Airborne Orbivirus Assessment

No. 2025/08

20 August 2025

Risk of airborne introduction of BTV and EHDV to Great Britain from the near continent

Time period: 06 to 19 August 2025.

This report describes the opinion of the Airborne Orbivirus Risk Assessment Group on the retrospective risk of entry of bluetongue virus (BTV) or epizootic haemorrhagic disease virus (EHDV)- infected midges into Great Britain (GB) from the near Continent over the previous 2 weeks. It does not attempt to predict the future risk of virus entry or consider the historical risk earlier than the time period stated above.

The risk assessment group comprises experts from the Met Office, The Pirbright Institute, the Animal and Plant Health Agency, and the UK Office for SPS Trade Assurance.

This is a qualitative risk assessment, meaning that we estimate risk and uncertainty using words rather than numbers. The risk and uncertainty levels we use are described in Supplementary Tables 1 and 2 in Appendix A.

Incursion risk

Our estimates of the risk of airborne introduction of infectious BTV-infected midges to GB over the last 2 weeks are:

- ‘Medium’ from French sources (meaning that it is likely that infectious BTV-infected midges have blown into GB over this period from this country). We have low uncertainty in this estimate (meaning that we have not had to rely on expert judgement to fill in data gaps).
- ‘Low’ from Belgian sources (meaning that it is unlikely that infectious BTV-infected midges have blown into GB over this period from this country). We have moderate uncertainty in this estimate (meaning that we have had to rely to some degree on expert judgement to fill in data gaps).
- ‘Negligible’ from Dutch sources (meaning that that the risk of infectious BTV-infected midges being blown into GB over this period from this country was low enough to not merit consideration). We have moderate uncertainty in this estimate (meaning that we have had to rely to some degree on expert judgement to fill in data gaps).
- ‘Negligible’ from German sources (meaning that that the risk of infectious BTV-infected midges being blown into GB over this period from this country was low enough to not merit

consideration). We have low uncertainty in this estimate (meaning that we have not had to rely on expert judgement to fill in data gaps).

- 'Negligible' from Danish sources (meaning that that the risk of infectious BTV-infected midges being blown into GB over this period from this country was low enough to not merit consideration). We have low uncertainty in this estimate (meaning that we have not had to rely on expert judgement to fill in data gaps).

This represents an overall 'Medium' risk of airborne introduction of infectious BTV-infected midges to GB from the near Continent over the last 2 weeks, meaning that it is likely to have occurred.

To estimate the risk of the airborne incursion of midges infected with BTV or EHDV into GB over the last 2 weeks we first inspect the outputs of a simulation model (an 'atmospheric dispersion model') of this movement process. This model simulates the potential movement of midges from locations along the coastline of the near continent, and has recently been changed from one using 9 single source locations across this area to one capturing the midge incursion risk from along the whole coastline, as described in Appendix B. We believe this change will give us a higher chance of detecting where meteorological conditions have been suitable for midge incursions.

We discuss the model outputs within the risk assessment group and agree on a single estimate of the 'risk of vector incursion' from each source country (shown in Section 1 of this report). This will routinely include France, Belgium, the Netherlands, Germany, and Denmark, with other source countries (Spain, Sweden, and Norway) included if conditions are found to be suitable for incursions from those countries. We do not currently consider the risk from sources in the Republic of Ireland, but would do so if there was considered a risk of BTV or EHDV incursion from this country.

As these risk estimates do not consider midge infection status, we then discuss within the group what the 'risk of incursion of infectious virus-infected midges' from each source country would be for each of BTV and EHDV. To do this, we consider the epidemiological situation in each source country. This includes both recent reports of livestock infection and recent temperature conditions (as infected vectors can only become infectious if temperatures are suitably high for a suitably long period of time) as well as the vector incursion risk. We do not differentiate between different virus serotypes or strains when we estimate this risk, but consider them all together.

Due to the difficulties in inferring vector infection status from limited data on livestock infection, we also estimate the level of uncertainty in these estimates, which describes the degree to which we have needed to fill gaps in our knowledge of the potential risk using expert opinion. These estimates are shown in Section 2 (BTV) and Section 3 (EHDV) of this report.

Spread risk

Our estimates of the risk of spread of BTV over the last 2 weeks if incursions did occur are:

- 'Very High' in the South West region of coastal England
- 'Very High' in the South East region of coastal England
- 'Very High' in the East Anglia region of coastal England
- 'Very High' in the North East region of coastal England

Regions are described in Appendix C. This means that temperatures in all four coastal regions considered were almost certainly suitable for sustained BTV transmission by vectors over the previous 2 weeks.

We estimate the potential risk of sustained onward spread of BTV in coastal and near-coastal areas in the south and east of England (the areas of GB most at risk of airborne virus incursions) over the previous 2 weeks by considering vector activity and temperatures. We divide this area into 4 regions in this assessment: the South West the South East, East Anglia, and the North East (highlighted in Appendix C).

We also provide estimates of the risk of virus spread in each of these regions should an incursion have occurred over the previous 2 weeks (estimates shown in section 4 of this report). Note that these risk estimates only consider the spread risk from infectious vectors entering the country over the previous 2 weeks in these regions and do not consider the risk of spread from vectors infected before this time (such as any previously infected vectors which may have survived the winter months, which we consider to be a rare occurrence).

We also do not consider the risk of intermittent transmission events from small numbers of infectious vectors. Instead, we focus on the risk of larger scale outbreaks, where temperature conditions allow the cycle of virus transmission between vectors and livestock to be perpetuated.

If meteorological conditions were found to be suitable for incursions into Scotland, we would estimate the risk of virus spread in near coastal regions in this country, but do not estimate these risks routinely.

Other information

Preliminary outbreak assessments of the BTV and EHDV situation in Europe are available, which also consider other potential routes of virus entry.

Read about:

- Bluetongue virus in Europe (GOV.UK)
- Epizootic haemorrhagic disease in Europe (GOV.UK)

Risk summaries

More details on our risk estimates and the evidence underlying these are provided in the 6 tables in the report. This includes:

- A single table (Table 1) describing our estimate of the risk of incursion of midge vectors (regardless of infection status) from each high-risk source country (with this risk shown in the top row of the table)
- 2 tables (Tables 2 and 4) which describe our estimate of the risk of incursion of BTV- or EHDV- infectious midge vectors from each high-risk source country (with this risk shown in the top row of the table)
- 2 tables (Tables 3 and 5) which describe our estimate of the uncertainty surrounding the country-specific risk of incursion of infectious vectors, accounting for our knowledge of relevant processes and the available data (with this uncertainty shown in the top row of the table)
- A single table (Table 6) describing our estimates of the risk of virus spread within high-risk areas of GB (considering both vector feeding behaviour and temperature suitability for virus replication and spread).

Risk of airborne vector incursions into GB from high-risk countries on the Continent.

Table 1. Country-specific risk of airborne incursion of vectors

	France	Belgium	Netherlands	Germany	Denmark
Risk of vector incursion into GB from source country	Medium: It is likely that midges have been blown into GB over the previous two weeks.	Low: It is unlikely that midges have been blown into GB over the previous two weeks.	Low: It is unlikely that midges have been blown into GB over the previous two weeks.	Negligible: No midges are expected to have been blown into GB over the previous 2 weeks.	Negligible: No midges are expected to have been blown into GB over the previous 2 weeks.
Incursion risk distribution	South West and South East regions.	South East and East Anglia regions.	South East and East Anglia regions.	Not Applicable.	Not Applicable.

Risk of airborne BTV incursion into GB from high-risk countries on the Continent (risk of incursion of infectious midge vectors)

Table 2. Country-specific risk of airborne incursion of BTV-infectious vectors

	France	Belgium	Netherlands	Germany	Denmark
Risk of incursion of infectious BTV--infected vectors into GB from source country	Medium: It is likely that infectious BTV-infected midges have been blown into GB over the previous 2 weeks.	Low: It is unlikely that infectious BTV-infected midges have been blown into GB over the previous 2 weeks.	Negligible: No infectious BTV-infected midges are expected to have been blown into GB over the previous 2 weeks.	Negligible: No infectious BTV-infected midges are expected to have been blown into GB over the previous 2 weeks.	Negligible: No infectious BTV-infected midges are expected to have been blown into GB over the previous 2 weeks.
Vector activity in high-risk area of source country	Thought to have been active and feeding over the last 2 weeks.	Thought to have been active and feeding over the last 2 weeks.	Thought to have been active and feeding over the last 2 weeks.	Thought to have been active and feeding over the last 2 weeks.	Thought to have been active and feeding over the last 2 weeks.

	France	Belgium	Netherlands	Germany	Denmark
Temperatures in high-risk area of source country this season	Known to have been high enough for vectors infected with BTV this season to become infectious.	Known to have been high enough for vectors infected with BTV this season to become infectious.	Known to have been high enough for vectors infected with BTV this season to become infectious.	Known to have been high enough for vectors infected with BTV this season to become infectious.	Known to have been high enough for vectors infected with BTV this season to become infectious.
Temperatures in high-risk area of source country over last 2 weeks	Expected to have been suitable for vectors infected with BTV in the last 2 weeks to become infectious.	Expected to have been suitable for vectors infected with BTV in the last 2 weeks to become infectious.	Expected to have been suitable for vectors infected with BTV in the last 2 weeks to become infectious.	Expected to have been suitable for vectors infected with BTV in the last 2 weeks to become infectious.	Expected to have been suitable for vectors infected with BTV in the last 2 weeks to become infectious.
BTV epidemiological situation in livestock in high-risk area of source country	BTV has been reported in livestock in or near the high-risk area of the	BTV has not been reported in livestock in or near the high-risk area of the	BTV has not been reported in livestock in or near the high-risk area of the	BTV has been reported in livestock in or near the high-risk area of the	BTV has not been reported in livestock in or near the high-risk area of the

	France	Belgium	Netherlands	Germany	Denmark
	source country over the last 2 weeks.	source country over the last 2 weeks, but reporting is incomplete.	source country over the last 2 weeks and reporting is reliable.	source country over the last 2 weeks.	source country over the last 2 weeks and reporting is reliable.

Table 3. Uncertainty in the country-specific risk of airborne incursion of BTV-infectious vectors

	France	Belgium	Netherlands	Germany	Denmark
Uncertainty in BTV incursion risk estimate	Low: Most or all information or data are complete. No subjective judgement is introduced.	Moderate: Some information or data are lacking or incomplete. Subjective judgement is	Moderate: Some information or data are lacking or incomplete. Subjective judgement is	Low: Most or all information or data are complete. No subjective judgement is introduced.	Low: Most or all information or data are complete. No subjective judgement is introduced.

	France	Belgium	Netherlands	Germany	Denmark
		introduced with supporting evidence.	introduced with supporting evidence.		
Knowledge of current livestock BTV infection in high-risk area of source country	Recent reports of BTV-3 and BTV-8 near to the high-risk area (considered plausible that these are new infections). Exact temperature requirements for spread of current BTV strains unknown. Level of surveillance activities unknown.	No new reports of BTV infection in the country due to lack of updates. Exact temperature requirements for spread of current BTV strains unknown. Level of surveillance activities unknown.	No recent reports of BTV infection in the country. Reporting considered reliable, with an update made in the last 2 weeks. Exact temperature requirements for spread of current BTV strains unknown. New surveillance protocol	Recent reports of BTV infection in the high-risk area of the country, but some differences in estimated numbers between different sources. Exact temperature requirements for spread of current BTV strains unknown.	No new reports of BTV infection in the country due to lack of updates. Exact temperature requirements for spread of current BTV strains unknown. Level of surveillance activities unknown.

	France	Belgium	Netherlands	Germany	Denmark
	Virus overwintering processes unclear (but likely that this has occurred).	Virus overwintering processes unclear.	implemented in recent weeks, but exact numbers of samples tested unknown. Virus overwintering processes unclear.	Level of surveillance activities unknown. Virus overwintering processes unclear (but likely that this has occurred).	Virus overwintering processes unclear.
Knowledge of current livestock immunity to BTV in the source country	Current level of immunity unknown. Some immunity to BTV-8 and BTV-3 expected due to natural infection and vaccination.	Current level of immunity unknown. Some immunity to BTV-8 and BTV-3 expected due to natural infection and vaccination.	Current level of immunity unknown. Some immunity to BTV-8 and BTV-3 expected due to natural infection and vaccination.	Current level of immunity unknown. Some immunity to BTV-8 and BTV-3 expected due to natural infection and vaccination.	Current level of immunity unknown. Some immunity to BTV-8 and BTV-3 expected due to natural infection and vaccination.

	France	Belgium	Netherlands	Germany	Denmark
	No expected immunity to BTV-12. Voluntary BTV-3 vaccination implemented in the country last year. Vaccination remains voluntary. State-funded BTV-8 vaccines available for sheep throughout the country (and BTV-1 vaccines in a region of the south).	No expected immunity to BTV-12. Mandatory BTV-3 and BTV-8 vaccination for all cattle and sheep in the country before turn-out to pasture. Vaccine coverage and efficacy is unknown, but coverage expected to be high.	Limited expected immunity to BTV-12. Voluntary BTV-3 vaccination implemented in the country last year, and still in place. Vaccination remains voluntary. Vaccine coverage and efficacy is unknown, but coverage thought to be relatively high.	No expected immunity to BTV-12. Voluntary BTV-3 vaccination implemented in the country last year, and still in place. Vaccination remains voluntary. Vaccine coverage and efficacy is unknown.	No expected immunity to BTV-12. Voluntary BTV-3 vaccination implemented in the country last year. Vaccination remains voluntary. Vaccine coverage and efficacy is unknown.

	France	Belgium	Netherlands	Germany	Denmark
	Other vaccines (BTV-8 and BTV-1 vaccines for cattle and BTV-3 vaccines) are available but are not state-funded. Vaccine coverage and efficacy is unknown.				
Knowledge of current vector infection with BTV in high-risk area of source country	No known surveillance for infection in vectors. Exact temperature requirements for replication of current	No known surveillance for infection in vectors. Exact temperature requirements for replication of current	No known surveillance for infection in vectors. Exact temperature requirements for replication of current	No known surveillance for infection in vectors. Exact temperature requirements for replication of current	No known surveillance for infection in vectors. Exact temperature requirements for replication of current

	France	Belgium	Netherlands	Germany	Denmark
	BTV strains unknown. Uncertainty in livestock infection status (and therefore risk of vector infection) in the high-risk area. Virus overwintering processes unclear.	BTV strains unknown. Uncertainty in livestock infection status (and therefore risk of vector infection) in the high-risk area. Virus overwintering processes unclear.	BTV strains unknown. Uncertainty in livestock infection status (and therefore risk of vector infection) in the high-risk area. Virus overwintering processes unclear.	BTV strains unknown. Uncertainty in livestock infection status (and therefore risk of vector infection) in the high-risk area. Virus overwintering processes unclear.	BTV strains unknown. Uncertainty in livestock infection status (and therefore risk of vector infection) in the high-risk area. Virus overwintering processes unclear.
Other comments on BTV risk uncertainty	None.	Uncertainty estimate due to lack of recent update on epidemiological situation in country.	Uncertainty estimate due to lack of information on exact surveillance conducted recently.	Uncertainty estimate constrained by lack of potential vector incursions.	Uncertainty estimate constrained by lack of potential vector incursions.

Risk of airborne EHDV incursion into GB from high-risk countries on the Continent (risk of incursion of infectious midge vectors)

Table 4. Country-specific risk of airborne incursion of EHDV-infectious vectors

	France	Belgium	Netherlands	Germany	Denmark
Risk of incursion of infectious EHDV--infected- vectors into GB from source country	Negligible: No infectious EHDV-infected midges are expected to have been blown into GB over the previous 2 weeks.	Negligible: No infectious EHDV-infected midges are expected to have been blown into GB over the previous 2 weeks.	Negligible: No infectious EHDV-infected midges are expected to have been blown into GB over the previous 2 weeks.	Negligible: No infectious EHDV-infected midges are expected to have been blown into GB over the previous 2 weeks.	Negligible: No infectious EHDV-infected midges are expected to have been blown into GB over the previous 2 weeks.
Vector activity in high-risk area of source country	Thought to be active and feeding in source country.	Thought to be active and feeding in source country.	Thought to be active and feeding in source country.	Thought to be active and feeding in source country.	Thought to be active and feeding in source country.

	France	Belgium	Netherlands	Germany	Denmark
Note on temperature summaries below	Estimates below relate to BTV rather than EHDV due to limited knowledge of EHDV temperature requirements. It is considered likely that EHDV temperature requirements are higher than for BTV.	Estimates below relate to BTV rather than EHDV due to limited knowledge of EHDV temperature requirements. It is considered likely that EHDV temperature requirements are higher than for BTV.	Estimates below relate to BTV rather than EHDV due to limited knowledge of EHDV temperature requirements. It is considered likely that EHDV temperature requirements are higher than for BTV.	Estimates below relate to BTV rather than EHDV due to limited knowledge of EHDV temperature requirements. It is considered likely that EHDV temperature requirements are higher than for BTV.	These estimates relate to BTV rather than EHDV due to limited knowledge of EHDV temperature requirements. It is considered likely that EHDV temperature requirements are higher than for BTV.
Temperatures in high-risk area of source country this season	Known to have been high enough for vectors infected with BTV this season to become infectious.	Known to have been high enough for vectors infected with BTV this season to become infectious.	Known to have been high enough for vectors infected with BTV this season to become infectious.	Known to have been high enough for vectors infected with BTV this season to become infectious.	Known to have been high enough for vectors infected with BTV this season to become infectious.

	France	Belgium	Netherlands	Germany	Denmark
Temperatures in high-risk area of source country over last 2 weeks	Expected to have been suitable for vectors infected with BTV in the last 2 weeks to become infectious.	Expected to have been suitable for vectors infected with BTV in the last 2 weeks to become infectious.	Expected to have been suitable for vectors infected with BTV in the last 2 weeks to become infectious.	Expected to have been suitable for vectors infected with BTV in the last 2 weeks to become infectious.	Expected to have been suitable for vectors infected with BTV in the last 2 weeks to become infectious.
EHDV epidemiological situation in livestock in high-risk area of source country	EHDV has not been reported in livestock in or near the high-risk area of the source country over the last 2 weeks and reporting is reliable.	EHDV has not been reported in livestock in or near the high-risk area of the source country over the last 2 weeks and reporting is reliable.	EHDV has not been reported in livestock in or near the high-risk area of the source country over the last 2 weeks and reporting is reliable.	EHDV has not been reported in livestock in or near the high-risk area of the source country over the last 2 weeks and reporting is reliable.	EHDV has not been reported in livestock in or near the high-risk area of the source country over the last 2 weeks and reporting is reliable.

Table 5. Uncertainty in the country-specific risk of airborne incursion of EHDV-infectious vectors

	France	Belgium	Netherlands	Germany	Denmark
Uncertainty in EHDV incursion risk estimate	Low: Relevant knowledge good and most or all data are complete. No subjective judgement is introduced.	Low: Relevant knowledge good and most or all data are complete. No subjective judgement is introduced.	Low: Relevant knowledge good and most or all data are complete. No subjective judgement is introduced.	Low: Relevant knowledge good and most or all data are complete. No subjective judgement is introduced.	Low: Relevant knowledge good and most or all data are complete. No subjective judgement is introduced.
Knowledge of current livestock EHDV infection in high-risk area of source country	Infection was reported last season near to the high-risk area (but not inside). Two cases reported this season in total. One of these is in the north of the country,	Report of a single positive cow (over 50km from border of high-risk area) in late April. Suspected to be vaccinated animal imported from France. No further reports since then.	No reports and no suspicion of virus presence in country.	No reports and no suspicion of virus presence in country.	No reports and no suspicion of virus presence in country.

	France	Belgium	Netherlands	Germany	Denmark
	at least 45km from the border of the high-risk zone. Exact temperature requirements for EHDV spread unknown. Level of surveillance activities unknown.	Exact temperature requirements for EHDV spread unknown.			
Knowledge of current livestock immunity to EHDV in the source country	Current level of immunity unknown. Some immunity to EHDV expected due	Mandatory EHDV vaccination for all cattle and sheep in the country before turn-out to pasture.	No immunity to EHDV expected as no natural spread or vaccination.	No immunity to EHDV expected as no natural spread or vaccination.	No immunity to EHDV expected as no natural spread or vaccination.

	France	Belgium	Netherlands	Germany	Denmark
	to natural infection and vaccination. EHDV vaccination implemented in the country last year to prevent spread and facilitate trade. Vaccine coverage or efficacy remains unclear.	Vaccine coverage or efficacy remains unclear.			
Knowledge of current vector infection with EHDV in high-risk area of source country	Exact temperature requirements for replication of current EHDV strains unknown.	Exact temperature requirements for replication of current EHDV strains unknown.	No reports and no suspicion of virus presence in country.	No reports and no suspicion of virus presence in country.	No reports and no suspicion of virus presence in country.

	France	Belgium	Netherlands	Germany	Denmark
	Uncertainty in current livestock infection status in the high-risk area.				
Other comments on EHDV risk uncertainty	None.	None.	None.	None.	None.

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BTV spread risk within GB

Table 6. Region-specific risk of recent BTV spread within GB

High risk region	Counties in region	Estimated number of cattle in region	Estimated number of sheep in region	Vector feeding levels	Temperature suitability for virus spread
South West	Cornwall Devon Dorset Somerset Wiltshire	1,533,622	1,540,170	Expected to have been feeding on livestock over the last 2 weeks.	Very High: Temperatures in the high risk region of GB were almost certainly suitable for BTV transmission by vectors over the previous 2 weeks.
South East	Hampshire Isle of Wight East Sussex West Sussex Kent	204,573	434,680	Expected to have been feeding on livestock over the last 2 weeks.	Very High: Temperatures in the high risk region of GB were almost certainly suitable for BTV transmission by vectors over the previous 2 weeks.

High risk region	Counties in region	Estimated number of cattle in region	Estimated number of sheep in region	Vector feeding levels	Temperature suitability for virus spread
East Anglia	Essex Suffolk Norfolk	133,490	145,925	Expected to have been feeding on livestock over the last 2 weeks.	Very High: Temperatures in the high risk region of GB were almost certainly suitable for BTV transmission by vectors over the previous 2 weeks.
North East	Lincolnshire East Riding of Yorkshire North Yorkshire Durham Tyne & Wear Northumberland	764,208	2,044,607	Expected to have been feeding on livestock over the last 2 weeks.	Very High: Temperatures in the high risk region of GB were almost certainly suitable for BTV transmission by vectors over the previous 2 weeks.

Estimates of numbers of cattle and sheep in the different regions as shown in the table above are taken from recent LDDG reports:

- Livestock Demographic Data Group: Cattle population report 2023
- Livestock Demographic Data Group: Sheep population report 2023

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Appendix A: Risk and uncertainty levels used in the assessment.

Supplementary Table 1. Risk levels used in the assessment

Risk level	Probability range	Likelihood statement
Negligible	Less than 1 in 1 million	So rare that it does not merit to be considered
Very Low	Between 1 in one million and 1 in one thousand	Very unlikely but cannot be excluded
Low	Between 1 in one thousand and 0.05	Unlikely but could occur
Medium	Between 0.05 and 0.50	Likely
High	Between 0.50 and 0.90	Very likely but not certain
Very High	Over 0.90	Almost certain

Supplementary Table 2. Uncertainty levels used in the assessment

Uncertainty level	Explanation
Low	Knowledge of the relevant processes is considered good and most or all information or data are complete. No subjective judgement is introduced.
Moderate	There is a lack of knowledge of the relevant processes, or some information or data are lacking or incomplete. Subjective or expert judgement is introduced with supporting evidence.

Uncertainty level	Explanation
High	There is a lack of knowledge of the relevant processes or most information or data are lacking or incomplete. Subjective or expert judgement may be introduced without supporting evidence.

Appendix B: Modelling overview

The Met Office Atmospheric Dispersion Model (NAME; https://www.metoffice.gov.uk/research/approach/modelling-systems/dispersion-model) is run twice a day to estimate the likely transport of any potentially infected midges.

NAME is run using meteorological data from the Met Office's numerical weather prediction (NWP) model output with 1.5 km horizontal spatial resolution and hourly time resolution. Modelled particles are released over a 2-hour period at sunrise and over a 3-hour period at sunset, to represent the diel periodicity of midge activity. The model particles are released from 10 m above ground level. This height is assumed to be above the normal flight boundary layer of midges, where wind speed is greater than midge flight speed, and therefore excludes midges undertaking active local-scale flight. Particles are then dispersed for 12 hours, reflecting wind-tunnel experiments on the flight duration of midges.

Particles are released from a quasi-continuous line source along the coastline of the near Continent. This line source comprises 17 individual hypothetical sources of similar length. These sources do not represent current known locations of high midge activity or disease presence, but are used to give near-complete coverage of the coastline of the near Continent.

The particles released are the NAME "midge" species, for which the particle release rate is a function of the day of the year and the local temperature, wind speed and precipitation at the source location. These midge species particles are also removed from the atmosphere either if they encounter rain rates in excess of 1 mm per hour, to represent the washout of midges, or if they pass over land any time after their first 2 hours of flight, to represent the small distances midges travel over land. The NAME midge species represents the most likely scenario for midges active on the Continent, as it takes into account the effects of seasonality and the meteorology on both take-off and survivability along the flight trajectory.

The resulting midge plumes do not represent the spread of virus, rather the spread of midges (which may or may not be infected) had they been present at the source location. The risk of airborne incursion of midges from a particular country into mainland GB coastal counties or the Channel Islands is based upon the total number of incursions by midge plumes from any source in that country over the previous fortnight.

Appendix C: High risk areas in Continental Europe and GB.

We consider a 50km-wide area of continental Europe (shown in red in the image below) to represent the area of main interest with regards to livestock infection and temperature suitability for onwards virus spread. This area runs along the coast adjacent to GB from western France (Brittany), through north and northwestern Belgium, Netherlands, and Germany, through western Denmark to the north of the Jutland peninsula. The coloured areas in GB represent ceremonial counties at risk of airborne virus entry and potential subsequent onwards spread within GB, grouped into regions as described in the report. Note that although Somerset and Wiltshire are not coastal (and are therefore not considered counties of potential incursion), they are included as counties of interest for onwards spread within GB.

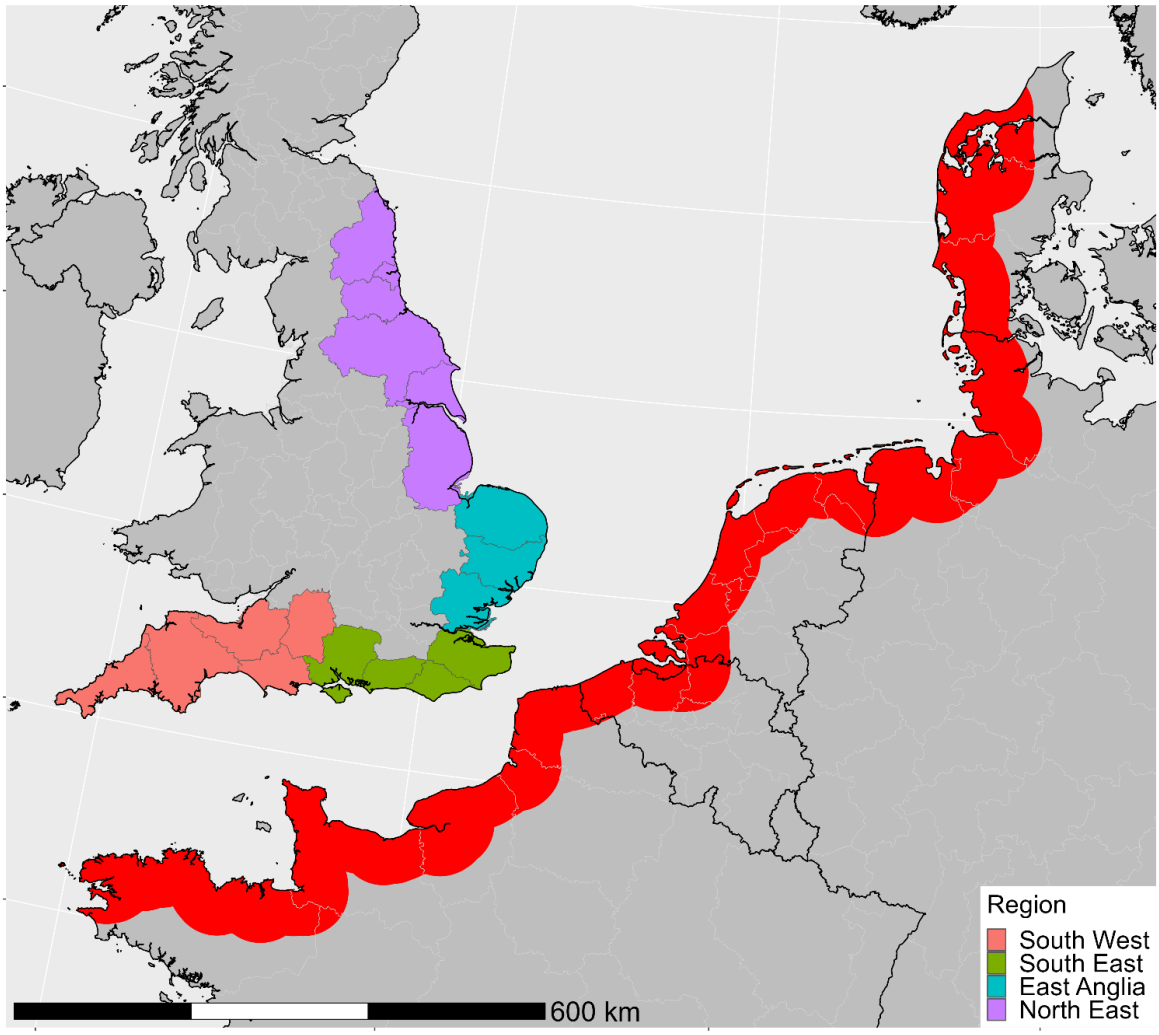

Figure 1. Map of high-risk areas of continental Europe and Great Britain.

This image shows a map of GB and the adjacent portion of continental Europe. Within GB, 4 coastal and near-coastal regions in the south and east of England are indicated. These are named as follows (and composed of the listed ceremonial counties): the South West (Cornwall, Devon, Somerset, Dorset, Wiltshire), South East (Hampshire, Isle of Wight, West Sussex, East Sussex, Kent), East Anglia (Essex, Suffolk, Norfolk), and the North East (Lincolnshire, East Riding of Yorkshire, North Yorkshire, Durham, Tyne & Wear, Northumberland). Within continental Europe, a 50km band along the coast adjacent to GB is indicated in red.