

Preliminary Analysis of the Noise Implications of LBA's Planning Application 20/02559/FU

Prepared by Andrew Tait of Galba (www.galba.uk). Some of the analyses are drawn from a paper prepared by Professor Peter Bonsall (Emeritus Professor of Transport Planning) at Leeds University (also linked from galba.uk).

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Some Alarming Highlights

Relaxation of night flying

LBA want to:

- abolish the existing restrictions on flights in the “shoulder” periods between 0600 and 0700 and between 2300 and 2330 (*page 8 of Appendix 10.7*).
- allow noisier planes to take-off between 2330 and 0600 (*page 9 of Appendix 10.7 indicates that planes with a noise “quota count” of up to 1.0 will be allowed to take-off during this period – the current limit is 0.5, thus the maximum certified noise allowed on take-off goes up from 89.9dB to 92.9 dB*).
- allow planes to land up until 0100 if they are up to 90 minutes behind schedule (*page 9 of Appendix 10.7*).
- abolish the existing cap on the number of noisy flights (87dB or above) between 2300 and 0700 (*see page 8 of Appendix 10.7*).

Predicted numbers affected

Even with their optimistic assumption on fleet composition, LBA's forecasts are alarming. They predict that, compared to the situation without their proposed development, their proposals would cause thousands more people to be subject to plane noise loud enough to have an adverse effect on them:

- an extra 2,600 people will be subject to at least 51dB (LAeq16hr), an extra 1900 to at least 54dB, an extra 700 to at least 60dB and an extra 200 to at least 60dB (*Table 10.21 in the noise and vibration chapter*).
- 26,100 more people will hear between 1 and 50 more planes which are loud enough to disturb them (above 65dB LAmax) on an average summer day (*Table 10.23 in the noise and vibration chapter*).
- 7,200 more people will hear between 50 and 100 planes loud enough to disturb them (above 65dB LAmax) on an average summer day (*Table 10.23 in the noise and vibration chapter*).
- 34,000 more people to be subjected to an increase in the amount of daytime plane noise loud enough to have an adverse effect on them (*Table 10.22 in the noise and vibration chapter*).
- 36,700 more people will experience night-time plane noise loud enough to have an observable adverse effect on them, and 700 more people will experience significant adverse effects (*Table 10.24 in the noise and vibration chapter*).
- 123,000 more people will be exposed to an increase in night-time plane noise at levels which have observable adverse impacts (*Table 10.25 in the noise and vibration chapter*).

Airport Competition

Although LBA claim that the new system they propose would be comparable with restrictions in place at competing airports, it is, in many respects, less restrictive than they are. For example, noting the competitor airports they identify (*in Table 6.3 of the main document*):

- Their main rival, Manchester Airport, has, in addition to its noise quota budget, a rule whereby the number of night time operations must not exceed 7% of its total number of flights (LBA is expecting 17.5% of its flights to be at night- see *Table 10.4-8*), a ban on use of its new runway during night hours and a policy to reduce the area exposed to night noise below what it was in 2001.
- Night flying restrictions at East Midlands Airport (LBA's second most important rival) are in place from 2300 to 0700 (2200 to 0600) in summer.
- Their third most important rival, Heathrow Airport, has, in addition to its noise quota budget, a cap on the total number of night flights allowed and night-time restrictions on use of its most sensitive runway.

Health Implications

Below are some quotes from the Application – these are LBA's own words; confirmation that extending flying hours and operating more flights will result in more noise and have a detrimental effect on health.

10.7.17 The effect of the Development in 2030 is therefore to increase night-time noise exposure in all reported noise exposure thresholds...

10.7.26 At an individual receptor level these changes between LOAEL and SOAEL are not considered significant however could give rise to a significant effects in terms of health and quality of life over the population. [1]

10.7.28 A Webtag appraisal has been undertaken... This confirms that that whilst the changes are forecast to be 'negligible' or 'low', the Development will result in an adverse effect on health due to increased noise.

[1] LOAEL - 'Lowest Observed Adverse Effect Level': The level above which adverse effects on health and quality of life can be detected - that can be sleepless nights, disturbance stress, Cardiac problems, mental health problems. SOAEL - 'Significant Observed Adverse Effect Level': The level above which significant adverse effects on health and quality of life occur.

How does noise from air traffic affect health?

Again, in LBA's own words from the Application:

From ES_VOLUME_2_APPENDICES_HUMAN_HEALTH-3247517

13.2.61 Environmental noise (e.g. noise from road, rail, and air traffic, and industrial construction) has been linked to a range of non-auditory health effects including annoyance, sleep disturbance, cardiovascular disease, impairment of cognitive performance in children, higher BP, hypertension or the prescription of antihypertensives, ischemic heart disease (e.g., myocardial infarction), cerebrovascular disease (e.g., stroke), neuronal disorders (e.g., dementia), and cardiometabolic disease (e.g., diabetes mellitus).[2]

[2] Münzel, T. et al. The Adverse Effects of Environmental Noise Exposure on Oxidative Stress and Cardiovascular Risk. *Antioxidants & Redox Signaling* 28, 873-908, <https://doi.org/10.1089/ars.2017.7118> 2018

There are also studies that suggest that exposure to aircraft noise has an adverse effect on mental health. For further reading, there is much more information in the WHO Night Noise Guidance "WHO Night Noise Guidance E92845.pdf"

Trade-off: flights vs well being

From the Application document:

5.38 The consultation clarifies that a noise cap, also known as a noise envelope, is any measure which restricts noise. The Government proposes advocating caps which are based on setting maximum noise exposure levels, such as contour area or noise quota. Noise caps should also consider the effect of night flights, given the health costs associated with sleep disturbance.

However, the document notes that “These costs need to balance the benefits of night flights and any restrictions should be proportionate to local circumstances”

So one side of that balance are the profits of airline operators and AMP Capital (the airport’s owners based in Australia); the *convenience* of people being able to fly locally (checking in at 3am); and LBA’s claims about economic benefits (these are dealt with elsewhere by Galba).

The other side of that balance is the health and well-being of tens of thousands of members of the public. Many of whom will not fly themselves and will be elderly and school children. 70% of all flights in Great Britain were taken by 15% of adults according to analysis of a 2014 government survey.

Flying Hours

The first thing to understand about this Application is that it is not really about a lovely new terminal building-cum-shopping mall. I think we’d all like that. What it’s really about is extending the flying hours so AMP Capital can attract more airline operators who want to squeeze in two flights per day.

Paragraph 3.8.16 of the Environmental Impact Statement makes it clear that LBA intend to take advantage of the proposed relaxation of restrictions on night flying “*immediately upon grant of the planning permission*” but they make no commitment to build the new terminal.

In the current climate (LBA made a £3m loss last year and that will be exacerbated by the lock-down this year) it’s very unlikely that the new terminal building will be built for years to come due to costs, but extending flying hours is cheap and gives the airport an immediate boost to revenue, assuming they can indeed attract new airlines in the wake of Covid-19. Airlines such as British Airways and Ryanair are now pulling out of LBA so their customer base is shrinking, not increasing.

To squeeze in two, or even three, return flights per day to destinations in Southern Europe or the Canaries, LBA has to start flying at 6am, or earlier, and fly until the early hours of the morning. It also means the people of Leeds will experience a peak during mid-afternoon when all these flights return from their morning trip and reload for the afternoon trip. So we need to add in the mid-afternoon peak when we discuss additional flights and noise; a very important point which is not very well understood in the local community, or mentioned in the Application, but one that needs emphasising to the planning officers. There are 36 schools identified in the Application as being under the flight path, all these schools will have outdoor activities going on during the mid-afternoon turnaround peak in the noise profile.

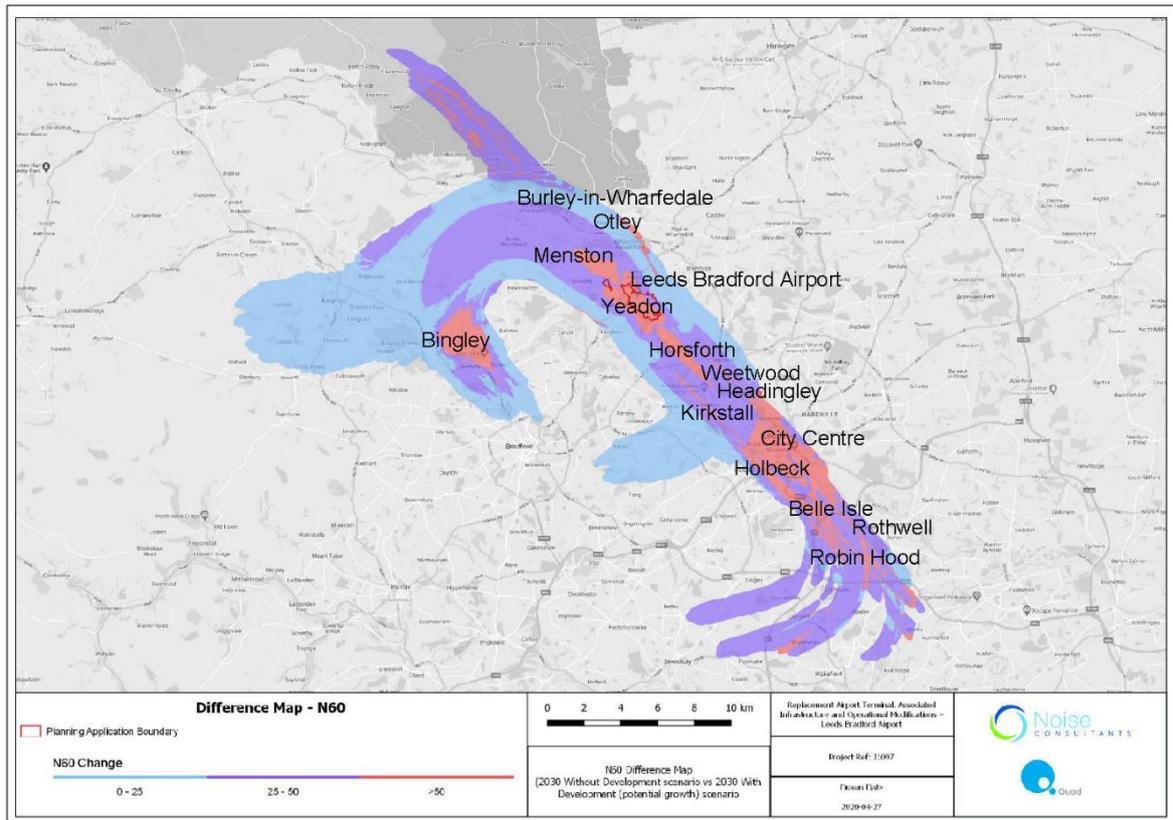
To do this LBA want to scrap the current flight regime of a restricted number of night-time flights permitted between 11pm to 7am and replace it with a quota system that operates between 11.30pm and 6am. They also want to allow late-running flights to land as late as 1am. And, although they don’t say this in the planning report, it’s buried in the appendices, the proposed new quota system actually allows noisier planes to operate at night than the current regime, so it’s a step backwards and definitely cannot be described as mitigation. See Quota System below.

LBA will create two shoulder periods 6-7am and 11-11.30pm, these will have ALL restrictions removed apart from an overall noise contour. So as long as they don’t exceed their overall noise contour, LBA can fly as many planes as they can handle during these shoulder periods and any restrictions on the noise individual planes can make will have been lifted.

Night-time noise exposure over Leeds (as predicted by LBA’s consultants)

The map below shows areas where, according to LBA’s analysis, people will hear a given number of flights at and above 60dB at night if the development goes ahead compared to it not going ahead (60dBA being a recognised threshold for sleep disturbance at night time). As well as the loudness of noise, it will cause additional nuisance due to the sheer number of flights. You can see that it affects

about half of Leeds, plus many people to the NW in the countryside where the ambient background noise will make it even more noticeable. Those living in the orange areas will experience over 50 new flights per night. Those in the purple areas, between 25 and 50.



The red, purple and blue colours indicate how many extra flights will be loud enough to disturb sleep on an average summer night over Leeds if the development goes ahead. It is based on the Applicant's optimistic assumption that airlines will be using quieter planes so could be worse than shown.

QC Quota System

A Quota Count (QC) is a number assigned to a particular type of plane that indicates how much noise it makes. The higher the number, the noisier it is.

The current regime restricts the total number of night flights to 1200 in winter and 2800 in summer. LBA are proposing to scrap these absolute limits in favour of a quota count of 1375 per year. At first this seems good, but remember, it is now concentrated over 6.5 hours not 8 hours. As each plane has a quota count, that means that 1375 planes with a QC of 1 can fly, or, 2750 at QC 0.5, or, 5500 at QC 0.25 or unlimited exempt planes.

Noise classification

Effective perceived noise in decibels, EPNdB	Quota Count
Below 84	Exempt
84–86.9	0.25
87–89.9	0.5
90–92.9	1
93–95.9	2
96–98.9	4
99–101.9	8
Greater than 101.9	16

Modern planes such as 737max have these lower QCs (0.5).

In this system, you can have twice as many flights at 86 dB (QC/0.25) than you can at 87 dB (QC/0.5), but they are still going to wake you up because the difference in noise to you will be imperceptible. The result being that you could experience twice the number of disturbing overflights while the airport claim they are modernizing the noise control regime. Note that 86dB is still very loud.

And don't forget as soon as it turns 6am, LBA can fly as many noisy planes as they like.

Noise Quota Relaxation

The current regime limits the night-time QC to 0.5 for departures and 1 for arrivals (LCC planning decision 07_02208_FU—2813243). But buried in appendix 10.7 of the current Application, LBA say they will allow QC of 1 for departures AND landing, so it appears that they are trying to sneak in a relaxation of the current rules which will obviously lead to significantly more noise. They don't explicitly mention this anywhere in the Application, you need to dig around in the old planning decisions to discover this. So much for transparency. CAA document CAP1616 which sets out how airports should engage with their community and is considered best practice by ICCAN (Independent Commission on Civil Aviation Noise), states that:

CAP1616 Part 3: Airspace information

474. When a change is identified, information about it should be made available, in an accessible form which a layperson can understand, to help to provide context as to why the noise effects they are experiencing may be changing.

In any case, you can experience as much noise when a plane arrives as when it takes off. They come in long and low over Leeds city centre with the wheels down, and because they are travelling relatively slowly, people on the ground are subject to more noise for a longer period than that of a departing plane which gains height quickly. People who live very close to the end of the departure runway will experience more noise on departure.

If the Applicant's claim to be introducing a fairer and more up-to-date system for controlling plane noise is true, why is it necessary for them to scrap the 0.5 QC noise cap introduced in 2007. It's plainly obvious that LBA want to relax the quota count to suit their own ambitions (i.e. to allow noisier planes to operate at night) rather than to protect the public.

From 20_02559_FU-PLANNING_REPORT_-_APRIL_2020_FINAL-3245735

...Moreso, it is demonstrated in the ES that re-framing the noise controls in the manner proposed, will bring them up to date and better reflect latest policy direction, and guidance on mitigation, whilst providing appropriate levels of mitigation to protect local communities from any adverse impacts of the development.

As an example, under the proposed system, LBA will be able to fly the equivalent of 20 flights (10 landings and 10 take-offs) by Airbus 320s every night (2300 to 0600) during the six months of summer.

Reasons why an average noise contour is not very helpful

An average noise contour smooths out the peaks and gives you an overall noise (dB) contour. However, it is an individual noise event that wakes you up. So what you need to know is: how many noise events will there be? This can be disguised by using contours.

Here's a quote from NATS (National Air Traffic Services) saying the same thing. This link provides further reading if you want to know more. <https://www.nats.aero/environment/aircraft-noise/>

Airport Noise

SEL is the sound exposure level of an aircraft event, measured in dBA of a one second burst of steady noise that contains the same total A-weighted sound energy as the whole event. SEL is often used to characterise the likelihood of sleep disturbance relating to aircraft noise as research has found that single event metrics are a better predictor of sleep disturbance than long term average noise metrics such as Leq16h

Reasons why the modelling which LBA have used to justify their Application cannot be trusted

All the modelled predictions in the Application documents rely on an assumed modernization of the aircraft fleet in response to an improved offer from LBA. This is not happening any time soon for reasons listed below along with many other uncertainties.

Since 2018 when the Applications dataset was devised:

- Boeing 737max are grounded – making predictions of quieter flights nonsense. This from Wikipedia suggests that it won't be flying soon, and, again, undermines modelling that makes assumptions 10 years into the future. Who knows what improvements will be made and what other planes might go out of service in the meantime.
As of October 2019 the disagreements over various system revision details, Level of Involvement (LoI) between the two leading aviation authorities, FAA and EASA, as well as Boeing's new recommendation of simulator training could delay the 737 MAX return to service.
- Flybe have gone into administration.
- Monarch have gone into administration - this might have happened before modelling but it shows the futility of trying to make long term predictions on operator demand.
- British Airways have pulled out of LBA.
- At the time of writing Ryanair's schedule for summer 2021 does not include any flights in or out of LBA.
- Passenger number recovery from Covid-19 is unpredictable.
- All airlines post-Covid-19 will be paying back massive bailout loans (£300m for Jet2) which means that capital expenditures will be cut to the bone and no new planes will be ordered until the future can be guaranteed and the cash has once again begun to flow.
- There is high possibility of aviation fuel tax to rein in climate issues.
- There is general turmoil and decline of routes: This quote from John Cunliffe (LBA Commercial Director) at LBA's 11.12.19 Airport Consultative Committee:
The summer months have proved difficult for passenger numbers with LBA showing a negative % vs. 2018. This is reflected across the industry, with many UK airports also showing negative growth during S19. The current economic climate and difficult landscape in the UK has clearly had an impact on people's summer holiday plans.

All of this casts doubt on the worthiness of demand-modelling that requires long-range assumptions about a business in turmoil.

In addition to the above uncertainties, modelling was only validated on what the modelers have called a "*relatively low number of noise monitoring terminals at the airport*" and so had to rely on extrapolated data. Other airports have many more monitoring terminals. There is no explanation of the reason for not using data from other sites, such as that from mobile monitoring sites, or from equipment at the Becket Park University campus. Finally, modelling noise on the ground uses ideal conditions and cannot fully predict your local experience. Reflections of noise from hard surfaces, especially in a city, can add >3dB on modelled data, so you could easily experience much more noise in reality than predicted.

Noise Abatement Measures

The Application makes repeated reference to the Balanced Approach when talking about noise mitigation. One of the four pillars of the Balanced Approach is Noise Abatement Operational Procedures. <https://www.icao.int/environmental-protection/Pages/noise.aspx>

In the Application, LBA mention that they would encourage new noise abatement procedures during the upcoming National Airspace review, however, they don't mention that there is already a noise abatement procedure in place. So much for transparency.

From LBA's AIP (the airport's user guide for pilots and air traffic controllers):

<https://www.aurora.nats.co.uk/htmlAIP/Publications/2018-10-11-AIRAC/html/eAIP/EG-AD-2.EGNM-en-GB.html>

"Section AD 2.21 NOISE ABATEMENT PROCEDURES:

The following Noise Preferential Routeings and Procedures shall apply to jet aircraft (except military aircraft).

These procedures may at any time be departed from to the extent necessary for avoiding immediate danger.

Operators of aircraft using the airport shall ensure at all times that aircraft are operated in a manner calculated to cause the least disturbance practicable in areas surrounding the airport.

Aircraft will use Runway 14 for landing and Runway 32 for take-off, whenever this is possible, having regard to wind, cloud base, approach aid limitations and aircraft performance and requirements. In the event of marginal conditions the runway to be used is at the aircraft Commanders discretion. However, violation of the selective runway procedure cannot be acceptable for expedite reasons, and it is regretted that inconvenience in taxiing distances and/or airborne routeing must be accepted in the interest of reducing aircraft noise intrusion on the local environment."

This says that ALL flights should take off and land to the North West, thus protecting the city centre population in favour of a green passage to the NW. This noise abatement procedure seems to be routinely ignored. Flights operate over the city in all conditions despite the above rule expressly forbidding travel in that direction for "expedite reasons". Wind direction can override the ruling, but it's clear to see that flights operate over the city even on calm days and nights, and it's difficult to believe that adverse wind conditions persist every single day and night. So, can we trust LBA to stick to the noise abatement procedures they allude to (but are far from being developed yet) if they can't stick to the current rules, and even fail to mention this very important point in their planning Application.

They also promise to consider a number of other measures to mitigate the effect of noise, but many are (theoretically) in place already, others are vague and others should have been in place already.