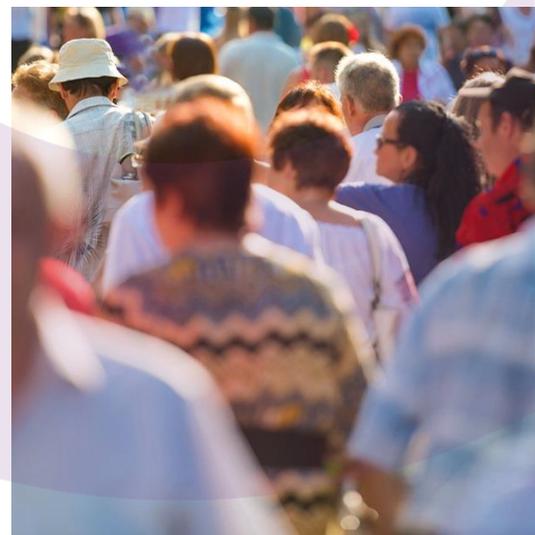
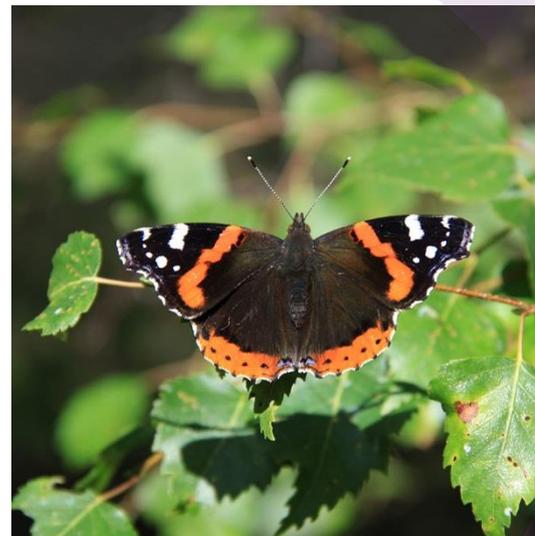




Bristol Airport Limited

12 mppa Planning Appeal

Summary Proof of Evidence —
Air Quality, Martin Peirce



Report for

Bristol Airport Limited

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1. Introduction

1.1.1 My name is Martin Peirce. I hold the Degree of Bachelor of Science in Mathematics with Astronomy (Upper Second Class Honours) from the University of Leicester and the Degree of Master of Science in Non-linear Mathematics from the University of Bath. I am a member of the Institution of Environmental Sciences and a member of the Institute of Air Quality Management, and am bound by their codes of conduct.

1.1.2 I am a Principal Consultant at Wood, an environmental and engineering consultancy. I have worked as an environmental consultant for 30 years, most of that time specialising in air quality, especially around airports. I led the air quality assessment in respect of Bristol Airport Limited's (BAL) application to develop Bristol Airport to accommodate 12 million passengers per annum (mppa) (the Appeal Proposal) and drafted the air quality chapters of the Environmental Statement (ES) and Environmental Statement Addendum (ESA).

1.1.3 My main proof addresses:

- NSC's Reason for Refusal (CD4.16) relating to air quality;
- the key findings of the Environmental Statement (ES) (CD2.5.19 and CD2.5.20) and Environmental Statement Addendum (ESA) (CD2.20.1);
- the specific issues now raised by North Somerset Council (NSC) and other parties in their Statements of Cases and other representations; and
- my overall conclusions.

1.1.4 The key finding of the ES was that the air quality impacts of the Appeal Proposal are of moderate significance in EIA terms. The ESA revisited the assessment with more up-to-date information, and showed that according to the latest evidence, the air quality impacts of the Appeal Proposal will be better than presented in the ES and will be not significant in EIA terms.

2. Legislative and policy context

2.1.1 The legislative, regulatory and policy context has been set out in the ES and the ESA. The only significant change that has occurred since the ESA was published is the publication of the

Government's Ten Point Plan for a Green Industrial Revolution (November 2020)¹ (CD8.8), so I have not repeated the full details of other legislation and policy in my full proof.

2.1.2 The key criteria against which air quality impacts are assessed are the following Air Quality Objectives and Standards (AQOs and AQSs):

- Nitrogen dioxide (NO₂): annual mean concentration of 40 µg m⁻³ (micrograms per cubic metre);
- Particulate matter smaller than 10 µm in diameter (PM₁₀): annual mean concentration of 40 µg m⁻³, and daily mean concentration of 50 µg m⁻³ not to be exceeded more than 35 times a year; and
- Particulate matter smaller than 2.5 µm in diameter (PM_{2.5}): annual mean concentration of 25 µg m⁻³.

2.1.3 In addition, the World Health Organization (WHO) has a guideline level for PM_{2.5} concentrations of 10 µg m⁻³ as an annual mean² (CD8.1). This has not been adopted in England as an AQO, AQS or target, but the Clean Air Strategy sets an exposure reduction target, to reduce the number of people living in locations above the WHO guideline by 50% by 2025, compared to a 2016 baseline.

2.1.4 The above assessment criteria are concerned with the effects of air pollution on human health, and so apply where people may be expected to be exposed to these levels of air pollution.

2.1.5 I also make frequent reference to guidance from the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK)³ (CD8.6). In particular, I use the terms 'substantial', 'moderate', 'slight' and 'negligible' to describe impacts in accordance with the definitions in the IAQM/EPUK guidance.

3. Environmental assessments and engagement

3.1 Scenarios assessed

3.1.1 The assessments considered a number of scenarios. The historic year 2017 was assessed in order to provide a baseline and model evaluation. Two future scenarios were assessed, known as 10 mppa

¹ HM Government (2020) The Ten Point Plan for a Green Industrial Revolution: Building back better, supporting green jobs, and accelerating our path to net zero. <https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution>

² WHO (2006) Air Quality Guidelines: Global Update 2005. ISBN 92 890 2192 6.

³ EPUK and IAQM (2017). Land-use Planning and Development Control: Planning for Air Quality, v1.2, [online]. Available at: <http://www.iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf> [Checked 22/03/2018].

(i.e., without the Appeal Proposal) and 12 mppa (i.e., with the Appeal Proposal). In the ES, the assessment year for the 10 mppa and 12 mppa scenarios was 2026. In the ESA, the assessment year for the 10 mppa and 12 mppa scenarios in the Core Case was 2030, reflecting the slower expected growth following the Covid-19 pandemic. The ESA also considered two sensitivity scenarios representing Faster and Slower Growth Cases, in which the airport was assumed to reach a throughput of 12 mppa in 2027 and 2034 respectively, to address the uncertainty in growth rates following Covid-19.

3.2 Environmental Statement

- 3.2.1 The key results of the assessment presented in the original ES are as follows. Bristol Airport is in a rural location which, away from the airport and major roads, has very good air quality, with annual mean NO₂ concentrations at around 10 µg m⁻³ or below. In the 12 mppa scenario, concentrations above the AQO of 40 µg m⁻³ are confined to the airfield and very close to the A38, locations where the AQO does not apply because members of the public are not regularly present.
- 3.2.2 The ES assessment predicted no 'substantial' impacts, 'moderate' impacts at seven receptors (of which one has subsequently been removed and some are not residential and therefore are not relevant locations of exposure with respect to annual mean AQOs), and 'slight' impacts at 50 receptors, with respect to annual mean NO₂. Concentrations at all receptors remain comfortably below the AQO, with a maximum NO₂ concentration of 35 µg m⁻³. All other impacts, including from PM, were assessed to be negligible.
- 3.2.3 Overall, the ES concluded that the air quality impacts of the Appeal Proposal were of moderate adverse significance.
- 3.2.4 The Officer's Report (CD4.11) concluded:
- 3.2.5 *"The method used to establish the air quality results and the number and distribution of the assessment locations provide a realistic projection of the impacts. For human health, there are no predicted exceedances of the annual mean air quality objectives for PM₁₀ and PM_{2.5}. For nitrogen dioxide (NO₂) however all but two receptors' locations are expected to incur increase[d] concentrations, but the projected levels remain below the air quality objective. In terms of Local Air Quality Management, all receptors comply with acceptable levels, although some are close to these limits. To ensure this remains the case, ongoing monitoring will be required together with an air quality action plan to improve air quality. This can be secured through a S106 legal agreement."*

- 3.2.6 Public Health England (PHE) reviewed the ES and said that *“During the operation of the airport, we agree that the major pollutants of concern are nitrogen dioxide (NO₂) and particulate matter (PM₁₀/PM_{2.5}). We agree with the approach taken in the air quality assessment.”*

3.3 Regulation 25 information

- 3.3.1 In response to the Regulation 25 request for further information from NSC, information was provided on (among other things), consistency with Clean Air Strategy’s target to halve exposure to levels of PM_{2.5} above the WHO guideline between 2016 and 2025 (CD3.4.10).
- 3.3.2 The Regulation 25 response showed that there were 10 receptors of those modelled in the ES that experienced annual mean PM_{2.5} concentrations over 10 µg m⁻³ in at least one of the 2017, 10 mppa and 12 mppa scenarios. It showed that concentrations at all receptors except one are lower in the 12 mppa scenario than in 2017. The number of receptors over 10 µg m⁻³ decreases from nine in 2017 to four in 12 mppa. This trajectory is consistent with the target in the Clean Air Strategy (noting that the evaluation years in the Strategy are 2016–2025 rather than 2017–2026).

3.4 Environmental Statement Addendum (ESA)

- 3.4.1 The ES Addendum submitted in November 2020 presented an updated assessment that took account of:
- Change in forecast passenger numbers;
 - Change in Assessment Year from 2026 to 2030 (year in which 12 mppa will be reached in the Core Case);
 - A Faster Growth Case (where 12 mppa is reached in 2027) and a Slower Growth Case (where 12 mppa is reached in 2034) in comparison to the Core Case; and
 - Updated emission factors for aircraft engines and road traffic.
- 3.4.2 The assessment in the ESA found concentrations of NO₂ in the 10 mppa and 12 mppa Core Case scenarios to be appreciably lower than those reported in the ES. The contribution to concentrations from background sources is marginally lower in the ESA due to the later year, and the contribution from aircraft is marginally higher due to the updated aircraft fleet forecast. The main difference accounting for the change in total NO₂ concentrations is the contribution from road traffic, which is much smaller in the ESA than in the original ES. This is because the emission factors for cars used for cars are much lower which partly reflects the later Assessment Year (2030 rather than 2026) and

reductions in average emission factors over time, but mainly reflects changes relating to the performance of Euro 6c diesel cars.

- 3.4.3 Consequently, the ESA predicted no “moderate” impacts, “slight” impacts at just fourteen receptors, and negligible impacts at all other modelled receptors. Annual mean concentrations of NO₂ are modelled to be below 30 µg m⁻³ at all receptors in the 12 mppa scenario, less than 75% of the AQO.
- 3.4.4 Annual mean concentrations of PM_{2.5} were predicted to be well below the AQO of 25 µg m⁻³ in all scenarios at all receptors, and to be below the WHO guideline of 10 µg m⁻³ at all but two receptors. At both of these receptors, which represent properties on the A38 Bridgwater Road in Bedminster Down, the PM_{2.5} concentration is greater than 10 µg m⁻³ in both 10 mppa and 12 mppa scenarios.
- 3.4.5 Overall, the ESA concluded that the air quality impacts of the Appeal Proposal were not significant.

3.5 Faster and slower growth scenarios

- 3.5.1 The ESA gave consideration to two sensitivity tests to examine whether the effects of faster (i.e., earlier) or slower (i.e., later) growth to 12 mppa makes any material change to the effects reported above. In the Faster Growth Case, the airport is forecast to reach a throughput of 12 mppa in 2027 and in the Slower Growth Case the airport reaches a throughput of 12 mppa in 2034.
- 3.5.2 The principal effect of the faster and slower growth scenarios is to affect the NO_x emissions from road traffic, which are falling rapidly as new, cleaner cars enter the fleet. However, even in the faster growth scenario, pollutant concentrations are sufficiently low that the increased vehicle emissions will not present any risk of exceeding any AQOs. The original ES used 2026 as an assessment year, and so may be considered a worst case in terms of growth scenarios, as well as using very pessimistic, and subsequently superseded, emission factors; this found that only impacts for NO₂ were no worse than ‘moderate’, and that only at a small number of receptors.

3.6 Mitigation

- 3.6.1 Two key mitigation measures are embedded into the Appeal Proposal that will directly reduce the air quality impacts of expansion to 12 mppa, namely:
- Realignment of roads at the junctions of Downside Road and West Lane with the A38. This will tend to reduce the amount of traffic queuing, which in turn will improve air quality at receptors near these sections of road; and

- The Airport Surface Access Strategy (ASAS), which will increase the proportion of airport passengers travelling by public transport instead of private car, with an ambitious target of 17.5% public transport mode share. This will improve air quality at receptors near roads with a significant amount of airport-related traffic.

3.6.2 Evidence about these mitigation measures will be given by Dr Witchalls.

3.6.3 Further mitigation measures that will indirectly affect are quality are:

- A commitment, to be secured by a Section 106 agreement, to develop an Air Quality Action Plan, coordinated with the Carbon and Climate Change Action Plan and Airport Surface Access Strategy. This will help BAL introduce further measures to reduce air quality impacts from the Bristol Airport's operations.

4. Response to issues raised by North Somerset Council and other parties

4.1.1 In my full proof, I respond to each of the Reasons for Refusal and issues raised by NSC and Rule 6 parties in the Statements of Cases and elsewhere. Their principal arguments are that the air quality impacts, and the residual health effects of the Appeal Proposal are not acceptable and are not compliant with national and local policy.

4.1.2 In my main proof I show, by reference to the ESA and to established guidance, that:

- The air quality impacts of the Appeal Proposal are small and are not significant, in accordance with widely accepted criteria from IAQM and EPUK. Specifically, the ESA shows that, with regard to annual mean NO₂:
 - ▶ there are no moderate or substantial impacts, in terms of the IAQM/EPUK guidance, at any of the modelled receptors;
 - ▶ there are slight adverse impacts at fourteen receptors;
 - ▶ there are no new or existing exceedances of the limit value; and
 - ▶ annual mean NO₂ concentrations are less than 75% of the AQO at all modelled receptors.
- Overall air quality will remain at acceptable levels even with the Appeal Proposal;
- These impacts are clearly not significant in the context of a project such as the Appeal Proposal;

- The assessment is robust and uncertainty about aircraft fleet forecasts and the year at which 12 mppa will be reached will not change the material conclusions of the assessment;
- The assessment addresses the pollutants agreed at the scoping stage, but also provides an indication of the likely impacts of UFP;
- The Appeal Proposal includes embedded mitigation to reduce the air quality impact of the development, and additional mitigation will be committed to under a planning condition; and
- The Appeal Proposal is fully consistent with national and local policy requirements to manage and improve air quality within a context of sustainable airport growth.

5. Conclusion

5.1.1 Overall, I conclude that air quality is generally improving and will be better in future than in recent years, with or without the Appeal Proposal. The development of Bristol Airport to accommodate 12mppa results in small changes in pollutant concentrations at some receptors but these do not result in significant impacts. In regard to air quality, the Appeal Proposal is consistent with relevant policy including national aviation policy, the National Planning Policy Framework (NPPF) and the North Somerset Core Strategy 2017. I am able to conclude, therefore, that the air quality impacts of the Appeal Proposal are not proper grounds for refusing the Appeal.