

# 2024 Consultation on the Future Direction of the UK Aviation Environmental Review

CAP 3039

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## Chapter 1

# Introduction

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- 1.1 As demand for air travel grows, impetus for reducing the environmental impacts associated with the aviation industry has never been greater. The UK is helping shape a sustainable future for aviation through research, innovation and the development of policies and measures that will facilitate environmental improvements. Progress is being made, being driven by Government, the UK Civil Aviation Authority (CAA), industry and other key stakeholders, but there is a long way still to go.
- 1.2 It is important that progress is tracked and measured to ensure that relevant policies and initiatives are delivering their intended outcomes. In this respect, the CAA intends to expand our monitoring of the UK aviation industry's environmental performance and report, via our legal duty,<sup>1</sup> on the state of environmental protection relating to civil aviation in the UK. The duty also requires the CAA to make recommendations which are intended to improve the level of environmental protection in the future.
- 1.3 We are required to prepare this report, known as the UK Aviation Environmental Review (AER), with respect to the whole of the UK starting from the date the UK left the European Union (EU) on 31 December 2020. We published our first AER in December 2023 (the AER 2023).<sup>2</sup> This duty to report previously sat with the European Union Aviation Safety Agency (EASA), which prepares the environmental report on behalf of all EU Member States. We are now considering how best we can fulfil this duty for the UK, with the aim of expanding on the level of environmental information to provide a comprehensive and holistic view of the impact of the UK aviation industry on the environment.
- 1.4 This consultation seeks input from stakeholders on our overall ambition and aims for the AER, alongside how we might best deliver these in practice so that future updates to the AER continue to be useful for stakeholders.
- 1.5 Following this consultation, taking into account the responses received from stakeholders, in 2025 we will establish an AER roadmap setting out how we will evolve the AER over the coming years.

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<sup>1</sup> Part IV of Article 87 of Assimilated Regulation (EU) 2018/1139.

<sup>2</sup> [UK Aviation Environmental Review 2023 \(caa.co.uk\)](https://www.caa.co.uk/uk-aviation-environmental-review-2023)

## What we are consulting on

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1.6 We welcome stakeholder views on the following areas:

### **1. Overall Ambition and Aims for the AER**

Chapter 2 outlines our overall ambition and aims for the future development of the AER. We are seeking views from stakeholders on this.

### **2. Existing Approach to Reporting**

The AER 2023 reported the UK aviation industry's environmental impacts with respect to climate change, noise and air quality. These analyses were determined by existing reporting mechanisms and methodologies.

To provide a more comprehensive understanding of the UK aviation industry's impact upon the environment, there is potential to expand our reporting capabilities within these areas in future updates of the AER.

We are seeking views from stakeholders to understand whether there are any other relevant areas we should consider including in our climate change, noise and air quality analyses moving forward. Chapters 3 to 5 outline examples of what we could consider including within our analyses in future updates of the AER.

### **3. Future Presentation of Environmental Impacts**

The AER 2023 reported the UK aviation industry's environmental impacts with respect to climate change, noise and air quality. These impacts were reported at the national level.

We believe there is value in breaking this data down in future updates of the AER to highlight the environmental performance of specific areas of the industry. This would improve our ability to track environmental progress, identify areas where environmental improvements may be required, and better meet our overall ambition and aims for the AER.

We are seeking views from stakeholders to understand how these impacts could be presented and what value this would add. Chapters 3 to 5 outline examples of how environmental data could be presented in future updates of the AER.

### **4. Additional Environmental Reporting Topics**

The AER 2023 reported the UK aviation industry's environmental impacts with respect to climate change, noise and air quality.

These three environmental topics are not the only areas that aviation has the potential to impact upon. Other environmental topics, such as biodiversity, are subject to legislative and/or policy requirements to be protected or

improved and aviation has the potential to impact upon this. In line with our ambition for the AER, it is important to provide a comprehensive and holistic overview of the aviation industry's environmental impacts by reporting on the industry's impact on a wider range of environmental topics.

We are seeking views from stakeholders to understand whether there are any additional environmental reporting topics that could be valuable to include within future updates of the AER. Chapter 6 sets out examples of additional environmental reporting topics.

- 1.7 It should be noted that the examples provided in this consultation document with respect to how impacts could be reported and presented are for information purposes only to aid stakeholders with their response.
- 1.8 After this consultation has closed we will undertake an in-depth analysis of the different examples provided, and additional options suggested by stakeholders, to establish their viability for inclusion within future updates of the AER. If an option is deemed viable, further work may be required to establish effective modelling processes to produce the desired environmental data.

## How to respond to this consultation

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- 1.9 This consultation is open from 1 October 2024 and will close on 10 December 2024.
- 1.10 Please submit responses through our consultation website ([consultations.caa.co.uk](https://consultations.caa.co.uk)) or by email to [environment@caa.co.uk](mailto:environment@caa.co.uk) using the questions set out in Appendix 1 of this document.
- 1.11 We will publish non-confidential submissions on our consultations website once the consultation has closed. The online consultation questionnaire will provide an opportunity to confirm whether your submission is confidential or not. We will take all relevant submissions into account when developing our policies in this area.
- 1.12 If you have any questions about this document or if you require the document to be provided in a different format, please email [environment@caa.co.uk](mailto:environment@caa.co.uk).

## CAA's response to this consultation

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- 1.13 Following this consultation, we will publish a consultation response document summarising all responses received from stakeholders. This document will set out how we have taken stakeholder views into account and how they will inform the future direction of the AER.
- 1.14 We will also establish an AER roadmap setting out how we will evolve the AER over the coming years, starting from 2025, to ensure it remains relevant, useful

and aligned with our overall ambition for the work. This roadmap will take into account responses received to this consultation from stakeholders.

- 1.15 We aim to publish the consultation response document and AER roadmap by summer 2025.

## Future evolution of the AER

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- 1.16 Following publication of the consultation response document and AER roadmap, we intend to:
- i) Update the environmental performance data and information on the relevant regulatory and policy frameworks every year, starting from the end of 2025;
  - ii) Update our recommendations on how to improve the environmental performance of the sector every three years, starting from 2026;
  - iii) Establish a centralised resource for the AER to provide an easily-accessible point for stakeholders to access environmental information online; and
  - iv) Continue to consult with stakeholders on a regular basis to inform the future development of the AER.

## Chapter 2

## AER: Ambition and Aims

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- 2.1 Our ambition in coming years is to develop the AER into a comprehensive and robust tool that will be a trusted source of accurate and accessible aviation environmental data that can be used by Government, industry and other interested stakeholders<sup>3</sup> to inform and drive positive environmental change.
- 2.2 We aim to develop the AER into a tool that will:
- i) highlight the sector's environmental performance;
  - ii) measure the sector's progress against policy, targets and forecasts;
  - iii) hold Government, industry and ourselves to account where policy and targets are not being met; and
  - iv) provide recommendations on how to improve the environmental performance of the sector in the future.

### Question<sup>4</sup>

**Q8:** Please tell us to what extent you agree with the CAA's ambition and aims for the AER. *(required)*

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

Please explain your reasoning. *(required)*

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<sup>3</sup>Examples of other interested stakeholder groups include aviation consumers, community groups, academia and the general public. Note this list is not exhaustive.

<sup>4</sup> Note questions 1-7 are included within Appendix 1.



## Chapter 3

# Climate Change

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## Introduction

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- 3.1 Climate change is the long-term change in the Earth's climate which influences weather patterns across the globe.
- 3.2 Aviation has contributed to climate change through its ongoing reliance on fossil fuels. This reliance, coupled with an upward trend in demand for air travel, continues to increase the industry's contribution to global warming, potentially setting aviation to become one of the largest emitting sectors by 2050 if no action is taken.<sup>5</sup>
- 3.3 Human activities have had an increasing influence on the Earth's global temperatures since the industrial era. Current estimations put global surface temperature rise at 1.5°C above the 1850-1900 pre-industrial average.<sup>6</sup> These temperature rises, likely caused by the release of greenhouse gas emissions from human activities, have resulted in more weather and climate extremes leading to widespread impacts upon ecosystems and populations across the globe.

## The climate change data we reported in the AER 2023

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- 3.4 The AER 2023 reported the UK aviation industry's total greenhouse gas emissions<sup>7</sup> at the national cumulative level.<sup>8</sup>
- 3.5 The data reported accounted for domestic flights within the UK and international flights departing the UK, in accordance with international reporting practices.

### Question

- Q9:** In addition to reporting greenhouse gas emissions from domestic flights within the UK and international flights departing the UK, are there any other relevant areas we should consider reporting on with respect to climate change in future updates to the AER?

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<sup>5</sup> [Sector-summary-Aviation.pdf \(theccc.org.uk\)](#)

<sup>6</sup> [Surface air temperature for January 2024 | Copernicus](#)

<sup>7</sup> The greenhouse gas emissions accounted for within the AER 2023 included carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O), reported as carbon dioxide equivalent (CO<sub>2</sub>e). For any quantity and type of greenhouse gas, CO<sub>2</sub>e signifies the amount of CO<sub>2</sub> which would have the equivalent global warming impact.

<sup>8</sup> Pages 66 – 68 of the [AER 2023](#) presents the greenhouse gas emissions data.

Examples of what we could consider reporting on with respect to climate change in future updates to the AER include:

- Greenhouse gas emissions emitted from additional sources, such as aircraft support vehicles and airport terminal generators;
- Greenhouse gas emissions emitted from aircraft manufacturing processes;
- Greenhouse gas emissions emitted from the production and use of new and emerging fuels, such as sustainable aviation fuels (SAF); and
- The impact of offsetting and carbon removal initiatives on global greenhouse gas emissions.

Yes

▶ Please identify the additional relevant area(s) we should consider reporting on with respect to climate change in future updates to the AER and explain why this would be useful to you.

▶ If known, please provide examples of any relevant data sources and/or methodologies we could consider to inform your suggestion(s).

No

## Presenting climate change data from 2025 onwards

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3.6 To ensure stakeholders remain informed about the UK aviation industry's contribution to climate change we are initially seeking views on how greenhouse gas emissions could be presented in the AER in the future, and what value this would give different stakeholders.

3.7 The following options are examples of how greenhouse gas emissions from the UK aviation industry could be presented in future updates of the AER. Note these options are not exhaustive and further suggestions from stakeholders for presenting greenhouse gas emissions are welcomed.

### Option 1: National Total

3.8 Present the UK aviation industry's greenhouse gas emissions at the national cumulative level.

3.9 This would follow the same approach taken in the AER 2023 where, for each year reported, the total national greenhouse gas emissions from the UK aviation industry were presented as a single figure.

### Option 2: Airport Cluster

3.10 Present the UK aviation industry's greenhouse gas emissions relative to regional clusters within the UK. Examples of regional clusters could include greenhouse

gas emissions emitted within South East England, South West England, Midlands, Northern England, Scotland, Wales and Northern Ireland.

- 3.11 This approach would, for each year reported, present total greenhouse gas emissions from the UK aviation industry relative to each cluster.

**Option 3: Airport**

- 3.12 Present the UK aviation industry’s greenhouse gas emissions relative to specific airports in the UK.
- 3.13 This approach would, for each year reported, present the total greenhouse gas emissions from the UK aviation industry relative to individual UK airports.

**Option 4: Airline**

- 3.14 Present greenhouse gas emissions emitted by individual airlines operating in the UK.
- 3.15 This approach would, for each year reported, present the total greenhouse gas emissions emitted by individual airlines operating in the UK.

**Questions**

**Q10:** There are various ways we can present climate change data in future updates of the AER. Please tell us how useful each of the following options would be to you. Note these options are not mutually exclusive and may be used in combination. *(required)*

	Not useful	Slightly useful	Useful	Very useful	Extremely useful
Option 1: National Total					
Option 2: Airport Cluster					
Option 3: Airport					
Option 4: Airline					

Please explain the reasons for your selections. *(required)*

**Q11:** Are there any other ways we could present climate change data which you think would be useful to include in future updates of the AER, outside of those already suggested?

Yes

- ▶ Please identify the additional option(s) we should consider for presenting climate change data in future updates of the AER and explain why this would be useful to you.
- ▶ If known, please provide examples of data sources and/or methodologies we could consider to inform the additional option(s) suggested.

No

## Chapter 4

# Noise

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## Introduction

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- 4.1 Noise is defined as unwanted and/or harmful sound.<sup>9</sup>
- 4.2 Aviation noise is a key environmental concern for communities in the vicinity of aerodromes and other aviation-related activities, as well as for wider public health, as it can negatively affect human health and wellbeing.
- 4.3 According to the World Health Organization, 25% of the burden of diseases are linked to environmental risks. 'Widespread exposure to environmental noise from road, rail, airports and industrial sites contributes to this burden'.<sup>10</sup> This suggests that a considerable portion of premature deaths and diseases could be prevented by creating healthier environments.
- 4.4 The most common adverse health effects associated with aviation noise are annoyance, sleep disturbance, cardiovascular disease and cognitive impairment.<sup>10</sup>

## The noise data we reported in the AER 2023

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- 4.5 The AER 2023 reported the estimated number of people in the UK<sup>11</sup> exposed to aviation noise from 2019<sup>12</sup> to 2022.
- 4.6 The Equivalent Continuous A-weighted Noise Level ( $L_{Aeq}$ ) was the metric used to assess these noise impacts. This metric gives an indication of the average noise level experienced over a specific time period. This assessment was undertaken for the average 16 hour summer day ( $L_{Aeq,16hr}$ ) and average 8 hour summer night ( $L_{Aeq,8hr}$ ) down to 51dB and 45dB respectively.<sup>13</sup>

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<sup>9</sup> [The Hearing Journal \(lww.com\)](https://www.lww.com)

<sup>10</sup> [Burden of disease from environmental noise - Quantification of healthy life years lost in Europe \(who.int\)](https://www.who.int)

<sup>11</sup> Eight airports were modelled in this analysis which included Birmingham, Edinburgh, Glasgow, London Gatwick, London Heathrow, London Luton, London Stansted, and Manchester. For future updates of the AER, the CAA is reviewing the potential to include more airports as part of its noise analyses.

<sup>12</sup> Modelling was undertaken from 2019 as this was the busiest year for air travel prior to the COVID-19 pandemic ([Latest quarterly statistics | Civil Aviation Authority \(caa.co.uk\)](https://www.caa.co.uk)).

<sup>13</sup> 51 dB  $L_{Aeq,16hr}$  and 45 dB  $L_{Aeq,8hr}$  are considered the Lowest Observed Adverse Effect Levels (LOAEL) for day and night respectively and are regarded as the point at which adverse effects begin to be seen on a community basis. (Source: [Para 3.5 Air Navigation Guidance 2017](#)).

4.7 This data was presented at the national cumulative level.<sup>14</sup>

### Question

**Q12:** In addition to reporting the number of people exposed to aviation noise in the UK, are there any other relevant areas we should consider reporting on with respect to noise in future updates to the AER?

Examples of what we could consider reporting on with respect to noise in future updates to the AER include:

- The potential health impacts associated with noise exposure from aviation activities; and
- The effectiveness of noise abatement/reduction initiatives.

Yes

▶ Please identify the additional relevant area(s) we should consider reporting on with respect to noise in future updates to the AER and explain why this would be useful to you.

▶ If known, please provide examples of any relevant data sources and/or methodologies we could consider to inform your suggestion(s).

No

## Presenting noise data from 2025 onwards

4.8 To ensure stakeholders remain informed about the UK aviation industry's noise impacts we are initially seeking views on how noise data could be presented in the AER in the future, and what value this would give different stakeholders.

4.9 The following options are examples of how noise data could be presented in future updates of the AER. Note that these options are not exhaustive and further suggestions from stakeholders for presenting noise impacts are welcomed.

### Option 1: National Total

4.10 Present the UK aviation industry's noise impacts at the national cumulative level.

4.11 This would follow the same approach taken in the AER 2023 where, for each year reported, the total number of people impacted by aviation noise in the UK was presented as a single annual figure.

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<sup>14</sup> Pages 35 – 36 of the [AER 2023](#) presents the noise data.

**Option 2: Airport Cluster**

- 4.12 Present the number of people impacted by aviation noise relative to regional clusters. Examples of regional clusters could include the number of people impacted by aviation noise in South East England, South West England, Midlands, Northern England, Scotland, Wales and Northern Ireland.
- 4.13 This approach would, for each year reported, present the total number of people impacted by aviation noise relative to each cluster.

**Option 3: Airport**

- 4.14 Present the number of people impacted by aviation noise around individual airports in the UK.
- 4.15 This approach would, for each year reported, present the number of people impacted by aviation noise around individual UK airports.

**Questions**

**Q13:** There are various ways we can present noise data in future updates of the AER. Please tell us how useful each of the following options would be to you. Note these options are not mutually exclusive and may be used in combination.  
*(required)*

	Not useful	Slightly useful	Useful	Very useful	Extremely useful
Option 1: National Total					
Option 2: Airport Cluster					
Option 3: Airport					

Please explain the reasons for your selections. *(required)*

**Q14:** Are there any other ways we could present noise data which you think would be useful to include in future updates of the AER, outside of those already suggested?

Yes

- ▶ Please identify the additional option(s) we should consider for presenting noise data in future updates of the AER and explain why this would be useful to you.
- ▶ If known, please provide examples of data sources and/or methodologies we could consider to inform the additional option(s) suggested.

No

## Chapter 5

# Air Quality

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## Introduction

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- 5.1 Air quality is the term used to describe how polluted the air we breathe is.
- 5.2 Aviation's impacts on air quality mainly occur within and around aerodromes. Emissions sources from aviation that impact air quality in these areas include, aircraft, aircraft support vehicles, airport terminal generators and airport-related traffic on local roads.
- 5.3 There are also a number of non-aviation related emissions sources that can contribute to the air quality of a particular area. These include emissions from other transport sectors such as road, rail and maritime, alongside emissions from domestic and commercial buildings.
- 5.4 Depending on the types of pollutants in the air, poor air quality can affect human health in different ways, including by impacting the cardiovascular and respiratory systems. Poor air quality can also impact the natural environment, including by impacting the growth of plants, the diversity of ecosystems and the climate.

## The air quality data we reported in the AER 2023

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- 5.5 The AER 2023 reported aviation related emissions originating from the following sources:
- Domestic and international civil aviation flights operating between ground level and 3,000 feet; and
  - Airport support machinery.
- 5.6 Emissions data was reported<sup>15</sup> at the national cumulative level<sup>16</sup> for the following five damaging air pollutants outlined by the Clean Air Strategy 2019.<sup>17</sup>
- Nitrogen oxides (NO<sub>x</sub>);
  - Sulphur dioxide (SO<sub>2</sub>);

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<sup>15</sup> Pages 46 – 57 of the [AER 2023](#) presents the air quality data.

<sup>16</sup> Air quality emissions reporting in the AER 2023 aligned with national and international reporting frameworks which account for emissions within the UK and Gibraltar. Further information regarding the reporting methodology can be found at the [National Atmospheric Emissions Inventory](#).

<sup>17</sup> [Clean Air Strategy 2019 \(publishing.service.gov.uk\)](#)



- Ammonia (NH<sub>3</sub>);
- Non-methane volatile organic compounds (NMVOCs); and
- Fine particulate matter (PM<sub>2.5</sub>).

### Question

**Q15:** In addition to reporting emissions from civil aviation flights and airport support machinery for the five damaging air pollutants outlined, are there any other relevant areas we should consider reporting on with respect to air quality in future updates to the AER?

Examples of what we could consider reporting on with respect to air quality in future updates to the AER include:

- Reporting emissions from additional sources, such as airport terminal generators and airport-related road traffic;
- Widening the scope of air pollutants captured by our reporting; and
- Reporting air quality concentrations of air pollution around airports and assessing this against legal air quality standards.

Yes

▶ Please identify the additional relevant area(s) we should consider reporting on with respect to air quality in future updates to the AER and explain why this would be useful to you.

▶ If known, please provide examples of any relevant data sources and/or methodologies we could consider to inform your suggestion(s).

No

## Presenting air quality data from 2025 onwards

5.7 To ensure stakeholders remain informed about the UK aviation industry's impact upon air quality we are initially seeking views on how air quality data could be presented in the AER in the future, and what value this would give different stakeholders.

5.8 The following options are examples of how air quality data could be presented in future updates of the AER. Note these options are not exhaustive and further suggestions from stakeholders for presenting air quality impacts are welcomed.

### Option 1: National Total

5.9 Present the UK aviation industry's contribution to air quality at the national cumulative level.

5.10 This would follow the same approach taken in the AER 2023 where, for each year reported, the total mass of specific pollutants from aviation activities that have the potential to impact air quality were presented as a single annual figure.

**Option 2: Airport Cluster**

5.11 Present the UK aviation industry’s contribution to air quality relative to regional clusters. Examples of regional clusters could include South East England, South West England, Midlands, Northern England, Scotland, Wales and Northern Ireland.

5.12 This approach would, for each year reported, present the total mass of specific pollutants from aviation activities that have the potential to impact air quality relative to each cluster.

**Option 3: Airport**

5.13 Present the UK aviation industry’s contribution to air quality relative to specific airports in the UK.

5.14 This approach would, for each year reported, present the total mass of specific pollutants from aviation activities that have the potential to impact air quality, relative to specific UK airports.

**Questions**

**Q16:** There are various ways we can present air quality data in future updates of the AER. Please tell us how useful each of the following options would be to you. Note these options are not mutually exclusive and may be used in combination. *(required)*

	Not useful	Slightly useful	Useful	Very useful	Extremely useful
Option 1: National Total					
Option 2: Airport Cluster					
Option 3: Airport					

Please explain the reasons for your selections. *(required)*

**Q17:** Are there any other ways we could present air quality data which you think would be useful to include in future updates of the AER, outside of those already suggested?

Yes

▶ Please identify the additional option(s) we should consider for presenting air quality data in future updates of the AER and explain why this would be useful to you.

▶ If known, please provide examples of data sources and/or methodologies we could consider to inform the additional option(s) suggested.

No

## Chapter 6

## Additional Environmental Reporting Topics

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6.1 The AER 2023 reported the level of environmental protection relating to civil aviation in the UK with regard to the following three environmental topics:

- Climate change;
- Noise; and
- Air quality

6.2 We are seeking initial views from stakeholders to understand whether there is appetite to expand the number of environmental reporting topics we include within the AER.

### Questions

**Q18:** Not including climate change, noise and air quality, would you like to suggest any additional environmental topic(s) that the AER could report on?

If yes, please select from the options below:

- The UK aviation industry's impact upon biodiversity
- The UK aviation industry's impact upon tranquillity
- The UK aviation industry's impact upon water quality
- Other environmental reporting topic(s): Please specify.
  - ▶ Please explain why the environmental topic(s) selected would be useful to you.
  - ▶ Please provide examples of data sources and/or methodologies we could consider to inform the environmental topic(s) suggested.
- No

## Appendix 1

# Summary of Questions

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1. What is your name? *(required)*
2. What is your email address? *(required)*
3. What country are you responding from? *(required)*
4. Are you responding from an organisation or as an individual? *(required)*
  - Organisation
  - Individual
5. If responding from an organisation, which organisation are you representing?
6. What type of organisation do you represent?

*Please select all that apply*

- airline
- airline and tour operator
- airline association
- airport
- airport consultative committee
- aviation data and software provider
- business or trade association
- business travel management company
- environmental charity
- internet technology service
- legal body
- non-governmental organisation (NGO)
- not for profit
- original equipment manufacturer
- professional membership institute
- rail users group

university

other

▶ If other, please advise on the type of organisation you represent?

7. Can we publish your response? *(required)*

Yes

Yes, but keep my name private

No

If no, please be aware that, as a public authority, we are bound by the Freedom of Information Act and may therefore be obliged to disclose all or some of the information you provide in accordance with the Freedom of Information Act 2000.

### **AER: Ambition and Aims**

8. Please tell us to what extent you agree with the CAA's ambition and aims for the AER. *(required)*

Strongly agree

Agree

Neither agree nor disagree

Disagree

Strongly disagree

Please explain your reasoning. *(required)*

### **Climate Change**

9. In addition to reporting greenhouse gas emissions from domestic flights within the UK and international flights departing the UK, are there any other relevant areas we should consider reporting on with respect to climate change in future updates to the AER?

Examples of what we could consider reporting on with respect to climate change in future updates to the AER include:

- Greenhouse gas emissions emitted from additional sources, such as aircraft support vehicles and airport terminal generators;
- Greenhouse gas emissions emitted from aircraft manufacturing processes;
- Greenhouse gas emissions emitted from the production and use of new and emerging fuels, such as sustainable aviation fuels (SAF); and

- The impact of offsetting and carbon removal initiatives on global greenhouse gas emissions.

Yes

- ▶ Please identify the additional relevant area(s) we should consider reporting on with respect to climate change in future updates to the AER and explain why this would be useful to you.
- ▶ If known, please provide examples of any relevant data sources and/or methodologies we could consider to inform your suggestion(s).

No

10. There are various ways we can present climate change data in future updates of the AER. Please tell us how useful each of the following options would be to you. Note these options are not mutually exclusive and may be used in combination.

*(required)*

	Not useful	Slightly useful	Useful	Very useful	Extremely useful
Option 1: National Total					
Option 2: Airport Cluster					
Option 3: Airport					
Option 4: Airline					

Please explain the reasons for your selections. *(required)*

11. Are there any other ways we could present climate change data which you think would be useful to include in future updates of the AER, outside of those already suggested?

Yes

- ▶ Please identify the additional option(s) we should consider for presenting climate change data in future updates of the AER and explain why this would be useful to you.
- ▶ If known, please provide examples of data sources and/or methodologies we could consider to inform the additional option(s) suggested.

No

**Noise**

12. In addition to reporting the number of people exposed to aviation noise in the UK, are there any other relevant areas we should consider reporting on with respect to noise in future updates to the AER?

Examples of what we could consider reporting on with respect to noise in future updates to the AER include:

- The potential health impacts associated with noise exposure from aviation activities; and
- The effectiveness of noise abatement/reduction initiatives.

Yes

- ▶ Please identify the additional relevant area(s) we should consider reporting on with respect to noise in future updates to the AER and explain why this would be useful to you.
- ▶ If known, please provide examples of any relevant data sources and/or methodologies we could consider to inform your suggestion(s).

No

13. There are various ways we can present noise data in future updates of the AER.

Please tell us how useful each of the following options would be to you. Note these options are not mutually exclusive and may be used in combination. *(required)*

	Not useful	Slightly useful	Useful	Very useful	Extremely useful
Option 1: National Total					
Option 2: Airport Cluster					
Option 3: Airport					

Please explain the reasons for your selections. *(required)*

14. Are there any other ways we could present noise data which you think would be useful to include in future updates of the AER, outside of those already suggested?

Yes

- ▶ Please identify the additional option(s) we should consider for presenting noise data in future updates of the AER and explain why this would be useful to you.
- ▶ If known, please provide examples of data sources and/or methodologies we could consider to inform the additional option(s) suggested.

No

**Air Quality**

15. In addition to reporting emissions from civil aviation flights and airport support machinery for the five damaging air pollutants outlined, are there any other relevant



areas we should consider reporting on with respect to air quality in future updates to the AER?

Examples of what we could consider reporting on with respect to air quality in future updates to the AER include:

- Reporting emissions from additional sources, such as airport terminal generators and airport-related road traffic;
- Widening the scope of air pollutants captured by our reporting; and
- Reporting air quality concentrations of air pollution around airports and assessing this against legal air quality standards.

Yes

- ▶ Please identify the additional relevant area(s) we should consider reporting on with respect to air quality in future updates to the AER and explain why this would be useful to you.
- ▶ If known, please provide examples of any relevant data sources and/or methodologies we could consider to inform your suggestion(s).

No

16. There are various ways we can present air quality data in future updates of the AER. Please tell us how useful each of the following options would be to you. Note these options are not mutually exclusive and may be used in combination.

*(required)*

	Not useful	Slightly useful	Useful	Very useful	Extremely useful
Option 1: National Total					
Option 2: Airport Cluster					
Option 3: Airport					

Please explain the reasons for your selections. *(required)*

17. Are there any other ways we could present air quality data which you think would be useful to include in future updates of the AER, outside of those already suggested?

Yes

- ▶ Please identify the additional option(s) we should consider for presenting air quality data in future updates of the AER and explain why this would be useful to you.
- ▶ If known, please provide examples of data sources and/or methodologies we could consider to inform the additional option(s) suggested.

No

### Additional Environmental Reporting Topics

18. Not including climate change, noise and air quality, would you like to suggest any additional environmental topic(s) that the AER could report on?

If yes, please select from the options below:

- The UK aviation industry's impact upon biodiversity
- The UK aviation industry's impact upon tranquillity
- The UK aviation industry's impact upon water quality
- Other environmental reporting topic(s): Please specify.

▶ Please explain why the environmental topic(s) selected would be useful to you.

▶ Please provide examples of data sources and/or methodologies we could consider to inform the environmental topic(s) suggested.

No

## Appendix 2

# Glossary of Terms

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Term	Meaning
Air Pollutant	A chemical or particle in the air that has the potential to impact the health of humans, animals and/or plants.
Air Quality	Term used to describe how polluted the air we breathe is.
Biodiversity	Term used to describe the variety of all life on Earth.
Carbon dioxide equivalent (CO <sub>2e</sub> )	For any quantity and type of greenhouse gas, CO <sub>2e</sub> signifies the amount of CO <sub>2</sub> which would have the equivalent global warming impact.
Climate Change	The long-term change in the Earth's climate which influences weather patterns across the globe.
Greenhouse Gas	Any gas that has the ability to absorb heat energy from the sun.
Noise	An unwanted and/or harmful sound.
Sustainable Aviation Fuel	Renewable or waste-derived aviation fuel that meets sustainability criteria. <sup>18</sup>
Tranquillity	A sense of calm or quietude.
Water Quality	Term used to describe how polluted water is in water bodies such as rivers, lakes and the sea.

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<sup>18</sup> Further information available at: [Sustainable Aviation Fuel \(SAF\) \(icao.int\)](https://www.icao.int)

## Appendix 3

# Abbreviations

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AER	UK Aviation Environmental Review
AER 2023	UK Aviation Environmental Review 2023
CAA	UK Civil Aviation Authority
CH <sub>4</sub>	Methane
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
dB	Decibel
EASA	European Union Aviation Safety Agency
EU	European Union
ICAO	International Civil Aviation Organisation
L <sub>Aeq</sub>	Equivalent Continuous A-weighted Noise Level
N <sub>2</sub> O	Nitrous oxide
NH <sub>3</sub>	Ammonia
NMVOCs	Non-methane volatile organic compounds
NO <sub>x</sub>	Nitrogen oxides
PM <sub>2.5</sub>	Fine Particulate Matter
SAF	Sustainable Aviation Fuel
SO <sub>2</sub>	Sulphur dioxide
UK	United Kingdom