Cabinet Office

Civil Contingencies Forward Look - Part 2

Assessment of Potential Civil Challenges to the UK over the Period August 2015– January 2016

15 July 2015

Contents

This paper provides a cross-Government assessment of the most significant civil domestic risks over the next six months, taking into account both their likelihood and impact (these reports are issued approximately quarterly). It is intended to raise awareness of potential challenges and to guide short-term planning by departments and others over that period. It complements the National Risk Assessment (NRA)[1] which underpins longer-term capability development.
Part 2 comprises a detailed assessment of potential risks over the next six months. Please refer to Part 1 for an executive summary of the most topical risks.

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[1] The NRA is the UK Government's classified assessment of the most significant emergencies that could affect the UK over the next five years.

Risk Index

RISK	LEAD GOVT DEPT	NRA REF[2]
Natural Hazards		
Significant fluvial and/or pluvial flooding over a wide area	DEFRA	H21
Significant localised and isolated fluvial and/or pluvial flooding	DEFRA	N/A
Localised coastal flooding	DEFRA	H19
Localised groundwater flooding	DEFRA	N/A
A disruptive space weather event	CO	H56
Volcanic ash plumes from Iceland reaching the UK	DfT	H54
Health impact due to poor air quality	DEFRA	H62
Widespread wildfire	DCLG	H58
Heat wave	MET OFFICE	H48
Drought	DEFRA	H50
Disruptive Winds and Gales	Impact driven*	XX
Severe Winter Weather	Impact driven*	XX
Industrial Relations		
Co-ordinated industrial action in the public sector	CO	N/A
Widespread industrial action within the NHS including the Ambulance Service	DH	N/A
National strike action in the Civil Service	CO	N/A
Strike action in the prison estate	MOJ	H33
National strike action in Fire and Rescue Services	DCLG	H30
National strike action by teachers	DFE	N/A
Strike action by transport workers	DfT	H35
Strike action by tanker drivers resulting in disruption to road fuel supply routes	DECC	H31
Key Infrastructure and Supporting Services		
Disruption caused by loss of refinery supply.	DECC	N/A
Disruption to fuel supplies due to withdrawal of non-	DECC	N/A

[2] The Forward Look risk scenarios tend to be less severe than the longer term reasonable worst case scenarios outlined in the NRA. As such the NRA scenarios referenced are not identical to, but are the closest fit to the risks considered here.

RISK	LEAD GOVT DEPT	NRA REF[2]
compliant fuel tankers		
Disruption to cross-Channel services	DfT	N/A
Weather-related energy disruption	DECC	
Social unrest and protest in Great Britain		
Community based disorder and/or looting in multiple locations lasting days	HO	H57
Significant disorder at organised public protests and spontaneous community based disorder	HO	N/A
Disruption caused by single issue protests	HO	N/A
Domestic disruption triggered by international events		
British and Dual Nationals seeking entry into the UK as a result of instability overseas	FCO	H37
Human Health		
Severe flu season impacting the UK	DH	N/A
Outbreak of novel infectious disease in the UK	DH	N/A
Animal and Plant Health		
Outbreak of a notifiable exotic animal disease	DEFRA	H25
New plant pests and pathogens threatening UK forests and woodlands	DEFRA	N/A

Annex A: International and domestic context (including energy markets)
Annex B: Assessment methodology

Introduction and Context

The following assessments should be considered in the current international and domestic context and alongside the domestic challenges that can arise during the late spring and summer period.

Whilst the UK economy is growing, aided by lower oil prices, it is not immune to the current economic situation in the eurozone. Ongoing negotiations between Greece and its creditors continue to cause uncertainty across the wider euro community. However, to date potential impacts to peripheral markets remain limited as do impacts on British Nationals visiting Greece. There are contingency plans in place to manage a degree of deterioration in the consular situation.

Separately, events in Tunisia, Paris and Copenhagen combined with a growing rhetoric around immigration and community integration may feed community tensions in the UK over the coming months. This may be exacerbated by concerns currently about managing migrants in the Mediterranean, as well as the increase in the number of migrants in Calais looking to reach the UK and the disruption to the Dover-Calais crossing in recent weeks.

Irrelevant & Sensitive

Irrelevant & Sensitive Similarly, the outbreak of MERS CoV in South Korea demonstrated the speed at which viruses can spread without effective infection prevention and control arrangements in place.

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Finally, the current Met Office three month forecast suggests that July and August will be warmer and drier than average and that it will remain warmer and drier than average throughout early September. It is worth noting that as we move through the summer rainfall tends to be slower moving and heavy in nature and also more localised, which leads to a higher likelihood of surface water flooding. An updated three month forecast for August, September and October will be issued at the end of July.

Natural Hazards

1.1 Significant fluvial and/or pluvial flooding impacting over a wide area  (Amber/ Green)

The Met Office three month models for July, August and September are signalling higher than average atmospheric pressure over much of Europe with latest predictions favouring near or below average rainfall across the UK. We judge therefore that there is a **low likelihood** of significant fluvial (river) or pluvial (surface) flooding affecting a wide area during this period from summer into winter. Rivers remain at normal seasonal levels, and because it would take unusually high rainfall totals for widespread flooding to occur, at this stage there is no reason to believe the likelihood of significant and widespread summer flooding is elevated above the seasonal risk profile of low. We judge the **impact** of widespread or multiple concurrent flooding events to be **medium,** although in exceptional circumstances the impact could be higher. The Flood Forecast Centre continually monitors flood risk and provides advance warnings when they see it increasing, which typically give four or five days of notice for Central Government, local responders and infrastructure operators to stand up their response capability.

1.2 Significant localised and isolated fluvial and/or pluvial flooding  (Green)

Localised flooding can occur with little or no notice in response to heavy or persistent rainfall on already saturated ground or very dry ground. For the period considered in this assessment, we judge the **likelihood** of significant but localised fluvial flooding and/or pluvial flooding as **low.** However, during summer, rainfall can be heavier over a smaller area so impacts such as surface water flooding can be more likely whilst overall rainfall amounts are below average. As we move into autumn and winter, rainfall tends to change with more persistent but less intense rainfall, coming usually from the west, being more likely than localised, intense rainfall.

The impact of localised flooding is geographically limited and is likely to affect only a few properties, as well as causing some localised disruption to transport. Therefore we judge the likely **impact** on a wider scale of a significant amount of either fluvial or pluvial flooding in a localised area to be **low.** In some cases the impacts can be disproportionate to the scale of the flood, if for example, inadequately protected major transport infrastructure or critical national infrastructure falls within the area flooded, or a major urban area is affected. In cases such as these the impact may rise to medium.

1.3 Localised coastal flooding  (Amber/ Green)

Coastal flooding is dependent upon high tides coupled with strong weather systems causing storm surges. The UK has experienced particularly high spring tides on a number of occasions

throughout the 2014/15 winter and spring, and there are two further incidents of high tides on 31 August and 29 September. The September high tides will be the highest for many years as astronomic factors coincide and water levels in some places are 0.5m higher than normal spring tides. If this is accompanied by a storm surge (low pressure and high winds) then sea levels could be raised by up to 4m, which would give cause for concern if there were disruptive weather conditions alongside. Therefore we judge the **likelihood** of localised coastal flooding event during the next six months to be **medium**. In most coastal flooding events, the main impacts are felt by poorly defended properties, caravans and businesses close to the seafront, and in some cases by the seafront itself. As a result, we judge the potential **impact** of localised coastal flooding to be **low**. However, if sea defences fail or are overtopped, inundation happens very rapidly and more significant impacts can occur, as was seen in winter 2013/14.

1.4 Localised groundwater flooding (Green)

Groundwater is underground water in the cracks and pores of saturated permeable rocks. As groundwater levels rise through rainfall, the water finds places to seep out onto the surface and this can cause springs to appear and rivers to fill. Currently, groundwater levels are falling and will continue to fall, as on balance, below average rainfall is considered the most likely scenario for July. Were there higher levels of rainfall later in the period groundwater levels are expected to remain relatively unresponsive, so we judge the **likelihood** of significant groundwater flooding to be **low** over the period. Only certain locations are vulnerable to groundwater flooding, and the effects are usually very localised. Therefore, although the local impact can be prolonged disruption and inconvenience for affected premises and communities, we assess the wider **impact** of localised groundwater flooding to be **low**.

1.5 A disruptive space weather event (Amber)

Space weather is a term which describes the environmental conditions in space (solar wind, magnetosphere, ionosphere) that can influence the performance and reliability of a variety of space-borne and ground-based technologies, and can also endanger human health and safety. Such events occur regularly but their severity varies significantly. These events comprise of more frequent low impact events through to less frequent severe events which are considered here, to potentially hugely disruptive storms such as the 1859 Carrington event which is currently assessed to have a 1% chance of occurring annually[1].

The Sun reached the peak of its 11 year cycle of activity (solar maximum) in May 2014, after which historical evidence suggests that there is the potential of increased solar activity for a period of two years. In October 2014 we saw the biggest sunspot (AR2192) of this solar cycle, although this sunspot was relatively inactive. The last 4 months have seen the two largest space weather events

[1] Further description of a Carrington-like event can be found in the National Risk Register.

so far during this solar cycle. Both events reached G4 (on a scale of G1 to G5, with G4 classed as severe and G5 as extreme). In line with expectations, no significant impacts were experienced in any of the three incidences. However, whilst we would expect the sun to start getting less active, severe space weather events can happen at any time in the solar cycle. With this in mind, we assess the **likelihood** of a moderately severe (once a decade type event, similar to events in 1989 or 2003) to be **medium**. The impacts would vary with severity but could include disruption to power supply, disruption of satellites services, potentially affecting Global Navigation system and disruption to transport, specifically aviation and therefore, the **impact** is assessed to be **medium**.

1.6 Volcanic ash plumes from Iceland reaching the UK (Green)

We assess the **likelihood** of a volcanic ash plume from Iceland reaching the UK as **low**. The Icelandic Met Office is currently reporting that volcanic activity for all of Iceland's monitored volcanoes as being within normal background levels. Seismic activity at the Barđarbunga volcanic complex continues to subside following the 6-month lava and SO2 rich eruption which ended in February. There does though remain a small possibility that volcanic activity could recommence and/or develop into an explosive eruption emitting substantial amounts of ash. The Icelandic Met Office, as the responsible volcano monitoring agency, continues to maintain a close watch of Barđarbunga and to coordinate closely with the Met Office in the UK.

On the basis of the heightened level of seismic activity in the vicinity the submarine Eldey volcano system, 15 kilometres off the south-west tip of Iceland, the Iceland Met Office (IMO) raised the aviation volcano colour code for Eldey to 'Yellow - *Volcano is experiencing signs of elevated unrest above known background levels*' on 1 July. Seismic activity then quickly died down again such that on 3rd July the volcano colour code was downgraded to 'Green – Volcano is in normal, non-eruptive state'. The IMO and Met Office will maintain the routine weekly activity update cycle but on the basis of current evidence, the IMO does not consider that any eruption is imminent.

Volcanic eruptions are unpredictable, often almost no-notice events with at best only a few days indication that an eruption is imminent, as demonstrated by the eruptions at Eyjafjallojökull (2010) and Grimsvötn (2011). Historically speaking on Iceland, there is on average a volcanic eruption emitting significant amounts of ash approximately every five years. Subsequent impacts on the UK depend on the characteristics (size, type and duration) of the eruption and the prevailing meteorological conditions between the UK and Iceland. Other volcanic contaminants s (such as toxic gases) could pose a potential hazard to the UK, however significant eruptions of this kind are less frequent than those emitting ash and are not considered in this document[3].

We judge the **impact** of a volcanic ash plume from Iceland reaching the UK under the most likely scenarios to be **low.** Revisions to European region flight regulations and associated contingency plans for flight operations in and around volcanic ash mean that disruptive impacts on the air transport system during future eruptions of a similar type to 2010 are expected to less than in

2010 albeit that a larger event will result in consequently more impact with northern airspace most at risk. The Met Office Hazard Centre hosts the 24/7 Volcanic Ash Advisory Centre responsible for issuing volcanic ash advice to aviation for eruptions originating in Iceland and the Jan Mayen islands further north. Volcanic activity alerts and impact assessments are also made available by the Met Office Hazard Centre to Government Departments and to responders by means of the Natural Hazards Partnership Daily Hazard Assessment.

1.7 Health impact due to poor air quality (Amber/Green)

A poor air quality event can be caused by particular weather conditions creating an environment in which air pollutants, such as nitrogen dioxide, ozone, sulphur dioxide and particulate matter, become concentrated over particular areas of the UK. These air pollutants can be a combination of man-made (e.g. traffic or industrial emissions) and/or naturally occurring (e.g. emissions from plants and trees, wind-blown dusts, volcanic eruptions or dust transported from the Sahara). These events are often driven by still weather reducing dispersion of locally generated pollution, supplemented with light winds bringing in pollution from the continent (to the south or east of the UK).

Air pollution can occur throughout the year; however spring is usually the highest risk period for particulate matter, with the summer the most likely period for elevated levels of ground level ozone. Recent patterns suggest that an event lasting at least two days would be expected at least once every year and as a result we judge that the **likelihood** of a poor air quality event of this duration over the next six months to be **medium**. These types of pollution events harm human health and can have significant impacts on crops and the environment. Although there is an increased risk of higher pollution levels in cities or near major transport hubs, impacts can be anywhere and widespread. Highest levels of O^3 are often found away from significant sources of transport emissions such as suburban areas and rural locations. Individuals most likely to be affected by a poor air quality event of two days are those who already have a chronic breathing or cardiac condition; however although such effects may be significant for the individual, it is not expected that this scale of episode would lead to any disruption to health services. Therefore, the disruptive **impact** of an air quality event lasting at least two days, as considered in this assessment, is therefore judged to be **low**. For disruption to health services to occur, the event would need to be of greater severity and length.

1.8 Widespread wildfire (Amber/Green)

Following a mild winter and spring which provided good growing conditions, there are large quantities of fuel for potential wildfires. We judge the **likelihood** of widespread wildfire over the summer months to be **medium**, although the **impact** is likely to be **low**. As well as the impact on natural areas, risks can be posed to agriculture and properties. There is also a risk of short term disruption to local parts of the transport infrastructure due to closure of roads and railways. The

risk of wildfire will reduce as we head towards winter, unless there is a prolonged dry spell in the autumn when the risk will rise.

1.9 Heatwave with temperatures exceeding the thresholds for severe and persisting for a prolonged period  (Amber/Green)

The UK adopted definition of a heatwave is when temperatures reach given thresholds over a day-night-day period, with an average threshold temperature being 30°C by day and 15°C overnight. The Heatwave Plan for England identifies four alert levels. Levels 1 – 3 serve as indicators for health and social care professionals, while a Level 4 heatwave is called when the threshold temperatures are likely to be severe or over a prolonged period and require a multi-sector response. Research suggests that excess deaths begin to occur when temperatures reach 25°C, and as temperatures climb so does the impact on the health service. We judge the **likelihood** of a Level 4 heatwave to be **low** given climatic conditions in the UK.

We judge the **impact** of any significant Level 4 heatwave to be **medium**. There would be significant pressure on health and care services, with a rise in number of deaths, particularly amongst the young, the elderly and sick. There is also a risk of disruption to parts of the transport infrastructure due to high temperatures. Demand for electricity will increase as cooling systems become more widely used. There will be a risk to livestock and animals in transit and crops may also be affected in a sustained long, dry and hot summer. Air pollution 'smog' and water pollution (bacterial growth caused by oxygen level restrictions in warm water) will increase, as will the potential for wildfire.

1.10 Widespread drought causing significant disruption (Green)

We judge the **likelihood** of widespread drought causing disruption to be **low,** although some water resources and drought indicators are lower than normal for this time of year, we are not anticipating significant impacts to the public water supply. A severe drought does not arrive without warning because routine monitoring of drought indicators such as river or groundwater sites picks up indications that significant deficits developing. Water companies have plans in place that set out the measures they will take before, during and after a drought to provide a secure water supply. The main impact of widespread drought is to cause restrictions on personal and commercial use, such as bans on hosepipe/non-essential use and agricultural restrictions, however with the reasonable worst case for this summer being hosepipe bans and some agricultural restrictions such as extraction of water from rivers for irrigation, we judge the **impact** to be **low**.

1.11 Widespread winds and gales  (Green)

Gales are the most common cause of damage to and disruption in the UK. In the second half of the period assessed in this Forward Look, the risk of storms increases, with winter being the windiest time of year as the jet stream tends to track further south, allowing more Atlantic storms

to affect the UK. We judge the **likelihood** of storm force winds (above 60mph) affecting multiple regions (for example Wales, West Midlands, East Midlands and East of England) for at least 6 hours during a working day to be **low** in the coming months, however this likelihood will increase as we move into autumn and winter. The **impact** is assessed to be **low** with wind damage to trees, some power lines down causing local power cuts and some short-lived disruption to trains services and roads transport. Rural areas tend to be at greatest risk as they are generally supplied via overhead wires unlike major urban areas where supplies are underground. Two years ago, following the St Jude's Day storm on 28 October 2013, there was significant disruption across the south of England to power supplies and transport systems. In December 2013, winds in excess of 80mph severely disrupted transport services and led to power outages lasting for a number of hours in 500,000 properties across the UK. Windstorms have, over the years, killed a number of people. The main cause of death has been from falling trees or masonry. In 2013/14 there were 5 deaths following windstorms.

The risk to infrastructure, such as power lines brought down by fallen trees or rail lines being closed for the same reason is slightly increased in autumn due to the weight of trees in full leaf. During periods of high winds Network Rail and Train Operating Companies proactively implement speed restrictions to minimise accident risk and may delay the start of rail services to enable 'route proving' network safety checks to be carried out. In very severe weather, services may even be cancelled. These measures reduce the risk of line blockages leaving busy passenger trains stranded. To minimise the risk of accidents and blockages on the Strategic Road Network, the Police, Highways Agency and local Highway Authorities will sometimes restrict traffic on exposed routes (e.g. preventing high-sided vehicles from using certain bridges). **Further details on this risk will follow in the next quarterly Forward Look.**

1.11 Severe and disruptive winter weather  (Amber/ Green)

Towards the end of the six month period under consideration, the risk of cold snaps will increase. Prolonged severe winter conditions are likely to cause some disruption for government, industry and the public, especially in more northerly and and or elevated areas. Disruption would be caused by mean temperatures (over at least 48 hours) of 2°C or widespread ice and heavy snow. For disruption to be a significant challenge such conditions would need to impact on more vulnerable parts of England for several days. We judge the **likelihood** of widespread and persistent severe winter weather over the period assessed to be **low.** We judge the **impact** of severe and disruptive winter weather (including, if the snow remained on the ground for at least two weeks, compacting and freezing, as new snow fell) to be **medium**. Impacts range from pressure on health services to increased gas demand. The most significant impact would be upon the transport network, which would cause a wide range of knock-on impacts on local businesses, school and work attendance, supply chains, and access to and by health care and welfare services. **Further details on this risk will follow in the next quarterly Forward Look.**

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Key Infrastructure and Supporting Services

3.1 Disruption caused by loss of refinery supply (Amber/Green) 

The outlook for oil refineries in the UK and the wider EU community is bleak. There have been several refinery closures in the UK over recent years and there are likely to be more over the next decade. This is due to the number of large, more competitive refineries coming on stream abroad, as well as the US ban on crude oil exports and higher regulatory costs.

DECC analysis suggests more than half of UK refineries are of critical importance to the supply of fuel in their region. One of these refineries has been facing significant difficulties in refinancing critical loan facilities. The operating company successfully secured a refinancing deal in June such that the short term risk of insolvency is greatly reduced. We, therefore, assess the **likelihood** of loss of refinery supply over the next six months as **low**.

In the event of a refinery closure, it is expected that contingency planning will be able to limit the effects of loss of refinery supply on regional fuel supply, however there remains a residual risk of panic buying and potential industrial action by refinery workers. On this basis we judge the **impact** of a disruption caused by loss of refinery supply to be **medium** in most cases with regional rather than national impacts including potential short term impacts on regional fuel prices, forecourt stock outs in the case of severe panic buying and in instances of industrial action by refinery workers; limitations on fuel supply contingency plans. There may be short term disruption at pumps until mitigating actions are implemented.

3.2 Disruption to fuel supplies due to withdrawal of non-compliant fuel tankers (Amber/Green) 

In October 2013 it was made known that around 230 road tankers had entered service with manufacturing faults following incorrect certification. These tankers, accounting for approximately 23% of fuel delivery capacity, were required to be taken out of UK service if over 6 years old, or by the end of June 2015; whichever deadline was sooner. In December 2014, following a research programme commissioned by DfT, it was decided that of those tankers still in service (around 130 vehicles at that time), only those built before the middle of 2010 (approximately 60) must be withdrawn from service by the end of June 2015. Those built after the middle of 2010 must be withdrawn by, or pass additional checks to continue operation beyond, the end of December 2015.

Since then, hauliers have sourced replacements for 60 tankers, with 20 awaiting certification by DVSA due to enter service shortly. About 70 'post mid-2010' tankers will remain in service until the end of the year, delivering some 7% of fuel to forecourts. We assess the **likelihood** of all these

vehicles being taken out of service at the same time before replacements are in place to be **low**. This would only occur if new, negative evidence on the safety of these tankers emerged, or if a reassessment of the risk was required in the event that one of these tankers failed. We assess the **impact** to be **low**, since the industry has spare tanker capacity of circa 6% which offsets the majority of the capacity at risk. However at a national level an aggregated reduction in forecourt stocks would occur and could be seen within weeks. This would bring with it a potential risk of localised grade outs and stock outs, which could in turn be exacerbated by panic buying.

3.3 Disruption to cross-channel services (Amber/Green)

Industrial action by French ferry workers and the growing number of migrants congregating in Calais has the potential to disrupt cross-channel services over the next six month period. Despite an appeal by the workers' cooperative SCOP against the Competition and Markets Authority ruling (ordering Eurotunnel to cease operating MyFerryLink services) being upheld, Eurotunnel agreed to lease the two MyFerryLink passenger ferries to DFDS. They intend to continue to run the third freight only ferry themselves. The full implications for SCOP, in terms of job losses, as a result of this sale is (as of 13 July) yet to be established, however it is anticipated that it will result in significant job losses.

This follows recent strike action by SCOP workers on Monday 29 June, when they succeeded in blockading the Port of Calais and ensuring that all ferry services were prevented from operating out of the port. This led to a cancellation of all P&O services with DFDS services were diverted to Dunkirk and also caused some disruption to Eurotunnel and Eurostar services. This action continued for three days until a temporary agreement was reached between the union and the French Government on 2 July that allowed the port to reopen for use by P&O only. This action caused significant disruption particularly to freight traffic, and created long queues on both sides of the channel that took 48 hours to return to normal levels. The queues of static or slow moving freight vehicles are targeted by migrants. If ongoing negotiations between the French Government and all parties breakdown or the union no longer see any progress being made this could trigger strike action. With the above context we judge the **likelihood** of protest and/or strike action on cross-Channel services of 48 hours or more to be **high.** The **impact** is likely to be **medium**, particularly as we move into the summer school holiday period, particularly given the potential for strike action by the ferry workers to conflate with the growing number of economic migrants in the Calais area seeking passage to the UK. There are contingency plans to in place to mitigate the disruption to both freight and passengers traffic in Calais through effective communication of alternative travel routes, and to manage any disruption in the UK through the use of Operation STACK.

3.4 Energy Disruption related to Severe Winter Weather (Amber/Green)

October to March is the season of highest risk for energy supply, as demand increases with the lower seasonal temperatures and shorter hours of daylight, and winter weather hazards pose disruptive risks to energy. Overhead power lines are directly exposed to disruption from storms and gales either from excessive wind speeds, or from windborne debris. Periods of low temperatures and heavy snow also pose a risk of ice accretion on overhead lines.

Winter means a more hostile operating environment for gas production from the UK Continental Shelf, Norwegian imports and shipping, however, diversity of upstream gas supply flows means that concurrent disruptions to any two of UKCS production, Norwegian/interconnector supply, storage or Liquefied Natural Gas are manageable in all but the coldest winters. Downstream gas supply is not directly exposed to winter weather risks; though cold weather is an impact multiplier should a disruption occur that prevents customers heating their homes.

Transport disruption caused by heavy snow/icy roads is the main risk for downstream oil supplies. This impairs hauliers' efficiency distributing fuel and oil products by road. The impact is felt by heating oil and LPG users, particularly in more rural areas. Prolonged low temperatures mean customers consume their heating oil/LPG more quickly, while snow-bound secondary and residential roads prevent suppliers making deliveries.

It is too early in the year to make a more specific risk assessment for the coming winter. A climatologically standard winter is expected to cause some short-lived and localised disruption to electricity caused by winter storms, but we would not expect to see gas supply or heating oil/LPG disruption given the diversity of gas supplies and the annual mitigation activities by industry and local resilience fora to prepare heating oil/LPG customers for winter. On this basis it is assessed that the **likelihood** of energy disruption in the coming winter as **medium** and the **impact** to be **low**. National Grid's annual Winter Outlook is produced over the summer for completion in early autumn. This will provide the basis to refine the risk assessment in the next Forward Look.

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Domestic Disruption Triggered by International Events

5.1 British and Dual Nationals seek entry into the UK as a result of instability overseas (Amber/Green) 

We currently assess the **likelihood** of significant numbers of expatriate British Nationals (taken as upwards of ten thousand) seeking immediate entry back to the UK as **low**.

For expats, while there are several million longer-term expatriate British Nationals, many are in stable parts of the world such as North America or Australia; and experience suggests that large scale relocations are extremely unlikely. The ongoing uncertainty around the financial situation in Greece has raised concerns about whether long term expatriates living in Greece, of which there are around 40,000, with an unknown number of dual nationals, may be expected to return home. This is considered to be likely in only very extreme scenarios and even then they would not be expected to be seeking immediate re-entry.

For tourists, the main risk lies in the continued instability in the Middle East and the risk that events there could trigger a conflict involving one or more countries that host significant numbers of British Nationals as tourists. Any change to country-specific situations would be reflected in updated FCO travel advice. We would not expect to see the return of British Nationals from the Middle East region in significant numbers unless the conflict escalated significantly. FCO travel advice is constantly updated to make short-term British National visitors aware of specific country risks.

We judge the potential **impact** to be **medium** as, in a reasonable worst case scenario, large numbers of people (including those considered vulnerable) could arrive within a short time and potentially put significant pressure on local services, transport routes and borders. However, the actual impact would depend on a number of factors such as the rate of arrival, the demographics of those returning, whether they had homes to return to, and the location of potential host communities in the UK.

Human Health

6.1 Severe flu season impacting the UK (Green) 

The annual influenza season usually occurs during October to early May each year. Each annual flu season is dominated by one or more major influenza subtypes; the particular sub-type can change from year to year. The severity of disease is in part dependent upon the strain of sub-type circulating as well as the level of immunity in the population, with a severe flu season indicated by significant increases in weekly consultation rate for influenza-like illness, syndromic surveillance indicators such as cold/flu calls via NHS 111 and numbers of hospitalised cases. The 2014/15 influenza season has come to end, however, it is not possible to predict the severity of the forthcoming 2015/16 season, which could start at any stage from September onwards. The **likelihood** of flu circulating before this time is currently assessed as **low**. A severe flu season in 2015/16 can have a big impact on primary and acute care services, and can place the NHS under pressure. However, the health response to seasonal flu is based on tried and tested systems. Given the preparations put in place, the **impact** is assessed as **low**.

6.2 An outbreak of a novel strain of an infectious disease causing serious illness (excluding pandemics) (Green) 

The risk of an emerging infection becoming prominent is always present, particularly at the interface between animals and humans (i.e. zoonotic infections). Globally, there are currently three main areas of concern: the ongoing cases of MERS-CoV in the Middle East and Eastern Asia; the large number of avian and human cases of influenza A (H5N1), particularly in Egypt; and the epidemic of Ebola Virus Disease (EVD) in West Africa.

As of 29 June, the World Health Organization has been notified of 1,339 laboratory-confirmed cases of infection with MERS-CoV, including at least 476 related deaths. An outbreak in South Korea has led to 185 cases, with 32 deaths and 150 recoveries and 1 further case in Thailand, China and the Philippines. In Egypt, the incidence of human influenza A (H5N1) infections and H5N1 cases has increased dramatically since January 2015, and as of 24 June 2015, 145 human cases including 36 deaths have been reported to WHO. In West Africa, total cases of Ebola are now circa 27,600 with 11 260 reported deaths. Whilst the focus is shifting from slowing the transmission to working towards ending the epidemic, it is important to note that cases continue to arise from unknown sources of infection and to be detected only after post-mortem testing of community deaths.

We judge the **likelihood** of an outbreak of a notifiable or novel infectious disease causing serious illness in otherwise healthy adults in the UK as **low**. MERS-CoV and Ebola outbreaks in developed health care systems have been limited, with no sustained community transmission. In addition,

the volume of health care workers returning to the UK from Sierra Leone is decreasing, and with it the risk of a case of Ebola in the. Around 85 returning workers are expected to arrive in the UK between the end of June and the end of September. As demonstrated in recent responses to suspected and confirmed Ebola cases, the UK has effective processes in place to detect, contain and treat a novel infectious disease.

The precise impact of a novel infectious disease in the UK will depend upon the mode and frequency of transmission, effectiveness of antibiotics and antivirals, and distribution of infection. The **impact** of an outbreak of a novel strain of infectious disease in the UK is judged as **low** providing there is prompt and effective messaging to reassure the public. Preparedness for E.coli outbreaks and other food borne diseases are part of everyday preparedness in the NHS, and impacts are usually felt at the local level. However, as for any major infection that occurs on a large scale and causes serious illness, there remains the potential for local NHS facilities to come under pressure.

Animal and Plant Health

7.1 Outbreak of a notifiable exotic animal disease (Amber/Green) 

Exotic animal diseases have the potential to have considerable impacts on animal health, industry and the economy should an outbreak become established. The method and speed of transmission of some diseases gives the potential for many animals to become infected over a short period, for example, Foot and Mouth Disease, which is spread by direct and indirect contact, mechanically as well as through the air. UK and international surveillance currently indicates that the **likelihood** of a UK outbreak of such notifiable exotic animal diseases is currently **medium** with respect to avian influenza but low for other notifiable exotic animal diseases.

There are continued outbreaks of avian influenza in South East Asia, Indonesia and Egypt (endemic areas for the disease), as well as North America, West Africa and the Middle East. This year has seen a significant increase in cases of human infection with Influenza A (H5N1) in Egypt and the emergence of new strains of avian influenza and spread to new areas. In the EU (Germany, Hungary, Italy, Netherlands, Sweden and the UK), H5N8 HPAI has been reported in poultry and wild birds, most recently in farmed poultry in the UK. Strains of H5N1 HPAI have also been detected in wild birds and backyard poultry in Romania, Bulgaria, Turkey and Russia, and multiple outbreaks of H5N2 HPAI in the USA and Canada. Its presence in migratory wild birds is suspected to have introduced influenza to the UK and EU farmed poultry population in previous instances.

Other animal diseases of concern, including African Swine Fever (reported in Russia and Eastern Europe), Foot-and-Mouth Disease, Sheep and Goat Pox (SPGP), Lumpy Skin Disease (LSD) and Peste de Petits Ruminants (PPR) (all reported in the Middle East and North Africa), continue to place the European border at risk where there is potential for illegal trade of live animals. The threat to the UK remains low because we do not import live animals from these non-EU countries. Defra continues to raise awareness within the industry and the European Community of the importance of notifying suspicion of disease, maintaining bio-security and the risks associated with catering, swill feeding and transport.

Finally, the vector season in Europe is underway and the recent increase in Bluetongue (BTV-1 and BTV-4) in South and East European Union means the risk may increase for other Member States this summer. Vigilance is required in terms of disease being spread by windborne movement of the midge vector, although there is currently no evidence of such diseases in North West Europe. Vaccines against these types of BTV are commercially available and permitted for general use in Great Britain.

We assess the **impact** of an avian influenza outbreak as **low** as it would likely be more limited than other notifiable disease (e.g. Foot and Mouth Disease) with the potential to have widespread effects on sectors of society which would be medium. Depending on the disease, impacts can range from being limited to livestock sectors, through to more widespread effects on rural life, movements and the economy (e.g. if an incursion of Foot and Mouth Disease were to occur). The UK has tried and tested contingency arrangements for controlling animal disease incursions which were recently tested in the effective response to the H7N7 Avian Influenza outbreak in Lancashire.

7.2 New plant pests and pathogens threatening UK forests and woodlands  (Amber/Green)

We judge the **likelihood** of findings of new plant pests and pathogens at points of entry, in nurseries, planting sites or in the wider environment to be **medium**. This is due to the significant number of diseases in existence globally and the availability of pathways for entry such as the global trade in plants, airborne transmission of insect borne disease or fungal pathogens from fruiting spores (largely in spring and summer) and presence of pests in wooden packaging materials, particularly from Asia.

We assess the **impact** of these events to be **low**. There is very little threat to human life involved; indeed, very few of the known pests and pathogens carry any human health implications. The economic impact is also relatively limited, however the impact on UK businesses specialising in particular plant/tree species could be more severe. The biggest impact is likely to be in terms of public and media reaction. While public outrage is highly unlikely to manifest itself in malicious protest or communications, there could be significant strength of public feeling on specific issues, particularly those affecting the wider environment (e.g. the Chalara outbreak of 2012).

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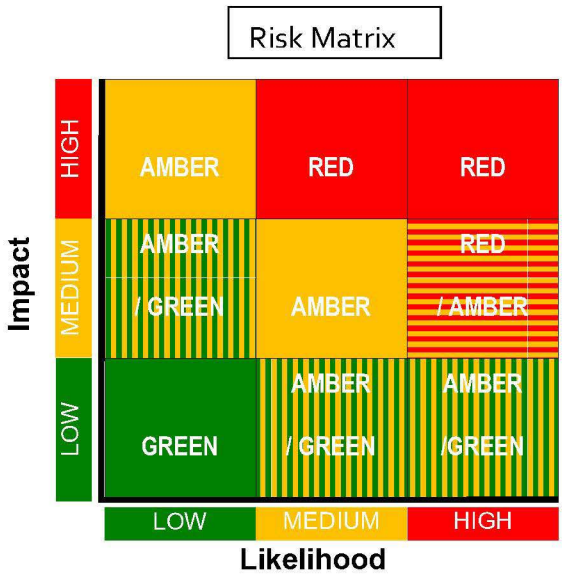
ANNEX B: ASSESSMENT METHODOLOGY

Forward Look risk assessments combine the assessed likelihood of an event happening during the next six months and the level of impact for the UK. Separate assessments of likelihood and impact are made for each issue and are shown as high, medium or low. Overall risk is determined by combining likelihood and impact assessments to arrive at an overall 'colour' risk rating as per the matrix outlined above.
Our assessments draw on a wide variety of open and closed source material. It should be noted that the assessment of terrorist threats is the responsibility of the Joint Terrorism Analysis Centre and the assessment of financial impacts on the economy is the responsibility of other committees.



The following descriptors are intended to provide a guide to the definitions we attach to risk through our assessment. These are 'best-fit 'judgements and not all criteria will be applicable against every risk.

LOW LIKELIHOOD	The event is not likely to occur in the next 6 months Very few reliable indicators that the event will occur No significant background factors increasing risk Measures in place are likely to prevent the event from occurring
MEDIUM LIKELIHOOD	The event may occur in the next 6 months Some background factors increase the likelihood of the event occurring There are some reliable indicators that the event will occur (possibly including expert opinion) and some counter indications
HIGH LIKELIHOOD	The event is more likely to occur in the next 6 months than not A range of background factors make the event more likely to occur There are compelling indicators that the event is likely to occur (possibly including key triggers, precedent and expert opinion)

LOW IMPACT	Few consequences, and at a low level Local rather than national consequences Little or no disruption to everyday activities beyond the area directly affected Affecting few sectors or across sectors at a very low level Minimal reputational risk for the UK
MEDIUM IMPACT	Consequences across a number of sectors, or a single sector severely impacted Impacts may be felt nationally Some disruption to everyday activities beyond the area directly affected Some reputational risk for the UK
HIGH IMPACT	Many sectors seriously affected by the event, including the economy Consequences felt nationally Significant disruption to a range of everyday activities beyond the area directly affected Significant reputational risk for the UK