies mutual aid arrangements in place - London Resilience Partnership Plans 	London Fire Brigade
H 40	No notice loss of significant telecommunications infrastructure in a localised fire, flood or gas incident	<p>Loss of service to up to 100,000 people for up to 72 hours</p> <p>Building damage to a large urban telecoms facility.</p> <p>Possible impact on emergency services including disruption to proposed Emergency Services Control Centres. Possible accidental cutting of submarine cables.</p>	2	2	Med.	<ul style="list-style-type: none"> - Civil Contingencies Act 2004 - Telephone provider demand and network capacity management strategies - National Emergency Alert for Telecoms - London Resilience Partnership Plans 	Metropolitan Police Service
Major Transport Incidents / Accidents							
HL 11	Railway Accident	Up to 30 fatalities and up to 100 casualties (fractures, internal injuries – burns less likely).	3	3	High.	<ul style="list-style-type: none"> - Railway and Transport Safety Act 2003 	British Transport Police

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		Possible loss of freight. Major disruption to rail line including possible closure of rail tunnel.				<ul style="list-style-type: none"> - Railways (Access and Management) Regulations 2005 - Railways (Accident Investigation and Reporting) Regulations 2005 - Railways (Licensing of Railway Undertakings) Regulations 2005 - Railways Act 2005 and 1993 - The Railway Safety Levy Regulations 2006 - Transport Act 2000 - Health and Safety at Work (etc) Act 1974 - The Railway (Safety Case) Regulations 2000 - Improved inspection regimes to detect track defects - Train Protection Warning Systems - ATOC Guidance and Directives - Specialist Emergency Services and other responder resources 	
HL 9	Aviation accident	Aviation accident causing up to 50 fatalities and up to 250 casualties. Accident involving one commercial aircraft, probably on takeoff or landing.	2	3	Med	<ul style="list-style-type: none"> - Stringent controls on aircraft entering UK Airspace including the mandatory use of Aircraft Collision Avoidance systems on heavy aircraft 	London Fire Brigade

NOT PROTECTIVELY MARKED

						<ul style="list-style-type: none"> - UK flight separation rules - CAA Maintenance and Flight safety standards Airline maintenance regimes - London Resilience Partnership Plans 	
H 16	Aviation accident over a semi-urban area	Collision of two commercial airliners - death of all passengers and crew on aircraft (100 fatalities), up to 50 fatalities and 300 casualties on the ground. Significant debris field but no significant damage to key infrastructure.	1	4	Med.	<ul style="list-style-type: none"> - Stringent controls on aircraft entering UK Airspace including the mandatory use of Aircraft Collision - Avoidance systems on heavy aircraft - UK flight separation rules - CAA Maintenance and Flight safety standards - Airline maintenance regimes - London Resilience Partnership Plans 	
HL 10	Local accident on motorways and major trunk roads	Multiple vehicle incident causing up to 10 fatalities and up to 20 casualties; closure of lanes or carriageways causing major disruption and delays.	4	1	Low	<ul style="list-style-type: none"> - Road Traffic Act 1988 - Road Vehicle (Construction and Use) Regulations 1986 - Traffic Management Act 2004 - VOSA patrols to enforce legislation - London Resilience Partnership Plans 	Metropolitan Police Service
Disruptive Industrial Accident							
HL 42	Loss of cover due to industrial action by workers	A number of three day strikes with significant support over a two month period affecting a single emergency service.	5	3	High	<ul style="list-style-type: none"> - Police Act (1996) - RCN Code on Industrial Action 	Greater London Authority

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	providing a service critical to the preservation of life					<ul style="list-style-type: none"> - Standards of conduct, performance and ethics for nurses and midwives - Alternative emergency cover protocols for the Fire Brigade Organisational Business Continuity Arrangements 	
H 31	Significant or perceived significant constraint on fuel supply at filling stations	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.	3	2	Med.	<ul style="list-style-type: none"> - Legal requirements re: conduct of industrial disputes. - Stocks of contingency fuel to varying degrees - National Emergency Plan for Fuel - London Resilience Partnership Plans 	Metropolitan Police Service
H 35	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 > 3 days. Greater impact if action occurs in a co-ordinated manner.	3	2	Med.	<ul style="list-style-type: none"> - Health and Safety at Work Act 1974. - Employment Act 1980. - Employment Act 1988. - Public Order Act 1986. - Trade Union and Labour Relations (Consolidation) Act 1992. - Anti-Social Behaviour Act 2003. - Organisational Business Continuity Arrangements 	British Transport Police
H 33	Unofficial strike action by prison officers	TBC	TBC	TBC	TBC	This risk is yet to be assessed by London Risk Advisory Group.	
Public and Crowd Events							

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H 37	Arrival of British Nationals not normally resident in the UK.	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.	4	2	Med.	<ul style="list-style-type: none"> - Local Authority emergency housing arrangements however response to this risk coordinated through FCO at a national level. - Heathrow Travel Care access to specialist services - Voluntary sector support to FCO response 	Local Authority
H 57	Public Disorder	Large scale public disorder in multiple sites in a single city occurring concurrently over several days.	3	1	Med	<ul style="list-style-type: none"> - Riot Damages Act 1886 - Public Order Act 1986 - Central command for large scale public events - Dedicated police training and response capability 	
Attacks on Crowded Places							
X 1	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	High	<ul style="list-style-type: none"> - 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 	Metropolitan Police Service
Attacks on Infrastructure							
X 2	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	3	3	High	<ul style="list-style-type: none"> - Business continuity plans for loss of essential services helps minimise disruption - Well established programme of work to 	Unspecified

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		affected. Cyber attacks are not incorporated in this risk assessment (see subsequent section).				protect infrastructure from terrorism including protective security advice from Centre for the Protection of National Infrastructure and local Police services.	
Attacks on Transport System							
X 3	Attacks on transport system	<p>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.</p> <p>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.</p>	5	3	High	<ul style="list-style-type: none"> - Regulation and security processes of individual public transport sectors - Contingency plans developed by operators in conjunction with responders 	Unspecified
Unconventional Attacks							
X 4	Small Scale Unconventional Attacks	<p>Mass impact terrorist attacks, whilst unlikely, cannot be ruled out. 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</p>	3	3	High	<ul style="list-style-type: none"> - Well developed specialist response capability - Access to medical-countermeasures 	Unspecified
X 5	Catastrophic Unconventional Attack		2	5	Very High		Unspecified

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		small-scale (assassination or poisoning) to mass-impact (widespread dispersion and contamination) which is reflected in the scores.					
Cyber Security							
X 6	Cyber security (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.	2	3	Med.	<ul style="list-style-type: none"> - National Cyber Security Programme - Additional outreach to businesses and public regarding cyber threats and security 	Unspecified
X 7	Cyber security (Data Confidentiality)	<p>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.</p> <p>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.</p>	5	1	Low	<ul style="list-style-type: none"> - National Cyber Crime Unit - Centre for Protection of National Infrastructure providing security advice 	Unspecified

Risks Not Applicable and Removed

ID	Risk sub-category	Rationale for Not Applicable Status
H1	Fire or explosion at a gas LPG or LNG terminal or flammable gas storage site.	Deemed not applicable to London as no sites meeting this description. Flammable gas storage covered in HL25 assessment
HL1	Fire or explosion at a gas terminal or involving a gas pipeline.	Covered by H7 and HL30 assessment.
H2	Fire or explosion at an onshore ethylene gas pipeline.	Deemed not applicable to London due to no ethylene gas pipelines
HL26	Localised fire or explosion at an onshore ethylene gas pipeline	Deemed not applicable to London due to no ethylene gas pipelines
H3	Fire or explosion at an oil refinery	Deemed not applicable to London due to no oil refineries
HL27	Localised fire or explosion at an oil refinery	Deemed not applicable to London due to no oil refineries
H6	Fire or explosion at an offshore oil/gas platform	Deemed not applicable to London due to no offshore Oil or gas platforms

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H 103	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.
H8	Very large toxic chemical release	No such facilities with London area.
HL 104	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.
HL2	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
H 10	Radioactive substance release from a nuclear reactor.	Deemed not applicable to London due to no nuclear reactors
HL31	Limited radioactive substance release from a nuclear accident.	Deemed not applicable to London due to no nuclear reactors
H 42	Rapid accidental sinking of a passenger vessel in or close to UK waters.	This outcome covered in Risk Assessment for HL34 and HL8.
HL13	Maritime accident or deliberate blockage resulting in blockage of access to key port, estuary, maritime route for more than one month	This risk deemed not applicable to London by London Risk Advisory Group.
H 22	Influenza Epidemic	Removed 2013: Advice from Public Health England is that this would not be considered a 'bad seasonal flu outbreak' and would be dealt with using normal arrangements.
H 24a	Legionnaires Disease	Removed 2013: Advice from Public Health England is that this would be dealt with using normal outbreak arrangements.
H 24b	Meningococcal Disease	Removed 2013: Advice from Public Health England is that this would be dealt with using normal outbreak arrangements.
HL 102	Oak Processionary Moth	Removed 2013: Advice from Public Health England is that there is minimal human health risk and this can therefore be removed from the London Risk Register.
H39	Failure of water infrastructure	Removed 2014: consequences amalgamated into H49 assessment
HL20	Flash Flooding	Removed 2014: Advice from Environment Agency that London doesn't have the geography for this risk.
H 43	Telecommunication Infrastructure Failure – Human Error	Removed 2014: Not applicable.
HL 16	Local coastal / tidal flooding	Removed 2015: Not applicable to Sutton.
H 46	Biological substance release during an unrelated work activity/industrial process.	Removed 2016: Removed from London Risk Register in September 2015.
HL22a		Removed 2017: Amalgamated into HL22 assessment.
H 30	Emergency services: loss of emergency fire and rescue cover because of industrial action	H30 has been removed from the NRA due to the impact score being reduced to 0. Will be merged with HL42.

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H49	Loss of drinking water supplies due to a major accident affecting infrastructure	Removed from National Risk Assessment – combined into H38.
HL18	Local / Urban flooding fluvial or surface run-off	Covered by updated H21 Fluvial flooding risk (which reflects the NRA)
HL19	Local fluvial flooding	Covered by updated H21 Fluvial flooding risk (which reflects the NRA)

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Full Risk Matrix

Impact	Catastrophic (5)		X5	H41; H9	H23	
	Significant (4)		HL12	H22; H21; H50; H45	H56	
	Moderate (3)	H25; H7; HL30; HL22; HL23	H25; H26; H23; H15; HL105; H39; H40; HL9; X6	H18; H55; HL21; X2; X4	H24; L19; HL48; HL4; HL11; X1	HL42; X3
	Minor (2)		H58; HL7; HL7; H11	H17; H31; H35; H57	H54; H14; H37	
	Limited (1)				HL10	X7
		Low (1)	Medium Low (2)	Medium (3)	Medium High (4)	High (5)
		Likelihood				

Risk Rating	
	Very High
	High
	Medium
	Low

Appendix 1

Likelihood and Impact Scoring Scales

Impact scoring scale – qualitative measures

Level	Descriptor	Categories of Impact	Description of Impact
1	Limited	Health	<ul style="list-style-type: none"> Limited number of injuries or impact on health.
		Social	<ul style="list-style-type: none"> Limited number of persons displaced and insignificant personal support required. Limited disruption to community services, including transport services and infrastructure.
		Economic	<ul style="list-style-type: none"> Limited impact on local economy.
		Environment	<ul style="list-style-type: none"> Limited impact on environment.
2	Minor	Health	<ul style="list-style-type: none"> Small number of people affected, no fatalities, and a small number of minor injuries with first aid treatment.
		Social	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Negligible impact on local economy and cost easily absorbed.
		Environment	<ul style="list-style-type: none"> Minor impact on environment with no lasting effects.
3	Moderate	Health	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Limited impact on local economy with some short-term loss of production, with possible additional clean-up costs.
		Environment	<ul style="list-style-type: none"> Limited impact on environment with short-term or long-term effects.

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4	Significant	Health	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● Significant impact on local economy with medium-term loss of production. ● Significant extra clean-up and recovery costs.
		Environment	<ul style="list-style-type: none"> ● Significant impact on environment with medium- to long-term effects.
5	Catastrophic	Health	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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.

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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:

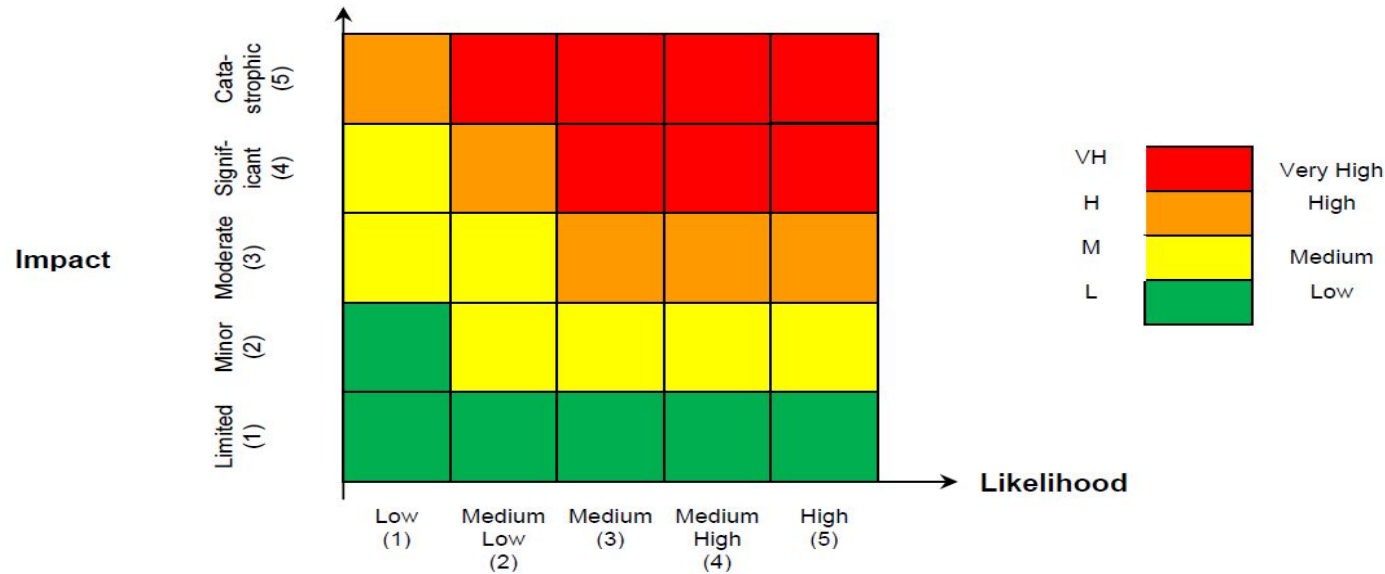
Strictly, levels 1 and 2 of the impact scale are likely to fall below the threshold for an emergency. Consequently, there may be no statutory requirement to plan for events that score 1 or 2 on the impact scale. This scale recognises that, to demonstrate a thorough analysis, Category 1 responders will 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

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	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)