

Luton Airport Expansion - 19 mppa

EIA noise assessment methodology Response

1. Introduction

1.1 Purpose of this Technical Note

- 1.1.1 This note responds to comments on the noise assessment methodology made by:
- **Seth Roberts** in his Luton Airport Public Inquiry Proof of Evidence for LADACAN, Seth Roberts (Hayes McKenzie Partnership Ltd 3617_N01_EXT4, 29 August 2022); and
 - **Andrew Lambourne**, Chair of the Luton and District Association for the Control of Aircraft Noise (LADACAN), in his Proof of Evidence to the Planning Inquiry (30th August 2022).
- 1.1.2 The comments addressed are set out in *black italicised text* and the response is provided in [blue text](#).

1.2 Responses

Seth Roberts' Proof of Evidence

- 1.2.1 **Seth Roberts' Proof paragraph 3.9:** *It is stated very clearly in an unnumbered paragraph located between 8.6.3 and 8.6.4 in the revised ES (CD4.06) that 2028 is the key assessment year and that:*
- 1.2.2 *'As the proposal is to vary a condition of the 2014 Planning Permission, it is considered relevant to use the baseline of 12.5 mppa in 2028, as was assumed for the 2012 ES (as updated with runway operation and population numbers)'*
- 1.2.3 *It is also stated in the same paragraph that for the other assessment years: 'it is more appropriate to compare with what it is permissible currently' although there is no justification provided for this and it is unclear why the intervening years should be different from the key year of 2028. In relation to this point, it is important to understand that a proposed development which meets the requirements for a full environmental impact assessment (EIA) must present an ES in accordance with the EIA regulations. The EIA regulations state at paragraph 3 of schedule 4 (Information for Inclusion in Environmental Statements) that an ES should include the following information (noting that it is assumed that the ES is written prior to the development taking place):*
- 1.2.4 *'A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.'*
- 1.2.5 **Applicant response 1:** Mr Roberts seeks to rely upon this to suggest that a baseline of 12.5mppa¹ is the correct baseline against which to measure the effects of the proposed development. This is obviously wrong.

¹ Note that the reference to 12.5mppa is a typographical error as is explained at 1.2.19 of this document.

- 1.2.6 First, Mr Roberts is referring to ESA3 (May 2021) (CD4.06), rather than the updated assessment found in ESA4 (July 2022) (CD1.16). The latter is the most up to date assessment of the environmental impacts of the application in terms of noise.
- 1.2.7 Second, Mr Roberts is referring to one of a number of baseline scenarios that were considered, but it was not suggested that the baseline of 12.4mppa was the correct one to use. A baseline assuming 12.4mppa in 2028 was included to provide a contextual analysis suggested by the Local Planning Authority to show a comparison with the baseline that was considered at the time of the 2014 planning permission supported by the 2012 Environmental Statement (CD6.02).
- 1.2.8 That Environmental Statement had used a baseline of 12.4mppa as the 'without scheme capacity' (see 6.43 and 6.44 CD6.02) to assess the 2012 planning application which led to the 2014 planning permission being granted for up to 18mppa passengers.
- 1.2.9 The Airport's current operations are now governed by the 2017 Variation Permission (CD7.03). The baseline capacity is clearly not limited to 12.4mppa. As such, the correct baseline against which to assess the current proposal is necessarily what is permitted by way of operations of the Airport under the Variation Permission.
- 1.2.10 ESA4 explains how the baseline has been calculated using 2019 data (due to the impact of the Covid Pandemic during later years). As the noise contours were exceeded in 2019 the baseline has been adjusted in order to represent a condition-compliant operation with the fleet mix for the relevant assessment year. This is explained at ESA4 para 6.3.2 (CD1.09).
- 1.2.11 **Seth Roberts' Proof paragraph 3.13:** *Between the 2012 Application and the Application there have been changes to the noise model used by the acoustic consultants, Bickerdike Allen Partners (BAP), who prepared the noise assessments. Some of these changes are briefly covered in the two versions of Appendix 8C – one contained in the revised ES (CD4.06) and one in the figures of the addendum to the ES (CD1.17). Both versions of Appendix 8C refer to measurements of newer aircraft types at the airport in 2018 and 2019 that have been used to calibrate the inputs into the Integrated Noise Model (INM) which is the software which is used for calculating noise contours.*
- 1.2.12 **Seth Roberts' Proof paragraph 3.14:** *Calibration of the noise model was carried out through noise measurements at a measurement location in Ludlow Avenue close to the airport at the end of 2015 and this was detailed in a BAP report (CD8.06). This document is mentioned in passing within the ES vol.2 (CD1.09) but is not discussed in the noise chapter and the significance of the document is not highlighted in any way. No further reference to this document is given anywhere in either the revised ES (CD4.06) or the addendum (CD1.16) but since the assessment presents predicted noise contours assessed against benchmark LOAEL and SOAEL thresholds, it should be noted that this calibration information is highly pertinent to the outcome of the assessment. The BAP report notes that the 2015 measured levels were lower than predicted by around 4 dB(A) SEL for the three main aircraft types included in the noise contours presented in the 2014 annual noise monitoring report. This discrepancy between predicted and measured values led to BAP adjusting standard INM flight profiles to provide results which better matched measured levels at the noise monitoring location in Ludlow Avenue. There are a number of concerns related to the adjusted flight profiles and how this has considerably reduced predicted noise contours, the concerns are detailed at section 5 of this report.*
- 1.2.13 **Applicant response 2:** Seth Roberts appears to be raising concerns about calibration of the noise model and adjusted flight profiles and the reduction of noise contours by reference to noise measurements at Ludlow Avenue. His comments refer to a 2015 contouring Methodology Update (CD8.06) but his concerns are not well-founded.
- 1.2.14 The noise contours presented in the ES were not based on, or calibrated using, the 2015 noise measurements from Ludlow Avenue. The methodology used is described in Appendix 8C in ESA4 (CD1.17).

- 1.2.15 Noise measurements taken from Ludlow Avenue in 2015 had suggested that the noise contours at that time were over-predicting the noise in that area. As a result of this, information was sought from airlines regarding their operational procedures. The information on the actual operational procedures used at Luton Airport was used to adjust the default departure profiles in the INM noise model, and this is explained in Appendix 8C in ESA3 (CD4.06), and Appendix 8C in ESA4 (CD1.17).
- 1.2.16 The noise predictions using these revised profiles were then checked against the noise results from the Airport's NMTs and the measurements from Ludlow Avenue and were found to result in noise predictions that more closely matched the measured results.
- 1.2.17 These profiles, based on the airline operational procedures, were used for subsequent modelling including the contours presented in the ES, whose validation exercise used noise data from 2018 and 2019 at the fixed NMTs. This is explained in Appendix 8C in ESA3 (CD4.06), and Appendix 8C in ESA4 (CD1.17).
- 1.2.18 **Seth Roberts' Proof paragraph 3.16:** *The addendum to the ES (CD1.16) refers to a without development scenario in 2028 with 12.4 mppa rather than the 12.5 mppa specified within the updated ES (CD4.06) with no explanation within the noise chapter or Appendix 8C. It is not clear whether or not this is a typographical error, but it appears to have been carried right through the document and associated appendices suggesting that perhaps there has been an update to the ATM forecasts for this baseline scenario.*
- 1.2.19 **Applicant response 3:** The reference to 12.5 rather than 12.4 mppa was simply a typographical error that we identified and corrected within ESA4. The correct value is 12.4 mppa, as it relates to the baseline used in the original ES (2012).
- 1.2.20 **Seth Roberts' Proof paragraph 3.17:** *There are no updated forecast traffic flows for the 2028 12.4 mppa baseline within Appendix 8B of the revised ES or the addendum and this 2028 baseline is not included in the list of noise contours described at Appendix 8B of the addendum. In fact, the only place that forecast traffic flow data for the 2028 baseline (12.5 mppa) is supplied is within Appendix 3A of the ES (CD1.10 p.163). A document was recently prepared by the Applicant entitled 'Note on Environmental Statement Documentation' (dated August 2022) and within a table at page 3 of this document it is explicitly stated that Appendix 3A is superseded by Appendix 8B of the revised ES. However, since information on the assumed traffic flows for the 2028 baseline is not available anywhere else, it is assumed that the table in Appendix 3A of the 2019 ES (CD1.10) is still relevant and represents the assumed traffic flows used in the most recent iteration of the noise model for the 2028 baseline.*
- 1.2.21 **Applicant response 4:** There was clearly no need to update and no basis for updating the 12.4 mppa air traffic flows in the way suggested, as they have simply been taken from the original ES (2012, CD6.02). The scenarios presented in Table 8B were superseded the equivalent scenarios in Table 3A.
- 1.2.22 As has been stated above, whilst the 12.4mppa figures were included to provide context, it is obvious that that the Airport's capacity is not limited to 12.4mppa as a result of the subsequent permissions. The correct baseline against which the proposal has to be assessed are the permitted lawful operations of the Airport under its current planning permission (2017, CD7.03).
- 1.2.23 **Seth Roberts' Proof paragraph 3.18:** *LADACAN has requested clarification on which parts of the ES and revised ES are still relevant following the release of the ES addendum and in particular clarification was sought over the ATM data presented in Table 8B.1 of Appendix 8B (CD1.17). The Applicant has now supplied two notes giving clarification on which parts have been superseded but the information supplied does not make sense as information within Appendix 3A (discussed at paragraph 3.17 above) is either still relevant or updated information has not been provided in Appendix 8B of the ES addendum. Furthermore, the 2028 with development scenario for 18 mppa*

presented in Appendix 8B of the revised ES (CD4.07) does not appear to have been brought forward into the latest version of this Appendix and it is also unclear whether or not this alternative development scenario is still relevant.

- 1.2.24 **Applicant response 5:** Appendix 3A was superseded by ESA3 Appendix 8B, Table 8B.1 (CD4.06), and ESA4 Appendix 8B, Table 8B.1 (CD1.16).
- 1.2.25 It is assumed that Mr Roberts' comment in the final sentence is relating to ATM data (as all relevant assessments were updated in the latest addendum). Data which had been updated was set out in the latest addendum. The ATMs for 2028 had not changed from the addendum dated July 2021. The additional columns for 2028 19 mppa and 2031 19 mppa did not require updating and remain correct.
- 1.2.26 **Seth Roberts' Proof paragraph 3.19:** Predicted baseline noise levels for the 2028 12.4 mppa scenario and numbers of properties within the 2028 baseline contours are given in the ES addendum but the numbers vary from those presented in the revised ES. To give an example of this, the number of properties within the 51 dB daytime noise contour for the 12.5 mppa 2028 baseline as set out in table 8.8 of the revised ES (CD4.06 p.23) is 9990 whilst the corresponding number at table 6.1 within the ES addendum (CD1.16 p.53) for the 12.4 mppa 2028 baseline is 9788. It is unclear if the numbers have been misreported in one of the documents or if there has in fact been an update to the forecast ATMs.
- 1.2.27 **Applicant response 6:** This difference is simply due to the use of updated CACI data. ESA2, and ESA3 used the 2020 CACI dwelling and population data. The updated 2021 CACI dwelling and population data was used in ESA4, which gives rise to slightly different numbers.
- 1.2.28 **Seth Roberts' Proof paragraph 5.2:** The quote above includes a footnote (126) which refers the reader to Appendix 10B which is said to contain a discussion about how the forecasts have been incorporated into the noise model. I have not been able to find this appendix in any of the core documents that you might expect it to be contained within (CD4.06, CD1.10 or CD1.17). However, this appendix is also referred to in the ES vol 2 (CD1.09) indicating that it is not a typographical error. It should therefore be noted that the way in which forecast ATMs have been included within the noise model remains unclear.
- 1.2.29 **Applicant response 7:** There is no missing Appendix 10B.
- 1.2.30 The reference to Appendix 10B in the footnote is simply a numbering error and refers to Appendix 8B in ESA2 which became Appendix 8C in ESA3 (CD4.06), and 8B in ESA2 (CD1.10). This is the first time LADACAN has claimed not to be able to identify the document itself (notwithstanding lengthy correspondence on the ES). It is surprising given that the footnote identifies in full "A discussion on how the forecasts are used within the noise modelling software is provided within Appendix 10B." It can be seen from this and the context that the footnote was intending to reference the Noise Modelling Report present in what was Appendix 8B in ESA2 and then Appendix 8C in ESA3 (CD4.06). Furthermore, ESA3 Section 8.4-Data Gathering methodology, refers to Appendix 8C in the same context. Also, in response to a similar query during consultation from LBC which stated, "A clear and coherent link between forecast numbers and noise model inputs is required", the fourth row of Table 8.4, provided a similar clarification, and directed the reader to the Noise Modelling Report presented in Appendix 8C of ESA3 (CD4.06).
- 1.2.31 For the avoidance of doubt, the forecasts of relevance to the assessment were presented in ESA3 Appendix 8B, Table 8B.1, and ESA4 Appendix 8B, Table 8B.1. There are numerous references directing the reader to the table of aircraft movements in Appendix 8B throughout the noise chapters in both ESA3 (CD4.06), and ESA4 (CD1.16).

1.2.32 **Seth Roberts' Proof paragraph 5.8:** Table 1 shows the total forecast ATMs for the 2028 baseline and the three with development scenarios described above. It can be seen that there is a difference (increase) of 475 between the 2028 baseline of 12.5 mppa and the 2028 18 mppa. There is then a further increase of 414 movements between the 2028 18 mppa and 19 mppa scenarios and a decrease of 99 between the 2028 19 mppa and the 2031 19 mppa scenarios.

Table 1: Total Forecast ATMs with and without the development in 2028 and 2031

Aircraft type	2028 Baseline without development (12.5mppa)	2028 with development (18mppa)	2028 with development (19mppa)	2031 with development (19mppa)
TOTAL	38962	39437	39851	39752

1.2.33 **Seth Roberts' Proof paragraph 5.9:** The increase of 414 between the two 2028 with development cases can easily be assumed to be a result of the additional 1 mppa. The reduction of 99 moving to 2031 can be plausibly explained by a significant change in fleet mix with newer aircraft having greater seating capacity. However, the change between the 12.5 mppa baseline and the 2028 18 mppa scenario is surprisingly small and cannot readily be explained by passenger numbers alone.

1.2.34 **Applicant response 8:** The comparison Mr Roberts seeks to make with 12.4mppa in 2028 is not the correct one for the reasons set out above. For the sake of completeness only, however, the reason why there is a small difference in numerical terms is because the 12.4 mppa baseline used in the original 2012 ES was not based on much fleet modernisation. For example, of the newer, larger aircraft there were zero A319neo, A320neo, and B737-Max, the fleet mix dominated by A319ceo, A320ceo, and earlier generations of the B737. The newer, larger aircraft included in the 2028 19mppa forecasts have an average capacity of 195.6 seats, compared to 176.6 seats presented in the 12.4mppa scenarios in the 2012 ES. This means it is now possible to fly fewer aircraft but carry more passengers. The 2028 18mppa and 19mppa forecasts contain a greater proportion of movements by modernised aircraft, as well as other changes to the forecast fleet mix. The 2028 12.4mppa forecast presented in the 2012 ES is over 10 years old and is obviously not the correct baseline to use for the reasons already discussed. See also **Applicant response 11**.

1.2.35 **Seth Roberts' Proof paragraph 5.15:** The 2015 BAP report (CD8.06) indicates that noise monitoring data and associated NTK system data highlighted a discrepancy between assumed departure profiles and actual departure profiles for a number of aircraft. However, the noise monitoring equipment section of Mr. Lambourne's proof of evidence highlights a number of areas where discrepancies occurred most of which are in line with the highlighted areas of caution listed in ECAC document 29 (see paragraph 4.9 above). The charts in the Mr. Lambourne's proof also highlight that the monitoring occurred for a total of 3 weeks in midwinter whereas the noise contouring is calculated for a 3-month summer period. Mr. Lambourne also notes that no altitude data was provided in the requested data relating to the 2015 survey at Ludlow Avenue. Without information about the height of the aircraft it is very difficult to know whether or not the recorded noise levels are valid for all scenarios used in the noise modelling. A number of factors affecting flight profiles are discussed below.

1.2.36 **Applicant response 9:** Seth Roberts claims that without information as to the height of aircraft it is difficult to know whether recorded noise levels are valid for all scenarios. He also suggests that the Ludlow Avenue results are not representative of the departure profiles used in the summer period as the survey only lasted three weeks. As set out in **Applicant response 2**, the modelled departure profiles are based on operational procedure information provided by the airlines not the Ludlow Avenue survey. The information provided by the airlines to BAP on their operational procedures reflects the procedures used for the whole year.

- 1.2.37 **Seth Roberts' Proof paragraphs 5.16-5.26:** *In summary, within these paragraphs, Seth Roberts has carried out some analysis in relation to average aircraft heights and runway lengths.*
- 1.2.38 **Applicant response 10:** The purported analysis carried out by Seth Roberts is based on aircraft operating at their maximum take-off mass (MTOM). This very rarely occurs in reality. The altitudes and necessary runway lengths calculated therefore do not reflect the reality of the situation.
- 1.2.39 As an example, in the INM software aircraft weight is modelled based on what is called "Stage Length" which corresponds to the length of the flight and hence the necessary fuel load. For an Airbus A320 the maximum Stage Length is 5. In summer 2019 the average Stage Length for an Airbus A320 departure was 2, and no Airbus A320s operated a departure which had a Stage length of more than 4. This indicates no Airbus A320 operated at its maximum take-off weight in summer 2019.
- 1.2.40 **Seth Roberts' Proof paragraph 6.3-6.6:** *Seth Roberts claims that it is surprising that the 2028 12.4mppa scenario produces predicted noise levels that are in some instances actually higher than 2028 19mppa levels.*
- 1.2.41 **Applicant response 11:** See response 8 above.
- 1.2.42 **Seth Roberts' Proof paragraph 7.1:** *There is uncertainty in the appropriateness of the assumed fleet mix particularly surrounding the 2028 baseline 12.5 mppa scenario and the missing Appendix 10B (see paragraph 5.2) leaves question marks over how the assumed fleet mix has been derived and how it has been incorporated in to the noise model.*
- 1.2.43 **Applicant response 12:** See responses above. There is no uncertainty. The 12.4 mppa baseline is not the correct baseline to use. And the original 12.4 mppa calculation in the ES in 2012 did not foresee much fleet modernisation. For example, there were zero A319neo, A320neo, and B737-Max, the fleet mix dominated by A319ceo, A320ceo, and earlier generations of the B737. Additionally, as previously stated in **Applicant Response 8**, it should be noted that the newer, larger aircraft included in the 2028 19mppa forecasts have an average capacity of 195.6 seats, compared to 176.6 seats presented in the 12.4mppa scenarios in the 2012 ES. This means it is now possible to fly fewer aircraft but carry more passengers.
- 1.2.44 **Seth Roberts' Proof paragraph 7.2:** *The predicted noise levels for the 2028 12.5 mppa baseline seem to be very high particularly when compared to the 2028 19 mppa with development scenario. This raises questions about the validity of these predictions and makes it difficult to have confidence in the quantified noise impact.*
- 1.2.45 **Applicant response 13:** See **Applicant responses 8, 11, and 12**, above.
- 1.2.46 **Seth Roberts' Proof paragraph 7.4:** *A key metric in understanding the impacts of the with development case is the L_{Amax} (see paragraph 4.8) and the associated Number Above contours which are an appropriate way of comparing the predicted increases in overflights between the baseline and with development scenarios. However, the ES addendum does not present Number Above contours for the 2028 12.4 mppa baseline (see paragraph 3.12) making it impossible to assess the change according to this metric.*
- 1.2.47 **Applicant response 14:** As has been explained at paragraph 6.42 of ESA4 (CD1.16), N-Contours have been updated for the proposed condition 10 and also for operations under the existing Condition 10. Both short and long-term forecasts have been produced.
- 1.2.48 As has been stated above, the Airport is not confined to 12.4mppa. There is no need for N-Contours to be presented in relation to this scenario.

- 1.2.49 **Seth Roberts' Proof paragraph 7.5:** *Changes to the calibration of the noise model, particularly in 2015, means that absolute predicted noise levels have reduced when qualitatively, they might reasonably be expected to have increased. The uncertainty associated with this calibration of the noise model brings into question the assessment of absolute predicted noise levels against the benchmark thresholds for LOAEL and SOAEL.*
- 1.2.50 **Applicant response 15:** As set out in **Applicant response 2**, this is based on the misapprehension that the noise model was calibrated using the noise measurements from Ludlow Avenue in 2015. The ES validation exercise used 2018 and 2019 noise data from the fixed noise monitoring terminals. This is explained in Appendix 8C in ESA3 (CD4.06), and Appendix 8C in ESA4 (CD1.17).
- 1.2.51 **Seth Roberts' Proof paragraph 7.6:** *Furthermore, estimated altitudes for six aircraft types (see Table 3) at the 2015 noise monitoring location in Ludlow Avenue have been compared with gate data analysis presented for 2017 noise monitoring at a similar location. The comparison indicates that subsequent changes to the RW26 departure profiles may not be representative of future scenarios where more heavily laden aircraft would be expected to be taking off more regularly as part of the expected growth in passenger numbers. Comparative altitude analysis in South Luton over a representative period of time could have provided a more accurate indication of changes to departure profiles on the RW26 routes, when correlated with aircraft type and MTOW. There is also the possibility that different profiles apply for RW08 departures.*
- 1.2.52 **Applicant response 16:** As set out in **Applicant response 10**, the analysis referenced is based on aircraft operating at their maximum weight, something which very rarely occurs.
- 1.2.53 **Seth Roberts' Proof paragraph 7.7:** *The content of the ES, revised ES and ES addendum have not been presented in a clear way, leading to significant confusion over which parts of which document are still current and which are obsolete. This confusion has still not been properly resolved and discrepancies in the presented 12.4 mppa compared with the 12.5 mppa 2028 baseline (see paragraph 3.19) indicate that there may be updates to the 2028 baseline that have not been documented at all.*
- 1.2.54 **Applicant response 17:** See responses above.
- 1.2.55 We do not agree that the ES has not been clearly presented. In accordance with best practice, the ES has been updated where necessary. The first ES (2012) (CD6.02) was prepared to support a planning application in that year which was then granted in June 2014 (CD6.03). The first addendum (ESA1) (July 2015) (CD7.02) was prepared to support a section 73 Application in that year which was then granted in October 2017 (CD7.03). This current section 73 Application was originally supported by ESA2 (January 2021) (CD1.09). The noise chapter was updated in response to a request by the Council (ESA3) (May 2021) (CD4.06). Finally, due to the passage of time between the 2021 ES and this call-in Inquiry it has been necessary to update the ES and this has been done through ESA4 (July 2022) (CD1.09).
- 1.2.56 **Seth Roberts' Proof paragraph 7.8:** *To answer the questions on which I have been asked to opine, in relation to the noise impact presented as part of the Application:*
- *The ES has not in my opinion presented a clear, transparent or correctly formulated baseline for the without development case. It is considered that the only relevant baseline which has been presented is the 2028 12.5 mppa (or perhaps 12.4 mppa?) that was used for the 2012 ES. However, the updated assumptions around this baseline scenario have not been made sufficiently clear and it is considered that the predicted noise levels that have been presented for this baseline are not plausible in the context of the with development scenarios.*
- 1.2.57 **Applicant response 18:** See responses above regarding the 12.4mppa illustration.

The Airport is not now restricted to 12.4mppa. The proper baseline against which the application should be assessed is that which is lawfully permitted under the current Variation Permission (2017, CD7.03).

- *The ES has presented forecast 92-day ATMs data across a number of different tables, and it is not clear which values apply, particularly in the case of the 2028 12.5 mppa baseline. It is also unclear how the forecast numbers have been formulated as there is no explanation provided. Hayes McKenzie would typically expect to see a report from an aviation consultant (such as York Aviation) explaining how forecast ATMs have been derived for the purposes of the ES.*

1.2.58

Applicant response 19: See responses above regarding the 12.4 mppa illustration. In any event, forecasts of relevance to the 2028 12.4 mppa baseline are in the 2012 ES (CD6.02).

1.2.59

Applicant response 20: The forecasts regarding fleet renewal in all other scenarios (i.e. not including 12.4mppa 2028) are considered to be correct. They are based upon the practical experience of the airport operator and not on a theoretical exercise. This is particularly robust in circumstances where the application is for a small increase in passenger numbers (5.5%) over a ten-year period. Our forecasts have drawn on the following:

- Wizz has expedited fleet renewal in the period since the original forecast was produced, this has not impacted assumptions as they were assumed to be fully modernized by 2028.
- Easyjet has delayed some fleet orders during the pandemic but are to return to pre-pandemic delivery by 2027.
- Whilst there are some short-term production issues at Boeing that has gained significant media coverage, these are unlikely to impact the longer-term delivery schedules.
- Other airlines are likely to offer fleet benefit with Ryanair already operating some next generation flights, and Wizz purchasing slots from Vueling with Wizz having a faster fleet renewal program.
- A number of bilateral agreements between LLA and commercial airlines offer incentives for those airlines to operate certain types of modern aircraft (which produce lower emissions) at the airport.
- LLA has taken steps to mitigate any previous breach or likely breach in planning conditions with measures detailed in the planning application and additional local rules applied to the slot scheduling process which limits the number of commercial seats (being a function of aircraft size and number of aircraft movements) an airline can operate per season.

1.2.60

Applicant response 21: For the 19mppa application a 'bottom up' methodology has been used by taking the current flight by flight program at the airport during the 92-day period and adding movements and modernising airline fleets based on the information available from airline orders, capacity constraints, and expectations of airline growth plans.

- *So far as I can tell from the noise contours, the forecast pseudo-baseline scenarios comply with the contour area limits specified in Condition 10. However, it should be noted that the long-term limit (currently enforced by reduced area limits applying from 2028 onwards) assumes that there will be a gradual reduction in noise output achieved by a contour reduction strategy. The pseudo-baseline noise contours do not appear to reflect this gradual reduction in contour area up to 2028 that was stipulated as part of the 2014 planning consent. It is not possible to determine whether or not any of the forecast scenarios comply with Condition 8 since only the summer period ATM forecast data has been provided and Condition 8 specifies passenger throughput within a 12-month period. It is possible that this question could be answered more fully by the missing*

appendix 10B, and it is considered that the omission of this document is a significant failing of the ES documentation.

1.2.61

Applicant response 22: The Condition 10 limit baseline contours do take account of this reduced area limit, as they show a year-on-year decrease through to 2031, as shown in Appendix 8E in ESA4 (CD1.17).

1.2.62

Applicant response 23: The 92-day period represents 29.1% of the year's capacity. The forecasts for the 92-day period were extrapolated up taking account of the normal share of the 92-day period in a year to calculate the total annual capacity. A load factor was then applied which was the annual passenger throughput. The ability to control condition 8 is greater outside of the 92 period when demand and airline profitability is softer. The 92-day capacity is therefore relevant to Condition 8, however less so than Condition 10.

1.2.63

Applicant response 24: See **Applicant response 7** above regarding reference to Appendix 10B.

- *The total forecast number of ATMs are shown to increase year on year up to 2025 and then start to reduce for 2028 and 2031. Therefore, the predicted noise reduction up to 2025 is entirely dependent on the fleet mix, which is not within the control of the Applicant. For assessment years 2028 and 2031, the total forecast ATMs are predicted to decrease but it is understood that once slots have been granted, they cannot be rescinded by the Applicant, so it is unclear how the reduction in ATMs is expected to come about. The effect that these two factors could have on the long-term noise envelope reduction requirement has not been discussed within the ES, revised ES or addendum.*

1.2.64

Applicant response 25: The reduction in total forecast ATMs can come about because the newer, larger aircraft included in the 2028 19mppa forecasts have an average capacity of 195.6 seats, compared to 176.6 seats presented in the 12.4mppa scenarios in the 2012 ES. This means it is possible to fly fewer aircraft but carry more passengers.

- *The only baseline which I consider to be theoretically suitable for assessing the noise impacts is the 2028 12.5 mppa (or 12.4 mppa) and I do not consider the other, pseudobaseline scenarios to be appropriate for assessing impact. Given the uncertainty surrounding the presented 2028 baseline, I am not confident that it is correct and in its present form, the assessment does not stand up to scrutiny.*

1.2.65

Applicant response 26: This is misconceived. As explained above, the correct approach to assessing the impact of the proposal is to consider it against the current lawful operations of the Airport under its current permission. In short summary (and as set out at 3.2.6 of ESA4 (CD1.16):

- LLAOL is applying to vary the current consented 18mppa conditions therefore the baselines will be the current Condition 10 consented levels.
- For the environmental assessments, the 2019 actual movements are an accurate reflection of the impacts of an 18mppa operation when adjusted to deal with exceedances of the noise conditions. Therefore, the baseline noise contours in the ES used the 2019 actual movements for the 92-day period with a percentage reduction factor applied until the contours met the condition limits. This allows the demonstration of what the impacts of a compliant condition would be with a representative fleet mix from 2019.
- In 2019 the percentage of modernised fleet was 6%. Summer 2022 is expected to see a percentage modernisation of 20-25% therefore the fleet mix used for the noise assessment has been updated to account for this shift. The methodology used to complete this was to take the 2019 actual movements, modernise the relevant fleets accordingly and then apply the reduction factor to the point that the condition limit was met.

- 1.2.66 See also, Table 3.1 of ESA4 which sets out the baselines considered in the ES and their rationale.
- 1.2.67 Given the fact that the Airport is not limited to 12.4mppa Mr Roberts' criticisms relating to that analysis are of no real relevance. In any event Mr Roberts' criticisms are rejected. The 2028 12.4 mppa contours were prepared using the forecasts including fleet mix from the 2012 ES. As the modelling methodology has been updated since the time of the 2012 ES, the noise contours were recomputed using the same 2019 methodology as was used to prepare the other contours presented in the ESA, but with the 2012 forecasts. The methodology used is described in Appendix 8C in ESA4 (CD1.17).

Andrew Lambourne Proof

- 1.2.68 **Andrew Lambourne Proof paragraph 133:** states that there have been periods of more than 2-3 days when not all fixed monitors were functioning and that this has not been considered in the noise contour adjustment reports.
- 1.2.69 **Applicant response 27:** The validation does not require measurements of the actual noise level of every flight. It compares the predicted levels for flights by individual aircraft types with the average measured level for that aircraft type.
- 1.2.70 Short periods in which certain noise monitors are unavailable due to maintenance do not significantly impact these average measured results. Even with such gaps in the data the noise model can be and has been appropriately validated using thousands of noise results.
- 1.2.71 **Andrew Lambourne Proof paragraph 134:** states that one monitor was significantly outside of calibration limits for 2018-19 and that BAP was not advised of this.
- 1.2.72 **Applicant response 28:** The microphone check results in Annex E of Andrew Lambourne's proof of evidence show a number of periods when the Pepsal End Farm Noise Monitoring Terminal (NMT3) was not within the bounds of the lower and upper limits, as well as a number of individual days.
- 1.2.73 The periods with the largest apparent differences between the microphone check results and the limits were during August, September, and November 2019. NMT3 data for November 2019 was not used by or provided to BAP. The microphone check results for August and September 2019 are on a number of dates between 10 and 30 dB above the upper limit. If changes of this magnitude were actually occurring, they would be recorded in the measured noise levels (which they were not). BAP has analysed the average monthly noise levels for departures by the Airbus A320ceo at NMT3 in 2019. The average monthly NMT3 departure noise levels for August and September 2019 were within 0.1 dB of the average for the year. This indicates that the large apparent differences between the microphone check results, and the upper limit were not having a corresponding effect on the measured noise levels.
- 1.2.74 The noise monitor parts (microphones and sound level meters) are calibrated off-site every 2 years as part of the traceable calibrations; LLAOL has certificates for this. LLAOL considers that these are more important than the nightly check, which is an automated self-check carried out by the noise monitor.
- 1.2.75 As BAP has said, the comments from Mr Lambourne are based on NMT3 calibration. This noise monitor was not used in Nov 2019.
- 1.2.76 **Andrew Lambourne Proof paragraph 135-136:** states that Mr Lambourne has performed some 'basic verification checks'. Mr Lambourne surmises that some duplicate entries are 'go arounds' and argues that these might have to be included in the model.

- 1.2.77 **Applicant response 29:** BAP has confirmed that the data on the number of go arounds at the airport was not available to them. It is considered that this is a relatively small number and therefore would not materially affect the noise contours.
- 1.2.78 Regarding the impact of go arounds on the noise contour validation, the purpose of the validation is not to measure the actual noise level of every flight, but to compare the predicted level for a flight by individual aircraft types with the average measured level for that aircraft type.
- 1.2.79 The relatively small number of duplicate entries, whether or not some are related to go arounds, do not materially impact these average measured results, as the noise contours are validated using thousands of measured noise results.
- 1.2.80 In the recent correspondence with LADACAN (Question 3 of email dated 25/07/2022) over data requests LADACAN itself stated that there are not many go-arounds overall.
- 1.2.81 **Andrew Lambourne Proof paragraph 137:** *states that that it is unclear what level of adjustment has been made to account for results from monitor NMT3 due to proximity to the motorway.*
- 1.2.82 **Applicant response 30:** The noise contour validation process involves consideration of the measured noise levels from all the fixed noise monitors, the aircraft profiles, consideration of the change in noise levels compared to previous years and an element of professional judgement based on BAP's extensive experience in modelling aircraft noise at many airports.
- 1.2.83 With regards to NMT03 specifically, it is paired with NMT02, and they are primarily considered as a pair in the validation. In general, there are a similar number of correlated noise measurements for both NMT02 and NMT03. For certain quieter aircraft types there are sometimes substantially fewer correlated noise results from NMT03. BAP has identified that this is partly due to the noise from the motorway leading to a higher cut off for the monitor, which can result in some quieter flights not being correlated at NMT03 and therefore the measured average level at this monitor being unrepresentative. In these cases, it is necessary to reduce the relevance given to NMT03 in the analysis.
- 1.2.84 **Andrew Lambourne Proof paragraph 138-139:** *Andrew Lambourne argues that the recalibration exercise was inadequate and South Luton monitoring was inadequate to be representative of variations in noisiness of flights.*
- 1.2.85 **Applicant response 31:** As for **Applicant response 2**, the noise contours presented in the ES were neither based on nor calibrated using the 2015 noise measurements from Ludlow Avenue.
- 1.2.86 Noise measurements from Ludlow Avenue in 2015 suggested that the noise contours at that time were overpredicting the noise in that area. Following this, information was sought from airlines regarding their operational procedures. This information on the actual operational procedures at Luton Airport was used to adjust the default departure profiles in the INM noise model.
- 1.2.87 The noise predictions using these revised profiles were checked against the noise results from the airport's NMTs and the measurements from Ludlow Avenue and were found to result in noise predictions that more closely matched the measured results.
- 1.2.88 These profiles, based on the airline operational procedures, were used for subsequent modelling including the contours presented in the ES, whose validation exercise used noise data from 2018 and 2019 at the fixed NMTs.
- 1.2.89 **Andrew Lambourne Proof paragraph 140:** *Andrew Lambourne argues that registration codes did not match aircraft types and argues BAP does not know about this.*
- 1.2.90 **Applicant response 32:** BAP has confirmed that they were aware of this. As part of the processing of the movements and noise measurements, which BAP are provided with, BAP checks the aircraft

types listed match the registrations and make corrections to the data we use where necessary. Generally, there are relatively few mismatches, however there was a specific temporary issue with the recording of Airbus ceo vs neo aircraft types, which resulted in a larger than usual number of mismatches.

1.2.91

BAP confirmed that they did check the aircraft types before using the data, and as such there were no effects on the noise contours or noise contour validation.