
RESPONSE TO DISCUSSION PAPER 05 ON AVIATION NOISE

SUBMISSION BY GATWICK AIRPORT LTD

REFERENCE:
AIRPORTS COMMISSION: LONDON GATWICK 014

DATE: 6 SEPTEMBER 2013

LONDON
Gatwick

1. Summary

- The impact of noise on local communities is an important and controversial issue for the Commission's assessment of options for increasing airport capacity. It is important as noise can significantly affect the quality of life for communities living close to airports, and it will be a major factor in determining whether or not there is community and political support for particular airport developments. It is, and will remain, a controversial issue, because of the impact on communities and because, despite long debate, there is no firm consensus on how to approach issues around aircraft noise or even on how best to measure noise.
- The Commission's paper provides an extremely useful summary of the complexities of assessing noise impacts and we agree with the conclusion that no single noise metric can fully describe noise exposure at a given location. However, in Gatwick's view, it is essential that the Commission's noise assessment is made on absolute noise levels (rather than on changes relative to the existing environment), as this will provide answers which are much more meaningful in relation to Government policy guidelines, and will permit valid comparisons between different options.
- Significant progress has been made by the aviation industry, and by Gatwick, in reducing and mitigating noise, and this trend is expected to continue. However, we also recognise that people's sensitivity to, and perception of, noise has increased.
- We believe that, as an industry, aviation can meet UK passenger demand towards 2050 whilst reducing noise impacts. However, we also believe that at Heathrow, where more people already live inside its noise footprint than the combined population of all the major EU hub airports put together¹ (see figure 2), it will be difficult for the Commission to justify further expansion there. Given its position to the west of London, development at Heathrow will always impose disproportionately more noise nuisance on a much larger number of people than could ever be the case at Gatwick.
- Gatwick's current noise footprint, in terms of the 57dBA Leq, is 3050² people. With an additional runway, this footprint could increase to 11,800. To put this in context, we are less than 2% of the noise footprint of Heathrow today, and would be less than 5% with an additional runway (at our widest option using mixed mode).
- We strive to act as good neighbours, and take the impact of noise on our local communities extremely seriously. Gatwick's 'Fly Quiet and Clean' initiative, launched in 2012, looks to research and implement global best practice in the management and mitigation of noise, as well as in community engagement.
- Overall, we welcome the Commission's focus on noise as a central issue, we agree that noise should be a key consideration when assessing options for meeting the future aviation capacity needs of the UK, and we support the Commission's proposals for further study and research.

¹ European Commission, CAA. Figures based on the populations affected by noise using the standard measure of 55 LDen 2006 figures

² Department for Transport R&D Report 9903 ERCD report 1202 (actual modal split)

- However, we are also conscious that Phase 2 of the Commission's work will require substantially increased effort and expenditure from early next year by the promoters of the shortlisted schemes. In order to minimise the risk of nugatory work and expense, and the risk of promoters progressing options which the Commission later finds unsuitable on grounds of noise, we ask that the Commission provides clarity no later than their Phase 2 appraisal framework in December 2013 on a number of key issues:
 - We need details of the noise assessment framework that the Commission will use in its appraisal of options, especially the measures to be used. It is clearly essential that all proposals are presented on a uniform basis of measurement, as accurate comparisons will otherwise be impossible.
 - The Government's policy principles on noise, as laid down in the recent Aviation Policy Framework (APF), are inevitably expressed in general terms, but they will need to be developed with much more precise definition if they are to be used transparently by the Commission in assessing the noise impacts of competing proposals. To guide promoters, it is important that the Commission outlines soon how it proposes to interpret Government policy in its appraisal of options, particularly as regards:
 - Government's primary objective to limit and where possible reduce the number of people significantly affected by aircraft noise.
 - Government's desire to strike a balance between the negative impacts of noise and the positive economic impacts of flights.
 - Government's intention that, as a general principle, any benefits from future improvements in aircraft noise performance should be shared between the aviation industry and local communities.
 - And we need clarity as to the Commission's approach to:
 - the weighting of the different appraisal criteria (e.g. the relative weightings as between traffic generated and noise impacts);
 - the baseline on which noise assessment should be based; and
 - how to address the inter-dependency between noise and carbon impact.
 - We also urge the Commission that, if it identifies a need to expand capacity in the longer term, it is explicit on how to make Government's noise policies more precise and more operationally relevant for the purpose of the Commission's work. We believe that doing so, with proper justifications, would greatly increase the likelihood of the Government accepting the Commission's overall recommendations.

2. Introduction

2.1 Discussion paper 05 emphasises, rightly, that noise will be a central issue for the Commission, and it is clear that the impact of noise on local communities will be an important and controversial issue for the assessment of options for increasing airport capacity. It is an important issue as noise can significantly affect the quality of life for communities living close to airports, and will inevitably be a major factor in determining whether or not there is community and political support for particular airport developments.

2.2 Noise is, and will remain, a controversial issue, because of the impact on communities and also because, despite long debate, there is no firm consensus on how to approach issues around aircraft noise or even on how to best measure noise.

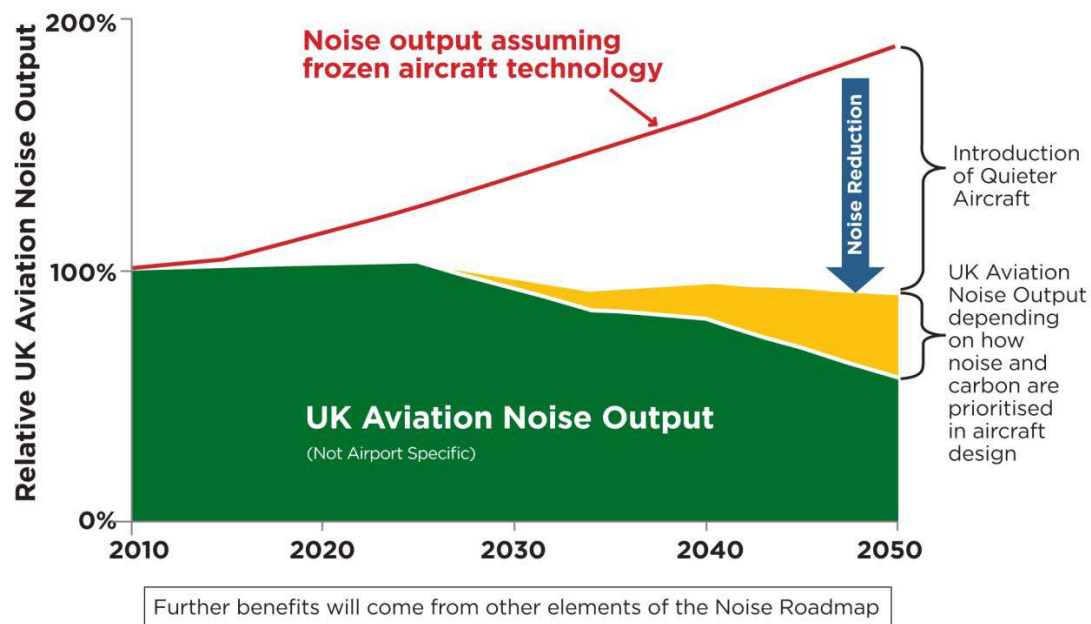
2.3 The Commission's discussion paper is an important and helpful contribution to the debate, particularly in:

- Accepting that assessment of noise impacts is inherently complex;
- Providing clear explanations of measurement methods and of the pros and cons of each method;
- Accepting that no single indicator can fully describe noise exposure at a given location;
- Recognition of the progress made by the aviation industry in reducing aircraft noise, and of ICAO's Balanced Approach to Noise Management;
- Bringing forward the important idea of measuring the noise efficiency of airports.

2.4 Significant progress has been made by the aviation industry in reducing the impact of noise. The noise produced by current aircraft in the UK has reduced by 97% on departure and 94% on arrival compared with the first passenger jet aircraft. Putting this in context a 97% reduction in noise energy means that 33 modern jet aircraft departing simultaneously today would produce in aggregate the same level of noise as one jet aircraft of the same size departing in the 1960's.

2.5 The Sustainable Aviation noise road map, published in 2012, projects that UK aviation will be able to accommodate significant growth in air transport movements to 2050 and, at the same time, achieve a reduction in UK aviation's total noise output compared to 2010. Figure 1 shows how the introduction of imminent and future aircraft and engine technology offers the potential to reduce UK aviation noise by 2050 compared to 2010. Without this technology, given the forecast growth in demand for air transport, UK aviation's noise output would almost double.

Figure 1: Sustainable Aviation Noise Road Map



Source: Sustainable Aviation

2.6 Gatwick follows the approach outlined in the Sustainable Aviation noise road map and applies the ICAO Balanced Approach in our own noise management strategy. This is also reflected in our Environmental Noise Directive (2002/49/EC) noise action plan (END plan).

The ICAO Balanced Approach to noise management has four principal elements:

- Reduction of noise at source
- Noise abatement operational procedures
- Operating restrictions on aircraft
- Land-use planning and management

2.7 There is still much to do in aircraft airframe and engine design, but current day aircraft are now breaking new ground with the Dreamliner 787 aircraft that has a 60% smaller noise footprint than its closest equivalent, and the Airbus A380 that is quieter than the existing 747 jumbo jet. There are also cleaner and quieter aircraft to come. Although aircraft are becoming quieter, airports are getting busier and so the challenge now is to look at how aircraft are flown, and where and also how frequently they are flown in relation to populated areas.

3.0 Progress at Gatwick

3.1 Gatwick is committed to reducing the noise impact of aircraft operations. Between 1997 and 2011 the number of people within the airport's 57 dBA noise contour has reduced by 75% and its area by 53%³ despite an increase in air traffic movements of 9.3%⁴. The number of people affected by noise levels of greater than 57dBA at Gatwick is currently less than 2% of those at Heathrow⁵.

3.2 Gatwick is one of the three regulated airports in the south east and as a result the Environment Research and Consultancy Division (ERCD) of the Civil Aviation Authority (CAA) produces every year noise contours based on the previous year's operations. These contours are very useful for benchmarking performance, however we do agree with the Airports Commission's paper which states that no one measure provides the whole picture.

3.3 Under our Fly Quiet and Clean initiative, underpinned by our END plan and the ICAO balanced approach, we have several schemes in place to manage noise, starting from aircraft on the ground and continuing up to and beyond seven thousand feet for both arriving and departing aircraft. These initiatives include the following:

4.0 Airport Collaborative Decision Making (ACDM)

4.1 **Airport Collaborative Decision Making (ACDM)** is focused at reducing noise at source. Gatwick is already the busiest single runway in the world but we are striving to become ever more efficient and quieter. We have introduced a more proactive and integrated approach to liaising with our air traffic controllers, airlines and ground handlers in order to optimise aircraft movement on the ground and in the air.

³Directors Report and Financial Statements year ended 31st March 2013

⁴ Department for Transport R&D Report 9903 and ERCD Report 1202 (actual modal split) / CAA archive documentation

⁵ ERCD Reports 1201 & 1202 – Noise Contours for Heathrow & Gatwick Airports (actual modal split)

4.2 What this means in practice is that the airport now utilises a new integrated planning tool which is used by all the organisations that influence the arrival and departure timings of aircraft. Traditionally it has been difficult to ensure that all these organisations (NATS, airlines, airports, handling agents) worked in concert with each other. As a result, a degree of inefficiency was 'inbuilt' into the performance of the airfield. The new planning tool is unique to Gatwick and drives the overall capacity and efficiency of the single runway, while at the same time reducing noise as well as fuel burn. The benefit is that aircraft spend much less time taxiing onto the runway and being held on the taxiways. All of which reduces Gatwick's ground noise impacts on local communities.

5.0 Future Airspace design – P-RNAV & Rotating Respite for Communities

5.1 We are leaders in the use of new technology to ensure that the design and use of our airspace and operational procedures are as efficient as possible. One such technology is **Precise Route Navigation (P-RNAV)**, a method that uses satellite navigation, ground based aids, and on-board electronic systems to allow aircraft to self-navigate on any desired path. Amongst other benefits, P-RNAV allows aircraft to follow much more accurate tracks and, over a 24 hour period, the currently broad swathe of aircraft tracks is reduced to a much narrower spread. In practice, this allows aircraft to fly routes that impact the fewest people, and allows the option of **rotating respite** to be introduced. P-RNAV also enables aircraft to climb at steeper gradients as they depart the airport thus reducing noise impacts further.

5.2 Gatwick has been running a P-RNAV trial, and consulted on full implementation last year. The Safety & Airspace Regulation Group (SARG) of the CAA has recently granted us permission to roll this technology out across all nine of our departure routes - a first for a UK airport. We will also be running a night-time arrivals noise respite trial for 90 days commencing in August 2013 to assess whether, and how, community respite can be introduced more broadly.

6.0 Community engagement

6.1 Community engagement is also critical to managing Gatwick's noise impacts. Key to delivering this is proactive communication by airport noise management teams with noise-affected communities. We already have a comprehensive noise management and governance structure supported by our consultative committee, GATCOM. With the help of these groups we have been able to deliver noise improvements and this approach will be vital to the development of new noise solutions in the future.

6.2 As well as working with GATCOM, we are also working with NATS and our airlines to communicate regularly with communities about noise management strategies and developments. Last year we held a noise seminar with a wide range of stakeholders, including Local Authorities, our airlines, the CAA and environmental groups. The purpose of the event was to outline our approach to noise management in detail, highlight what is already being done, what communities should expect from us in the future, and to get direct feedback. To the best of our knowledge, Gatwick was the only UK airport to hold such an event in 2012 and we will be holding another such seminar later this year. We have also redesigned our aircraft noise website, which enables members of the public to make enquires and complaints, making it much more user friendly with more useful information. In addition we have also launched a

new flight tracking system, which allows people to track aircraft with only a 20 minute delay, down from the previous 24 hours delay.

7.0 Land use planning

7.1 Land use planning is a very important issue for noise impact management at airports. Under the old Planning Policy Guidance 24, the noise threshold for allowing the development of new homes was the 57dBA contour. It is important for a clear threshold to be set in order to prevent the encroachment of noise sensitive developments around airports. However over several years this guidance has not been strictly adhered to and developments have been allowed to progress in noise sensitive areas.

7.2 The most recent of these at Gatwick is the well documented North East Sector development, where the original decision not to allow development was over ruled by the Secretary of State after a Judicial review. Homes in this development will now be built exposing inhabitants to noise in excess of 60dBA. If airports are to be effective in reducing noise impacts and reducing the number of people living within noise sensitive areas, we recommend that the Commission takes a strong position around this issue and recommends that clear national guidance is issued and followed.

8.0 What is next for Gatwick – further airspace design initiatives

8.1 Members of the local community have asked the airport to investigate the possibility of increasing the **angle of descent** for aircraft, thereby keeping them higher for longer and reducing noise impacts. Currently the global standard for the angle of descent following an Instrument Landing System (ILS) is three degrees. Aircraft join the ILS at varying distances from the airport but once established will follow a three degree descent until touch down. Gatwick is currently exploring with our airlines, the CAA and NATS how and when airspace and aircraft design issues can be overcome to achieve a higher angle of descent.

8.2 As a result of implementing P-RNAV, fewer people will be impacted by noise from arriving and departing aircraft at Gatwick. P-RNAV also opens up several **new airspace design options** which will provide further opportunities over the next few years to reduce the number of people impacted by aircraft noise to the lowest number possible. In doing so, we are working closely with NATS, who are managing the roll out of the London Airspace Management Program (LAMP), which is seeking to redesign London's airspace over the next few years.

9.0 Recommendations for the Airports Commission

9.1 Although the Commission's intention to pursue various lines of research and study is commendable, we wish to stress the urgency of defining the appraisal framework. In order to minimise the risk of nugatory work, or the risk of promoters selecting options which later turn out to be unsuitable, we need clarity from the Commission as soon as possible and in any case no later than their Phase 2 appraisals framework in December 2013, on a number of key points:

- We need details of the noise assessment framework that the Commission will use in its appraisal of options, especially the measures to be used. It is clearly essential that all proposals are presented on a uniform basis of measurement, as accurate comparisons will otherwise be impossible. A good example of the problem is the presentation of the Initial Proposals from Heathrow and Gatwick that have used two very different models to measure the noise impacts of runway expansion. Gatwick has used the model required by the CAA if an airport is to make an airspace change in the UK, and as is also required in the current DfT Air Navigation Guidance document, which is the ANCON 2.3 model. Heathrow has chosen the INM model developed by the FAA, the American aviation regulator. The models can produce very different results on an absolute basis, and potentially on a relative basis as well. This is because, whilst they use the same base algorithm, the assumptions built into the CAA model are based on actual data of flight profiles and noise impacts for an airport, whilst the FAA use theoretical assumptions. A consequence is that the INM model can produce a very different size and shape of noise contour from the CAA required model. This situation cannot be allowed to recur in Phase 2.
- The Government's policy principles on noise, as laid down in the recent Aviation Policy Framework (APF), are inevitably expressed in general terms, but they will need to be developed with much more precise definition if they are to be used transparently by the Commission in assessing the noise impacts of competing proposals. As a result, it is important that the Commission outlines soon how it proposes to interpret Government policy in its appraisal of options, particularly as regards:
 - Government's primary objective to limit and where possible reduce the number of people significantly affected by aircraft noise.
 - Government's desire to strike a balance between the negative impacts of noise and the positive economic impacts of flights.
 - Government's intention that, as a general principle, any benefits from future improvements in aircraft noise performance should be shared between the aviation industry and local communities.
- And we need clarity as to the Commission's approach to:
 - the weighting of the different appraisal criteria (e.g. the relative weightings as between traffic generated and noise impacts).
 - the baseline on which noise assessment should be based.
 - how to address the inter-dependency between noise and carbon impacts.

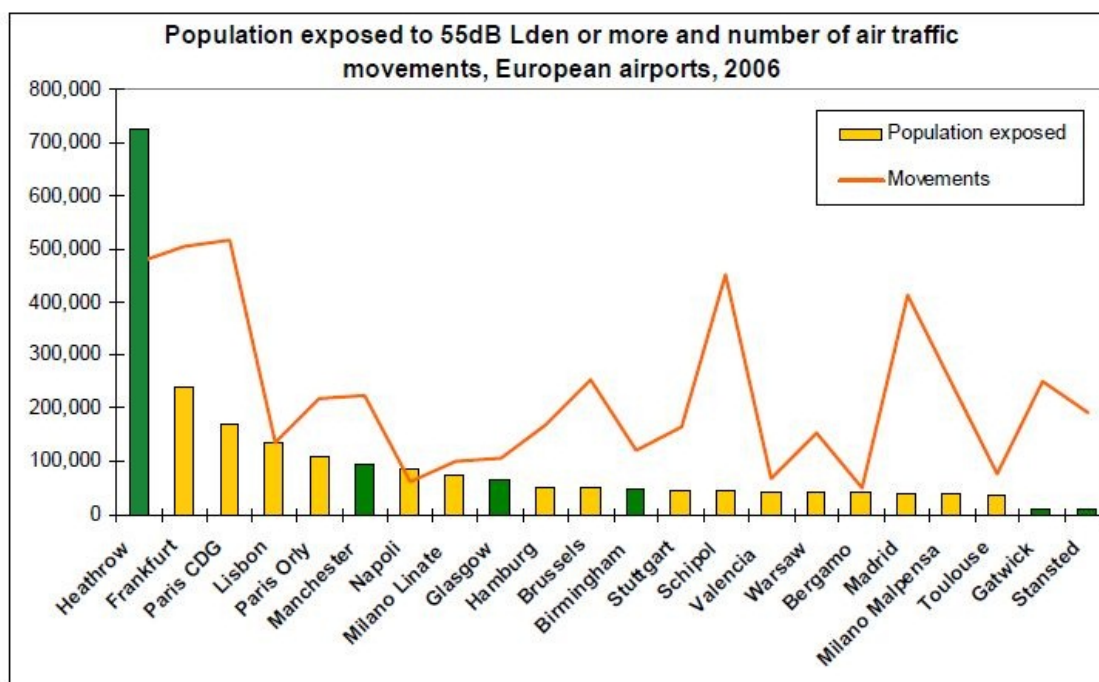
9.2 To highlight the importance of understanding how these policy principles will be interpreted, the Commission needs only to consider the baseline figures of the population who live inside the 57dBA Leq today at Heathrow and Gatwick – which are 258,500 and 3,050 respectively⁶. Gatwick's noise footprint, on this basis, is less than 2% of Heathrow's, and it is clear that, given its position to the west of London, development at Heathrow will always impose disproportionately more noise nuisance on a much larger number of people than ever could be the case at Gatwick.

9.3 We find it extremely difficult to understand on what basis could allowing Heathrow to grow by one or two additional runways ever be consistent with the Government's primary policy objective of "limiting and where possible reducing the number of people

⁶ Department for Transport R&D Report 9903 and ERCD Report (actual modal split)

significantly affected by aircraft noise". As Figure 2 below shows, Heathrow has more people already living inside its noise footprint than the combined population of all the major EU hub airports put together⁷. Gatwick's view is that, given the Government's primary policy objective, Heathrow could not be given permission to grow. No doubt, Heathrow has a different view. Such a crucial issue can be resolved only when the Commission defines in greater detail, as outlined in 9.1 above, how Government policy is to be interpreted for purposes of selecting options.

Figure 2: Population exposed to 55dB Lden or more from air traffic movements, European airports 2006



9.4 We also urge the Commission that, in making any recommendations to Government on airport expansion, it is explicit on how to make Government's noise policies more precise and more operationally relevant. We believe that doing so, with proper justifications, would greatly increase the likelihood of the Government accepting the Commission's overall recommendations.

Responding to the Commission's questions

We now turn to the questions put by the Commission in paragraph 6 of its discussion paper.

1 What is the most appropriate methodology to assess and compare different noise footprints? For example:

- *What metrics or assessment methods would an appropriate 'scorecard' be based on?*

⁷ European Commission, CAA. Figures based on the populations affected by noise using the standard measure of 55 LDen 2006 figures

As highlighted by the Airports Commission's Noise paper, no one measure can fully describe noise exposure at any given location. In the UK, the standard measure prescribed by the CAA and used by all the major airports is the Leq method using a 96 day summer time average. Whilst not a perfect measure, it does have the significant benefit that there is consistent historical noise data on all the major airports. In the case of Stansted, Heathrow and Gatwick, this data is produced independently by the CAA.

As the Commission paper has highlighted, there are a number of other noise assessment methods available across the world e.g.

(N) Method

- The number above (N) or frequency contours that are used at Canberra Airport in Australia, for example, do reflect aircraft over flight frequency more accurately, which the Leq method does not. However the (N) method gives the number of noise events above a certain level in a day. It does not show, for those noise events, the extent to which the noise level has been breached or for how long.

N70 Method

- In theory, the assessment methods used by Sydney Airport, which are a combination of N70, Average Individual Exposure (AIE) and Person Events Index (PEI), would provide communities with a more comprehensive picture of noise impacts and their frequency. However, minimizing AIE and increasing PEI potentially results in spreading noise impacts across more people, which would be in direct conflict with current UK Government policy which favours the concentration of aircraft noise over the lowest number of people. This possible conflict is illustrated further by the fact that the UK Future Airspace Strategy is dependent on P-RNAV for success. As mentioned earlier, P-RNAV will concentrate aircraft noise impacts over fewer people, although with the opportunity of rotating respite being introduced to offset this concentration. In principle, we support the Government's policy of reducing the total number of people affected by noise, providing the resulting concentration can be offset through rotating respite.
- *To what extent is it appropriate to use multiple metrics, and would there be any issues of contradiction if this were to occur?*

As the discussion paper outlines very well, in some countries around the world more than one metric is being used and these metrics differ from country to country.

The two main issues which need to be taken into account are:

1. It is essential that the principal metrics used for assessment can be related to Government policy. In the UK, any metric that cannot show how an airport is delivering against the Government's primary policy objective of limiting, and where possible reducing, the number of people significantly affected by aircraft noise, would risk creating a policy conflict.

2. If multiple metrics are used then there must be consistency across the main UK airports. It becomes difficult or impossible to benchmark noise impacts and performance between different airports if multiple different metrics are used. The Regulator and Government would surely find this totally unsatisfactory as it would make it impossible to arrive at clear and transparent policy choices affecting airports.
- *Are there additional relevant metrics to those discussed in Chapter 3 which the commission should be aware of?*

The Commission's paper does an excellent job of identifying current noise metrics used across the world, whilst acknowledging that there is no one-size-fits-all metric.

The Sustainable Aviation noise road map outlines a general approach and mechanisms for noise management at airports but also, helpfully, recognises that different solutions are required for different airports. At Gatwick, for example, we regularly use our Continuous Descent Approaches and track keeping performance as measures additional to Leq contours as a way of communicating our noise impacts and performance.

- *What baseline should any noise assessment be based on? Should an assessment be based on absolute levels, or on changes relative to the existing noise environment?*

In Gatwick's view, it is essential that the Commission's noise assessment is based on absolute noise levels, as this will provide answers which are much more meaningful in relation to Government policy guidelines, and will permit valid comparisons between different options.

- *How should we characterise a noise environment currently unaffected by aircraft noise?*

Although the Leq metric takes several factors into consideration when calculating impacts such as noise event frequency, the output is still an average noise contour. An additional issue not covered by the Leq metric is the frequency of noise events.

At Gatwick, people living outside our noise contours explain to us that they are not so much concerned by the level of noise but by how often it occurs. Although aircraft will continue to get quieter, the frequency of over flight will increase as traffic grows. As a result, a clearer understanding of the impact of frequency is needed before seeking to characterise noise environments not currently affected by aircraft noise and Gatwick supports this need.

2 How could the assessment methods described in Chapter 4 be improved to better reflect noise impacts and effects?

- 2.1 Aviation noise assessment methods date back to the Wilson committee in 1961 when a strong correlation between annoyance and level of complaints was found. This work led to the development of the Noise number index (NNI). After this came the Theodore Schultze study in 1978, and then the

Aircraft Noise Index Study (ANIS) in 1982 which led to the view that 57dBA was the noise level identifying the onset of community annoyance. A further study in 1997, Attitudes to Noise from Aviation Sources (ANASE), attempted to take this work further, but not all the findings are supported by commentators. There has been no major step forward in understanding levels of noise annoyance since that time, and the primary focus still remains around the 57dBA contour.

One of the most significant challenges in managing noise is its subjective nature. As history and experience of seeking to manage aircraft noise issues have shown, people's reactions and perception of aircraft noise are complex. Based purely on 57 Leq noise contour data, the reduction in aircraft noise achieved by the industry over the last half century has resulted in many fewer people being significantly affected by noise. However based on regular stakeholder feedback received by the industry, reinforced in the UK Aviation Policy Framework, it is apparent that noise from aircraft operations remains a real source of controversy between airports and local communities. Many local communities believe that current noise metrics, including the use of average noise contours, do not reflect fully their experience of aircraft noise.

As discussed earlier, there is a need for a significant piece of work to be undertaken following on from ANASE to determine better the impacts of aviation noise on local communities. In terms of noise metrics and assessment methods, and considering all the different approaches across the world, it would appear that Leq is the best approach to understanding the levels of noise experienced at certain locations around an airport. However we also believe there is merit in supplementing Leq with the N(70), AEI and PEI methods to help airports understand where best to place aircraft tracks with least effect on communities.

In Europe, the Lden method is commonly used, and this has been given some consideration for use in the UK in place of Leq. However, on closer analysis during a recent noise metric discussion chaired by the DfT, some significant issues were identified. While it is clear that the Lden method provides a more accurate assessment of noise impacts over a year, it is a very blunt instrument due to the weighting placed on certain flight types. For example, when an assessment was carried out using the Lden method on the impact of removing all night flights from an airport's operation, the actual impact on noise was in the order of only one decibel reduction. This means that if Lden was used it would be extremely difficult for an airport operator to effect any positive change in noise impacts through operational means.

3 Is monetising noise impacts and effects a sensible approach? If so, which monetisation methods described here hold the most credibility, or are most pertinent to noise and its various effects?

- 3.1 Although there are examples of monetisation for the rail and road industry, it has been difficult historically to monetise aviation noise impacts, due to the types of noise and the fact that it reaches people from many different aircraft and altitudes. This difficulty is recognised in the discussion paper.

Attempts to monetise aviation noise were made before Heathrow's Runway 3 proposal in 2009. Work undertaken by the Environmental Research and

Consultancy Division (ERCD) of the CAA found that, although it was possible to monetise impacts, the calculated costs escalated rapidly due to the nature of the population spread within noise contours and the large area covered by Leq contours at Heathrow. This work found that for every 3dB change in noise the cost doubled and quickly became unrepresentative of actual impacts. The cost was based on a combination of the lowering of house price values due to daytime annoyance, impact of sleep disturbance and potential negative health effects.

We recognize the potential advantages of making a monetary link to noise impacts but, as the Commission's paper outlines well, more work is needed in this area to produce a meaningful and accurate assessment. We would support further work in this area through the Government's Interdepartmental Group on Costs (IGCB).

4 Are there any specific thresholds that significantly alter the nature of any noise assessment, e.g. a level or intermittency of noise beyond which the impact or effect significantly changes in nature?

- 4.1 Experience at Gatwick suggests that, in general, people living close to the airport become de-sensitised to noise over time, having become accustomed to higher average levels of noise. However, annoyance from these areas is more typically registered if there is a change in the noise footprint or type of noise, rather than because of the average noise level itself. Annoyance is increasingly registered from populations outside the current Gatwick noise contours, as a result of the frequency of aircraft over flight rather than the actual noise level, but again stemming from changes in type of noise and where it is heard.

In order for more meaningful noise assessment to be developed, the flight frequency factor must be explored. It must also not be overlooked that perception is a major factor that can drive trends in noise annoyance. Several times over the last 18 months, noise annoyance has been registered by communities around Gatwick as a result of a perceived change in either operations or noise levels. After extensive investigation on both fronts, it is evident that rumours of a change in operations, or operational change that has no actual noise impact, often create large peaks in registered noise annoyance.

Much work has been done by ERCD into the identification of possible noise thresholds and trigger points for noise annoyance. This work demonstrates as one might expect, there is often a large peak of annoyance registered at high noise levels and this declines as noise reduces. The problem is that there is no clear cut off in annoyance as level of noise reduces and annoyance was seen to continue to be registered at lower average noise levels outside the 57 Leq noise contours, thus confirming the subjectivity of noise impact.

Again we would support further research into identifying a possible threshold as this would help inform the selection or development of alternative noise metrics.

5 To what extent does introducing noise at a previously unaffected area represent more or less of an impact than increasing noise in already effected areas?

- 5.1 At Gatwick we have experience of recent operational change consultations that provide insights into the way in which people react to aircraft noise. People who are already subjected to noise usually simply want it to go away and certainly do not want it to get worse. People currently unaffected by aircraft noise often remain silent when we consult locally and discuss the implications of the impacts on others. Any suggestion of aircraft noise impacting new areas always brings about a very strong negative reaction, but is naturally supported by those already exposed to such noise. People already exposed to significant noise feel that the noise should be spread and the burden shared by all who live near the airport. This argument leads back into the concentration versus dispersal debate. Current Government policy as published in the recent APF is clear that concentration is the preferred approach, indeed FAS and LAMP are reliant on new forms of air navigation, like P-RNAV, that will result in a concentration of aircraft noise on certain areas of the community.

Gatwick has recently been granted permission to implement P-RNAV on all nine of our departure routes. This now places the airport in a favourable position and ahead of other airports in the UK in terms of alignment with the future requirements of airspace design and operation in the UK. P-RNAV also allows the development of rotating noise respite, thereby creating the option of providing alternating respite for those people in communities subject to a concentration in aircraft noise.

6 To what extent is the use of a noise envelope approach appropriate, and which metrics could be used effectively in this regard?

- 6.1 This concept has been widely discussed through several previous Government consultations and discussion papers, as well as the Government's ANMAC meetings. We support this concept in principle but careful exploration and discussion needs to take place to understand all the implications, risks and benefits for each airport.

There are examples of this technique in use at other airports, the most recent being at Schiphol Airport. After construction of their latest runway, 35 noise enforcement points were established using the Lden metric, each point being given a weighting for noise levels during the day and night. The position of these points created a noise envelope around the airport and compliance with the limits at each of these points is measured on an annual basis. There are also several caveats in place to take into account wind direction changes, extreme weather and planned maintenance. There is also the uncontrollable aspect that airlines and their aircraft can use departure routes without regard to the existing noise limits, making compliance very difficult for the airport. All of this makes for a very complex noise management environment that has significant implications for runway operation and capacity.

The Schiphol example shows great care is needed when setting a noise envelope and striking an appropriate balance between capacity benefits and noise constraints.

7 To what extent should noise concentration and noise dispersal be used in the UK? Where and how could these techniques be deployed more effectively?

- 7.1 As mentioned in the discussion paper, current Government policy is to limit and where possible reduce the number of people significantly affected by aircraft noise. In practice, this policy will result in a concentration of aircraft tracks on arrival and departure. This effect will become more pronounced with the roll out of FAS and LAMP in the coming years. The solution to reducing noise impact, whilst ensuring compliance with policy, is to deliver rotating respite. Aircraft tracks will tend to be concentrated over fewer people but the ability to switch routes provides a workable alleviation to the impact on particular localities. The value placed on the predictability of noise should also not be overlooked - communities rate this highly as it enables them to plan or be prepared for when and where noise will be experienced.

8 What constitutes best practice for noise compensation schemes abroad and how do these compare to current UK practice? What noise assessments could be effectively utilised when constructing compensation arrangements?

- 8.1 We believe that current practice at Gatwick, offering several community schemes ranging from blight compensation to domestic noise insulation, is very strong and we are in the process of considering how to improve this further, so as to be recognised as following best practice in our sector. There is no one-size-fits-all solution for noise management and mitigation at airports, as every airport location, aircraft fleet mix and its communities will have different requirements and be governed by different operational requirements and constraints. We are in the process of updating all our schemes and plan to roll out a new noise insulation scheme later this year aimed at providing noise mitigation in a fairer way to more homes around Gatwick.

Any effective compensation scheme needs to reflect the needs and concerns of communities around the airport balanced against operational requirements and financial constraints of the airport itself. In addition, as a regulated airport, expenditure on such schemes will have to be consulted on with our airlines before any initiative can be launched.

9 Conclusion

- 9.1 The Commission's discussion document poses some very important questions that do not have straight-forward or easy answers. The Commission is right to identify noise impacts as a central issue when considering options for increasing aviation capacity, as any plans for additional capacity will need to be sustainable, and deliverable in terms of community and political support.

The aviation industry, and Gatwick airport itself have made remarkable strides in reducing noise impacts over the last 50 years, through new aircraft and

engine technologies as well as innovative ways of operating aircraft in and out of airports.

Gatwick is a UK leader in noise impact management through its pioneering implementation of P-RNAV and plans to trial rotating respite. There is still more to do and we welcome the opportunity to work with the Commission, as well as with the Regulator and our airline partners, to maintain our leading position.

We support research into the onset of annoyance and further work into the effects of aircraft over flight frequency, together with an assessment of possible development of noise envelopes.

We believe that it is extremely important for the Commission to make clear soon how it intends to assess the noise impacts of options for long term capacity growth, and how that noise assessment framework will interpret the policy position of the Government on noise issues.

Glossary

ACDM	Airport Collaborative Decision making
AEI	Average Individual Exposure
ANASE	Attitudes to Noise from Aviation Sources in England
ANMAC	Aircraft Noise Monitoring Advisory Committee. The committee is chaired by the Department for Transport and comprises, among others, representatives of the airlines, Heathrow, Gatwick and Stansted airports and airport consultative committees.
ATM	Air Traffic Movement
APF	Aviation Policy Framework
CAA	Civil Aviation Authority
CDA	Continuous Descent Approach
dB(A)	A unit of sound pressure level, adjusted in accordance with the A weighting scale, which takes into account the increased sensitivity of the human ear at some frequencies.
DfT	Department for Transport (UK Government)
ERCD	Environmental Research and Consultancy Department of the Civil Aviation Authority
FAA	Federal Aviation Administration
FAS	Future Airspace Strategy
GATCOM	Gatwick Airport Consultative Committee
ICAO	International Civil Aviation Organization
LAMP	London Airspace Management Programme
Lden	The day, evening, night level, Lden is a logarithmic composite of the Lday, Levening, and Lnight levels but with 5 dB(A) being added to the Levening value and 10 dB(A) being added to the Lnight value
Leq	Equivalent sound level of aircraft noise in dB(A), often called equivalent continuous sound level. For conventional historical contours this is based on the daily average movements that take place in the 16 hour period (07:00 - 23:00 LT) during the 92 day period 16 June to 15 September inclusive
N(70)	number of noise events with maximum noise level of 70dB(A)

NATS	National Air Traffic Services
NPR	Noise Preferential Route
P-RNAV	Precise route navigation
PEI	Person events Index
SA	Sustainable Aviation
SARG	Safety & Airspace Regulation Group of the CAA