Risk assessment template - Cross Government Risk Assessment 2018 (Emerging Infectious Diseases)

Tab 1 - Overview

1. Risk type *(select from the drop-down list below)*

Hazard-related risk

2. Risk title *(insert a short title that best describes the risk scenario e.g. volcanic eruption)*

Emerging Infectious Diseases

3. Risk owner *(select from the drop-down list below)*

Department of Health

4. Overall confidence assessment - likelihood/plausibility *(using your judgement and the uncertainty information you have provided elsewhere, please give an overall statement of confidence in your assessment of the likelihood/plausibility of the RWCS)*

Low

5. Overall confidence assessment - impacts *(using your judgement and the uncertainty information you have provided elsewhere, please give an overall statement of confidence in your assessment of the RWCS impacts).*

Moderate

6. Reasonable worst case scenario risk description *(provide an overview of the risk in a few paragraphs, briefly highlighting key impacts)*

Over the past 30 years, more than 30 new or newly recognised diseases have been identified. Most of these have been zoonoses, i.e. diseases that are naturally transmissible, directly or indirectly, from animals to humans. The reasonable worst case scenario (RWCS) is an outbreak of a high consequence infectious disease (HCID) which is airborne. An airborne disease is more likely to spread rapidly from person-to-person, and can make contact tracing more difficult compared to other diseases which have a different route of transmission. Other emerging infectious diseases which are spread through different routes of transmission are explored in the three variations below.

Specifically, the current RWCS is based on an outbreak of a respiratory infection in the United Kingdom (UK) which is similar to the outbreak of Middle East Respiratory Syndrome (MERS) seen in South Korea in the 2015. This has been chosen due to the current risk of this disease and the historical precedent of imported MERS cases leading to outbreaks. However, it should be noted that due to the nature of an emerging infectious disease there is some uncertainty as to whether a different emerging pathogen, including one which was airborne, would lead to an outbreak similar to the scenario described.

The RWCS is predicated on a novel or emerging infection (i.e. one that is either globally unknown or unknown/very rare in the UK) arising in another country and then arriving in the UK before it is identified. It is possible that a novel infection could arise in the UK first but this is less likely.

Based upon the experience of recent international outbreaks of MERS, the likely impact of such an outbreak originating outside the UK would be cases occurring amongst returning travellers and their families and close contacts, with potential spread to health care workers, and other patients within a hospital setting. The resulting cluster of individuals with a similar illness should lead to infection control within health care settings and other public health measures being instigated which can control the spread of the disease. For MERS, sustained human to human transmission outside of close contacts and health care workers has been limited so far (Arabi et al, 2017) and therefore there is currently a low risk of this disease presenting a wider threat to the UK. However, sustained human-to-human transmission in emerging airborne diseases is possible, which is why infection control procedures are critical to the mitigation of this risk.

The RWCS described above could lead to:

- increased demand on specialist intensive care and infectious diseases facilities;
- short term localised disruption to routine healthcare activities if outbreaks occur in hospital settings;
- possible disruption of several, or more, weeks to elective procedures;
- contacts of cases being placed under health surveillance; and
- public concern about travel, within and beyond the UK and possible international travel restriction advice.

As a novel or emerging pathogen it is unlikely that effective vaccines will be available and the effectiveness of existing antivirals/antibiotics will be unclear as will be optimal clinical management strategies.

7. Specific assumptions and strategic context *(list any key assumptions underpinning the assessment and any relevant information related to the strategic context)*

The specific assumptions underlying this scenario are that:

- the infection does not originate within the UK but spreads rapidly to UK (and globally) via air travel (specifically for this scenario, a traveller with MERS travelling from the Middle East); and
- that as an emerging infection, it would be difficult to recognise and detect rapidly.

Regarding the disease itself, the specific assumptions are that:

- there is the possibility of spread within a hospital (or other close) setting, prior to the infection being identified in the patient;
- there is a high case fatality rate - for MERS specifically it would be about 35%;
- there is no effective treatment other than symptomatic management; and
- the main control measure is the implementation of effective infection control in relation to identified cases.

For the RWCS there is an assumption that, although there will be national impacts, the spread of causalities and fatalities will be more contained within a region. Although this cannot be guaranteed, the most likely people to be infected are close contacts of the initial case and health care workers and patients within the health care setting where they are treated. This assumption would depend on transmissibility and the effectiveness of infection control procedures

8. Background and supporting evidence *(provide the historical background to the risk, including the most serious previous occurrences of similar events, as well as key changes since then that would affect the impact or likelihood/plausibility of the risk occurring again)*

New infections have emerged in the human population at regular intervals during recent decades. For example, this includes diseases such as HIV, SARS, MERS, Chikungunya, West Nile disease, and Ebola. Not all emerging diseases can be categorised as high consequence but their novelty makes them more difficult to detect and treat. The background below specifically deals with the RWCS, i.e. an airborne infectious emerging disease (including MERS and SARS). Background for emerging infectious diseases with other routes of transmission can be found in the variations described below.

MERS is caused by a coronavirus (MERS-CoV) related to same family of viruses that caused SARS. This infection emerged in the Middle East and globally in 2012, and since then World Health Organization has been notified of 2103 laboratory-confirmed cases of infection with MERS-CoV, including at least 733 related deaths (case fatality of 34.9%) as of 16 November 2017. The vast majority of these occurred in the Middle East. No specific treatment or vaccine is currently available for MERS.

In 2015, an outbreak of MERS occurred in South Korea, triggered by a single individual who had travelled in the Middle East. There were 186 cases including 38 deaths during this outbreak which was marked by multiple transmissions events within healthcare settings to other patients, their relatives and healthcare workers. (Kim KH et al, 2017), (WPRO, WHO, 2015). This outbreak feeds in to the RWCS described, although it should be noted that it is unlikely that an outbreak of MERS in the UK would mirror this scenario exactly.

The principal reservoir of the infection is camels in the Middle East (Gossner et al., 2016). Human to human transmission is relatively inefficient (at present) and most human cases have arisen through exposure to camels, in healthcare settings or under conditions of close household contact (Arabi et al, 2017). Therefore, any future MERS cases are likely to be either imported to the UK through international travel, or to arise from close contact with imported cases in households or healthcare settings.

SARS is also caused by a coronavirus. An epidemic of SARS occurred in 2003, with more than 8000 cases in 26 countries across the world. The case fatality rate for SARS, but can be as high as 50% (Donnelly et al, 2003). There were no confirmed cases of SARS in the UK and SARS is no longer prevalent across the globe so is seen as less of an ongoing threat compared to an outbreak of MERS.

The emergence of new infectious diseases is unpredictable but appears to have become more frequent. This may be linked to a number of factors such as climate change, the increase in world travel, the displacement of people because of war, the global transport of food, the encroachment

of humans on the habitat of wild animals, intensive commercial animal husbandry practices and enhanced detection.

9. Recovery and long term implications *(provide information about the time it would take to recover from a scenario of this type, as well as any potential long-term implications that would be felt beyond the two year assessment timeframe)*

For the individuals infected, the outcome of any infectious disease - whether it is established or emerging - is that the infected individual recovers and may be subsequently immune to further infection with the same strain of organism (although this is not always the case), or dies as a result of the infection. However, there could well be long term consequences as a result of the disease, including becoming a chronic carrier of the disease, but this is difficult to predict in advance without knowing the specific disease involved e.g. Zika to microcephaly.

There is limited data on the long term impacts of MERS. Due to the severity of the illness, it may be expected that recovery to previous levels of activity would be longer than for other, common causes of pneumonia. Outcomes are worse in individuals with previous long term conditions. As the majority of cases have occurred outside of Europe, it is not known what proportion of all MERS survivors develop long-term complications of this infection, such as long-term respiratory disease.

10. Capability requirements *(based on what you and others know about this risk and its consequences, what are some of the likely capabilities that government and/or the local level would need in order to manage the risk?*)

The capability requirements include:

- Surveillance systems, particularly syndromic surveillance; covering primary and secondary care settings and HCWs
- Staff trained in enhanced infection control practices, and adequate access to and training in the use of personalised protective equipment (PPE)
- Public health staff for contact tracing and follow-up;
- Excess death management, including potential infectious material (particularly for variation 2, below)
- Decontamination services
- Appropriate specialist healthcare services e.g. high level-isolation units, intensivists with specialised experience in infectious diseases
- Appropriate facilities for quarantine.

11. Variations and ranges *(using the scenario builder, provide information about other ways in which this scenario might manifest itself and the effect these variations might have e.g. would a different target make the scenario more or less likely or impactful than the reasonable worst case? Would it require different capabilities to manage?)*

Variation/Range 1

There is the possibility of Ebola or another highly infectious viral haemorrhagic fever emerging as a global public health threat. Based on recent examples, this would likely emerge overseas and could be brought to the UK via recent travellers.

Ebola is an example of a longer established (first identified in humans in 1976), zoonotic blood-borne infection. Ebola recently caused a major outbreak in Guinea, Sierra Leone and Liberia (WHO Ebola response team 2014; WHO Ebola response platform, 2013-2015). Almost 29,000 cases were reported in these three countries over a period of two years. Linked outbreaks occurred in Mali (8) and Nigeria (20) and a further eight cases occurred in individuals from other countries, including Europe and the United States of America. A major global response was required to bring the outbreak under control in West Africa (WHO Ebola response activities 2014-2015; WHO Ebola response platform 2013-2015; WHO Ebola Response team, 2016). The outbreak provoked a major domestic response in the UK, with the introduction of extreme public health measures such as airport screening (Moll et al, 2016; UK Government, 2016). In 2017 to date, there have been small contained outbreaks of Ebola in the Democratic Republic of Congo (WHO press release, 2017a) and Marburg (another viral haemorrhagic fever) in Uganda (WHO press release, 2017b).

Ebola is transmitted through contact with bodily fluids of the infected patient, and transmission remains possible after the patient has died. It has an average case fatality ratio of 50% (although known to range from 25%-90%) with no known treatment - only symptom management. Ebola has associated long-term musculoskeletal and ocular complications so those who recover from the infection could require further medical care. (WHO, 2017d).

For this particular variation, because of our healthcare system – which is able to practice good infection control – and our public health system it is unlikely that there would be a greater threat than a localised outbreak from an imported case. However, this assumption is predicated on the requirement for high level isolation units and decontamination services to protect health care workers who are exposed to the patient's bodily fluids. Similarly, the infectiousness of the patient after death means that there is a need for specialised death management systems.

Variation/Range 2

The mosquito vectors (Aides species) that can transmit Zika virus, dengue and chikungunya are currently spreading across Europe, becoming established (ECDC, 2017a) and in some cases transmitting such infections in areas in which they were unknown until recently (ECDC, 2017b; ECDC, 2017c). There is a risk of these mosquitos becoming established in the UK, which could result in these vector-borne diseases becoming more common.

The assumptions associated with a vector-borne infection:

- The relevant vector is established in the UK.
- The vector, if it is an insect commonly bites humans (and possibly animals).
- The pathogen can be found in the bloodstream of humans (and/or animals) before any symptoms are present and therefore puts the national blood supply at risk.
- There is no effective antimicrobial treatment or vaccine available

Zika virus infection, a viral disease which is transmitted to humans from infected mosquitoes including Aedes aegypti and Aedes albopictus was first identified in 1947 in Uganda. Until 2007, confirmed cases of Zika virus infection were rare. However, in 2007 a major epidemic occurred in Yap Island, Micronesia, and then in French Polynesia in 2013. Since the report of the first locally-acquired confirmed case of Zika infection in Brazil in May 2015, many countries, territories and areas

in South and Central America, the Caribbean, Oceania, South and South East Asia have reported Zika virus transmission (Baud et al, 2017). The disease is usually asymptomatic or mild, and historically had not been noted to cause death, nor been linked to intra-uterine infections and congenital central nervous system anomalies. However, it is now recognised that Zika virus infection during pregnancy is a cause of congenital brain abnormalities including microcephaly (also referred to as congenital Zika syndrome), and may also trigger the neurological disease Guillain-Barré syndrome (GBS) (WHO, 2016). During this recent outbreak the UK, alongside many countries around the world, instituted travel advice for women planning pregnancy (PHE, 2017a). Over 800,000 suspected and confirmed cases have been reported to date in the Americas (PAHO, 2017).

Other similarly widespread viral mosquito-borne diseases include chikungunya and dengue. Dengue is exceptionally widespread, with much of its geographic expansion having come since the 1970s. True numbers are unknown but there are in excess of three million cases reported annually, and an estimated half million severe dengue cases require hospitalisation each year (WHO, 2017c). Chikungunya was also first identified in Africa (Tanzania, 1952) and was of little consequence until 2005 when an outbreak occurred in the Indian Ocean. In 2013 it was detected for the first time in the Caribbean and subsequently spread throughout the Americas with over 2.5 million cases to date (Weaver. 2014). It is estimated that between 25 and 50% of clinical cases suffer rheumatological sequelae, including chronic inflammatory rheumatism, with consequent health impacts (van Aalst et al, 2017). Of note, a dengue vaccine is available but would be problematic for use in a UK scenario as recent scientific data have revealed that for those not previously infected by dengue virus [most UK citizens], more cases of severe disease could occur following vaccination upon a subsequent dengue infection (Sanofi, 2017).

Outbreaks of Chikungunya have occurred in Europe on several occasions since 2007; in France (Rezza et al, 2017; Manica et al, 2017) and France (Delisle et al, 2015; Calba et al, 2017).

In the UK, two incursions of Aedes albopictus have so far been detected by Public Health England (PHE) surveillance activities. Each most likely arrived in the UK via vehicles from Europe and each incursion was controlled. (PHE, 2017b)

West Nile virus is transmitted by other mosquito species (mainly Culex species), with cases recognised in humans and horses in Europe each year (ECDC, 2017d; ECDC, 2017e). The potential threat from West Nile virus is different as its mosquito vectors include some species native to the UK.

This variation requires specific surveillance to monitor the vector itself and the vector-borne disease.

Variation/Range 3

Human Immunodeficiency Virus (HIV)

In 2016 there were an estimated 89,400 people living with HIV, of whom 88% were diagnosed and aware of their infection. Of those diagnosed, 96% were receiving anti-retroviral therapy (ART) and 97% of those treated were virally suppressed. In the UK, treatment is now so effective that people receiving ART who achieve viral suppression are at extremely low risk of passing on the virus. https://www.gov.uk/government/news/13500-people-living-with-an-undiagnosed-hiv-infection-in-the-uk

In 2016, 5,164 people were newly diagnosed with HIV in the UK, an 18% decline on the 6,286 diagnoses made in 2015. This fall was due to reduced transmission among gay and bisexual men in London (in response to increased HIV testing, prompt ART at diagnosis and increasing availability of Pre-Exposure Prophylaxis), and a continued gradual decline in diagnoses in heterosexual men and women born abroad (due to changing migration patterns).

Challenges remain with 42% of HIV diagnoses made at a late stage of infection in 2016, associated with a 10-fold risk of one year mortality compared to those diagnosed promptly. Heterosexual men and women, particularly within black African communities, are most likely to be diagnosed late.

High level azithromycin resistant (HLAziR) gonorrhoea in England

Gonorrhoea is the second most common bacterial sexually transmitted infection (STI) in England and in 2016 36 244 diagnoses were made. Gonorrhoea has progressively developed resistance to the antibiotic drugs prescribed to treat it and few antimicrobials remain effective. Current recommended therapy involves ceftriaxone in combination with azithromycin. Gonorrhoea can develop resistance rapidly, therefore dual therapy is recommended because simultaneous development of resistance to both drug types is unlikely, and first-line treatment will remain effective. If azithromycin becomes ineffective against gonorrhoea, there is no 'second lock' to prevent or delay the emergence of ceftriaxone resistance, and gonorrhoea may become untreatable.

Between January 2015 and June 2017, 81 cases of HLAziR were made in England. Cases were first seen among young heterosexuals in Leeds but have since spread to other parts of England including London. Partner notification is essential to the control of STI-related outbreaks but success was limited indicating that there was likely to be many undiagnosed cases. However, the average number of new cases identified per month has remained relatively stable. All cases have been treated successfully. PHE has alerted clinicians to raise awareness of HLAziR gonorrhoea via the British Association for Sexual Health and HIV network. A National Resistance Alert was issued to all microbiologists in October 2015 to ensure that all gonococcal isolates are tested for azithromycin and ceftriaxone susceptibility, and resistant isolates are referred to PHE Colindale for confirmation and follow-up. The rapid spread of the outbreak highlights the likelihood that multi-drug resistant and untreatable strains of gonorrhoea will emerge and spread in the near future.

Variant Creutzfeldt-Jakob disease (vCJD)

Variant CJD (vCJD), a fatal neurodegenerative condition, was recognised as a new acquired form of human prion disease in 1996. The disease has been linked to the consumption of BSE contaminated

beef in the 1980s and 90s. And the assumption is that there was widespread population exposure to this risk. To date, 175 UK clinical cases have been attributed to this dietary exposure, a further three cases were caused by blood transfusion. The blood donors were healthy at the time of donation, but subsequently developed and died from vCJD. Measures to protect the food chain and the blood supply were implemented and remain in place. Following a peak in 2000, new cases of variant CJD now occur very infrequently. However, acquired forms of CJD have previously been shown to have very extended incubation periods, spanning decades. The possibility of further clinical cases and further transmission from asymptomatic individuals via blood transfusion or following surgery remains. There is no in-life test for asymptomatic vCJD and current understanding of the possible level of asymptomatic carriage of vCJD abnormal prions in the population comes from studies of archived tissue samples. These studies suggest that 1 in 2,000 of the UK population could be carrying abnormal prion protein. The interpretation of this evidence is difficult and further work is ongoing to better understand the scale of undiagnosed vCJD and the risk of further secondary transmission.

Variation /Range 4

12. Impact on vulnerable populations or groups with protected characteristics

Individuals with chronic diseases and also older age groups have developed more severe illness following MERS-CoV infection. The precise vulnerable population will vary between for different emerging infections.

Tab 2 – Likelihood

13a. Likelihood *(provide a probabilistic assessment - informed by scientific evidence and historical information - of the potential for the RWCS (or a scenario of a similar magnitude) occurring at least once within the next two years)*

Likelihood score of 3: <1/20 but >1/200 over 2 years

13b. Likelihood - explanatory notes *(provide information and evidence in support of your conclusions)*

Although new zoonotic risks arise with greater frequency than 1/20 in 2 years, the ability of these infections to transmit between people is more limited. This is evidenced by MERS which spreads more frequently from person to person in household and healthcare settings but sustained person to person transmission in the wider community has not been observed. On balance, a likelihood score of 3 (<1/20 but >1/200 over 5 years) is therefore considered a reasonable assumption.

13c. Likelihood - confidence assessment

Explanatory notes *(identify any particular sources or areas of uncertainty and how that may affect the assessment - see guidance for further information)*

There is significant uncertainty about the frequency with which an emerging infection may develop the ability to transmit from person to person.

Tab 3 – Plausibility

This section is only applicable for threat-related risks.

Tab 4 – Human Welfare Impacts

15. Fatalities in the UK

15a. Total number of fatalities *(indicate the estimated number of deaths arising from this scenario)*

40-70

15b. Number of no-notice and excess fatalities *(where possible, indicate what percentage of the total number of deaths would be considered 'no-notice' - see guidance for definitions)*

3 no-notice deaths (i.e. in first two weeks) and a further 52 excess (using average from range above).

15c. Impact on fatality management processes *(select a level of impact from the list below - includes storage, coronial processes and burial/cremation of remains)*

Two – Local/regional fatality management processes under significant pressure

Explanatory notes (for example, to explain the likely impact on fatality management processes and other challenges)

See explanatory notes (19e) for further details on fatalities. For fatality management process, level two has been indicated as infection control precautions may be required if post-mortem examinations need to be undertaken. For variation 2, the outbreak of a disease such as Ebola, special handling would be required for all of the deceased due to the infectiousness of the body.

16. Casualties in the UK

16a. Number of physical casualties *(indicate the estimated number below)*

200

15b. Number of no-notice and excess casualties *(where possible, indicate what percentage of the total number of injuries/physical harm would be considered 'no-notice')*

200 excess

16b. Number of mental health casualties (indicate the estimated number below - use separate algorithm)

167

17. Fatalities and casualties abroad

17a(i). Number of fatalities abroad (British nationals) *(indicate the estimated number below)*

Unknown

17a(ii). Number of casualties abroad (British nationals) *(indicate the estimated number below)*

Unknown

17b(i). Number of fatalities and casualties abroad (non-British nationals) *(indicate the estimated number below)*

2102 casualties; 733 deaths (from 2012-2017)

18. Crisis Hub cases *(indicate the estimated number of cases above business as usual figures below)*

0

19. Evacuation and Shelter

19a(i). Evacuation in the UK *(indicate the estimated number of people who would need to be evacuated below)*

0

19a(ii). Evacuation in the UK *(indicate the estimated timeframe for the evacuation below)*

0

19b(i). Shelter in the UK - temporary accommodation *(indicate the estimated number of people requiring temporary accommodation for less than 2 months below)*

0

19b(ii). Shelter in the UK - temporary accommodation *(indicate the estimated duration temporary accommodation will be required for below - up to 2 months)*

0

19c. Shelter in the UK - alternative accommodation for more than 2 months *(indicate the estimated number of households likely to require alternative accommodation for more than 2 months - 1 household is roughly equivalent to 2.5 people)*

0

19d. British Nationals requiring evacuation abroad / repatriation *(indicate the estimated number of people below)*

Unknown

19e. Human welfare impacts - confidence assessment

Explanatory notes *(identify any particular sources or areas of uncertainty and how that may affect the assessment - see guidance for further information)*

Q15 and 16: The number of casualties is based on the MERS outbreak in South Korea. Given this number of casualties, the number of fatalities could range from 40-70. Approximately 40 people died in the MERS outbreak, but with a case fatality rate of 34.9% it is possible that up to 70 people could have died. Both figures could be higher or lower than this depending on how communicable the disease is, as well as how quickly the disease is recognised and prevented from spreading further using infection control measures.

Q17 and 19: There is considerable uncertainty regarding the impact of the outbreak on British Nationals Overseas. This scenario has not been modelled by the FCO or Department of Health. The number of non-British fatalities and casualties abroad will depend on the country where the outbreak occurs and the response of the responding health system. The figures presented are the cumulative total of fatalities and casualties since the discovery of the disease in 2012.

Tab 5 – Behavioural Impacts

20. Behavioural (psycho-social) impacts

20a. Public outrage *(select a level of impact from the list below)*

Three

Explanatory notes

Even though the Government and other authorities can do little to prevent the emergence of natural diseases, there would be some outrage directed at the authorities associated with a perceived failure to contain the outbreak, given the numbers of fatalities and casualties. There would also be anger that diseases were not prevented from spreading to the UK. Blame would be dependent on where the disease has come from but there would be strong views that this should have been prevented.

20b. Public perception *(select a level of impact from the list below)*

Three

Explanatory notes

There is likely to be widespread and prolonged anxiety amongst the public for their own health the health of family and friends (especially children and the elderly) as well as a lack of understanding of the risks of infection as this is a new disease. There is likely to be increased anxiety regarding travel to and from the countries affected. Anxiety may be heightened by how Government and media handles the situation and informs the public about the risks and provides advice on protective measures they may take to lessen its impact.

20c. Behavioural impacts - confidence assessment

Explanatory notes *(identify any particular sources or areas of uncertainty and how that may affect the assessment - see guidance for further information)*

Tab 6 – Economic Impact

21. Economic Impact *(please refer to the Excel Guide)*

21a(i). Economic impact score *(select a level of impact from the list below)*

Four – Billions of £

21a(ii). Economic impact total *(insert the total amount (in £) resulting from your economic impact calculations)*

6,891,240,883

21b. Economic impacts - confidence assessment

Explanatory notes *(identify any particular sources or areas of uncertainty and how that may affect the assessment - see guidance for further information)*

A significant proportion of this economic impact results from the potential reduction in tourism. This was loosely based on the impact a SARS outbreak had on the tourism in Hong Kong but has a significant level of uncertainty.

The number of fatalities was taken as 55 for the economic impact model. An assumption has been made that there will be no ""slightly"" injured casualties. This is because even though some individuals might only have mild symptoms, the level of health care and isolation required to contain the outbreak would be high for everyone infected.

Tab 7 – Essential Services Impacts

22. Transport

22a. Rail/Road - London Commuting & TfL *(describe the impact of the scenario on London commuting and/or TfL services including the severity/intensity and duration of disruption, area(s) and/or number of people affected)*

No impact expected

22b. Rail/Road - Rest of UK *(describe the impact of the scenario on the rest of the UK's road and rail services including the severity/intensity and duration of disruption, area(s)/routes and/or number of people affected)*

No impact expected

22c. Aviation - Air Traffic Management *(describe the impact of the scenario on air traffic management including the severity and duration of disruption)*

No impact expected

22d. Aviation - Air Services *(describe the impact of the scenario on air services including the severity/intensity and duration of disruption, area(s)/routes and/or number of people affected)*

It is possible that there would be small disruption to airlines through the introduction of screening processes or cancelled flights affecting specific routes. This is unlikely to have a significant impact overall so would still score 0 on impact scale.

22e. Maritime - Cross-Channel Services *(describe the impact of the scenario on cross-Channel services including the severity/intensity and duration of disruption, area(s)/routes and/or number of people affected)*

No impact expected

23. Energy Supply

23a. Fuel *(describe the impact on fuel supplies including the area and/or number of forecourts or people affected and for how long)*

No impact expected

23b. Gas *(describe the impact on gas supply including the area and/or number of people affected and for how long)*

No impact expected

23c. Electricity *(describe the area affected and/or number of people without power and for how long)*

24. Food and water

24a(i). Food: Disruption to choice *(indicate the estimated percentage of the population or area affected and for how long)*

No impact expected

24b(i). Food: disruption to supply of essential foods *(indicate the estimated percentage of population or area affected and for how long)*

No impact expected

24c. Water: Loss of confidence or disruption to drinking water supplies (for more than 3 days) *(indicate the estimated number of people and/or area affected)*

No impact expected

25. Health *(refer to supplementary guidance before filling in this section)*

25a. Non-availability of drugs and medical devices *(indicate the estimated number of people/percentage of population/area affected and for how long)*

It is possible that there will be an impact on essential supplies needed to treat high consequence infectious diseases, such as high level isolation units. This would potentially impact 4% population for 10 days.

25b. Closure or diversion of A&E departments *(indicate the estimated number of people/percentage of population/area affected and for how long)*

An outbreak on the scale described in the RWCS would overwhelm high level isolation units for multiple days at a time. This would have a national impact (i.e. >40% population) due to the reach of these units.

25c. Non-availability of NHS 111 *(indicate the estimated number of people/percentage of population/area affected and for how long)*

There is likely to an increased volume of calls regarding the outbreak, however it is unlikely that this will lead to non-availability of NHS 111 services.

25d. Lack of availability of other health and care services *(indicate the estimated number of people/percentage of population/area affected and for how long)*

Within the region most affected by the outbreak there will likely to be significantly increased activity to respond to the outbreak which would result in postponed elective procedures. It is hard to predict how long this disruption will occur for but it could be as long as two months.

26. Finance

26a. Disruption to cash supply *(indicate the estimated population and/or area and/or number of cash machines affected and for how long)*

No impact expected

26b. Loss or major disruption to core infrastructure that processes high volumes AND values of transactions *(select a level of impact from the list below)*

No impact expected

26c. Loss or major disruption to infrastructure that allows Government to conduct its secondary functions *(select a level of impact from the list below)*

No impact expected

27. Communications

27a. Loss or major disruption to voice and data services *(indicate the estimated number of people and/or area affected and for how long)*

No impact expected

27b. Loss of internet traffic *(indicate the extent to which internet traffic would be lost (in Gb/sec) and for how long)*

No impact expected

28. Emergency services

28a. Disruption to policing (local capabilities) *(indicate the estimated number of people and/or area affected and for how long)*

No impact expected

28b. Disruption to fire & rescue services *(indicate the estimated number of people and/or affected and for how long)*

No impact expected

28c. Non-availability of NHS emergency ambulance services *(indicate the estimated number of people/percentage of population/area affected and for how long)*

28d. Non-availability of 999 service *(indicate the estimated number of people/percentage of population/area affected and for how long below)*

No impact expected

29. Education - disruption to schools (indicate the number of schools/pupils/area affected and for how long)

There is no expectation that schools would be closed during the RWCS.

30. Essential services impacts - confidence assessment

Explanatory notes (identify any particular sources or areas of uncertainty and how that may affect the assessment - see guidance for further information)

During the SARS outbreak in 2002, there was a significant impact on the airline industry in South East Asia. It is therefore possible that the impact on airlines would be higher than predicted above.

Tab 8 – Environmental Impacts

No environmental impacts for this risk.

Tab 9 – Security Impacts

No Security impacts for this risk

Tab 9 – International Order Impacts

No international order impacts for this risk.

Tab 10 – Trend Analysis

Trend analysis: 5 year outlook

40. To what extent is the RWCS likely to change over the next 5 years? *(Identify any trajectories or trends that might affect the risk and potential areas or sources of uncertainty. In addition to providing general information, please specify the extent to which the likelihood/plausibility or impacts of the risk might change and whether this is likely to affect the position of the risk on the matrix)*

Human disease may be linked to concurrent animal disease. Environmental factors and hazards (such as flooding) may also increase both the spread of existing exotic (from a UK perspective) diseases and the probability of the emergence of new diseases. Although unlikely to have an impact in the next five years, further ahead climate change may result in conditions that may make the UK more hospitable for establishment of insect vectors of diseases currently not endemic in the country.