

STANSTED AIRPORT ADVISORY PANEL

Night flights consultation.

Appendix A Consultation Questions – Suggested Response

What are your views on the findings of the night flight dispensation review?

The findings are not a surprise, and generally seem to reflect a lack of scheduling resilience in the low fares airline model, with the final leg of the last rotation taking place close to the Night Quota Period. The reduction in dispensations granted at Stansted in summer 2019 compared to summer 2018 is encouraging, although the 8,100 movements limit was still exceeded. Current operating conditions are clearly unrepresentative, but the Government's aim in redefining and clarifying its guidance to airport operators should be to prevent a high level of post-pandemic dispensations returning.

There are clear sensitivities for local communities around Stansted when they observe that most dispensations appear to be for leisure-based flights that are subsidised through low fuel taxation. Dispensations should be minimised to encourage airline business models that are more environmentally robust.

What are your views on the proposals for the night flight dispensation review?

The three proposals to increase transparency are all sensible and should be adopted without delay. An obvious question to ask is what the greater scrutiny at the noise and track keeping group would involve other than it becoming a "talking shop". For instance, would there be any powers to act if the group considered that the airport operator was being, or was still being less than transparent.

The responsibility for periodic reviews of dispensations should ideally go to ICCAN, which was established at the start of 2019 as an impartial advisory body on all matters relating to civil aviation and how it affects communities. ICCAN's new Corporate Strategy 2021-2024 includes a longer-term ambition to empower people through being engaged and informed on issues related to aviation noise. ICCAN could also publish the guidance on the information that airports should share with the public and how it is provided, including ease of accessibility on websites.

Should disruption due to local weather qualify for dispensations?

Not in situations where adverse local weather is forecast and can be planned for, Annex E highlighting snow and ice, particularly in relation to departures. However, the Government does acknowledge in the consultation that the guidance is unclear

where the threshold for wide-spread and prolonged weather disruption is. This should be clarified, although no two instances will be the same.

Should disruption due to en-route weather qualify for dispensations?

Should disruption due to foreign airport weather qualify for dispensations?

Yes to both questions, but only in the circumstances set out in Annex F – *“Unscheduled landings in the night period arising from diversions from other airports due to weather conditions provided an aircraft had taken off unaware that its intended destination was unavailable”*.

Should disruption caused by ATC industrial action qualify for dispensations?

Should disruption caused by industrial action by airport staff qualify for dispensations?

Should disruption caused by industrial action by airline staff qualify for dispensations?

No to all three questions. The point of industrial action is to inconvenience the aviation industry, not local residents.

Should network capacity delays qualify for dispensations?

No. The Government’s letter to each designated airport in 2018 made it clear that airspace capacity related delays, without an underlying cause that is exceptional, do not meet dispensation criteria. Airlines and airport operators should plan summer schedules with “headroom” built into the QC and movement limits to accommodate these delays.

Should delays caused by serious criminal or terrorist activity that affect multiple flights qualify for dispensations?

The Government says in the consultation that it does not expect drone incursions or other criminal or terrorist activity to become more frequent. In these circumstances dispensations could be allowed to ensure public safety, but this would be a judgement call between the airport operator and the police.

Should cumulative delays qualify for dispensations?

Not after the point that the circumstance that led to the delay is no longer ongoing.

Should dispensations be permitted for flights delayed to the NQP due to a medical emergency that has passed?

Should dispensations be permitted for flights delayed to the NQP due to a police emergency (for example a disruptive passenger) that has passed?

The answer to both questions is that these would probably be relatively local effects, so dispensations should only be granted for aircraft that were en-route at the time the emergency started.

Should dispensations be permitted for the repositioning of emergency service (including medical transplant) aircraft?

Yes, where the judgement is that an out-of-position aircraft may pose a risk to health.

Should dispensations on the basis of reducing carbon emissions be permitted?

No, and it is doubtful whether affected local residents would be sympathetic to this type of dispensation on a flight-by-flight basis. Reducing carbon emissions is already the main policy goal for airspace management above 7,000 feet where noise is less of a factor and is also a prime motivator for airspace modernisation. In the Aviation 2050 consultation, the Government proposed a new measure to set a new objective to limit, and where possible, reduce total adverse effects on health and quality of life from aviation noise. This would bring national aviation noise policy in line with airspace policy in the DfT's 2017 Air Navigation Guidance to the CAA.

Should pre-emptive dispensations be permitted?

No. The Council understands that this is a practice adopted only at Heathrow in order to land aircraft early on poor weather days to avoid later knock-on effects that could extend into the night period. This would seem to imply that the weather has been forecast and can therefore be planned for.

Should dispensations be granted for information technology failures?

No. The industry should have back-up plans to deal with IT failures.

If you have further views on the guidance allowing airport operators to grant dispensations, please provide it here?

The Council acknowledges that it is very difficult to tailor guidance to fit all situations where the duration and nature of incidents will inevitably vary. However, the general point made in Annex F that dispensations would not be appropriate when airport operators have reasonable time to rearrange their schedules should apply.

What are your views on government dispensations overall?

The Council notes that the Secretary of State has provided dispensations in exceptional circumstances to allow aerodromes to recover from prolonged disruption. Whilst there are no objections to this, the Government should clarify in guidance that dispensations will generally only be granted for a limited period to

allow replanning.

What length should the night flight regime beyond 2024 be?

It should ideally be 10+ years in length.

How do you think the length of regime will affect you?

With shorter regimes, there is little time to analyse their effect once implemented before consultation starts on the next regime. In this current case, the start of the consultation was delayed due to the pandemic. If it had not been delayed, there would still only have been about 18 months to assess the effect of the introduction of the new QC0.125 category before the new consultation started. With proposed shorter regimes, the temptation is always to roll forward the previous one (as has occurred in this case) on the presumption that a longer regime that can incorporate more change will follow. Rolling forward is often an easy way out, although understandable from 2022-2024 (now 2025) to allow a fuller appreciation of the effects of the pandemic.

It is considered that there would be benefits to having longer regimes (10+ years). In particular:

- there would be adequate time for a mid-regime review (led perhaps by ICCAN) that could feed into the consultation on the next regime,
- airport operators and airlines would have more time to plan to meet medium and longer term targets, which could justifiably be more challenging due to the longer lead-in times, and
- there should be more certainty for residents over what would happen in the longer term.

Do you think that QC is the best system for limiting noise at the designated airports?

Not on its own. Disturbance and dissatisfaction are events-based issues and not averaged or aggregated ones. What matters today to residents is the number of night flights and whether they are genuinely needed. In ICCAN's 2020 review of aviation noise metrics and measurement, it continues to support use of averaging metrics for noise monitoring and statutory reporting where appropriate. However, it also recommends that supplementary single event metrics are routinely published by airports to better reflect the way in which noise is experienced on the ground.

What do you think are the:

- advantages of changing to a new system?
- disadvantages of changing to a new system?

This would depend upon what system is chosen. A new system could be advantageous if it is events-based, allows only night flights which are genuinely needed, and which allows targets to be set that share the benefits of technological

improvement between the industry and local communities as set out in the 2013 Aviation Policy Framework (APF). The main disadvantage of a new system might be inability to compare historically if different metrics are used.

Do you have evidence of other noise management regimes being used elsewhere and how they compare with the current system?

No, but the Council is aware of a 2004 European Commission study on the different aspects of noise limits at airports.

Should we introduce an additional QC category for quieter aircraft in the longer-term?

Yes. Introducing a new QC0.0625 category would be a logical progression of technological advance, coupled with scheduling and/or operational bans referred to in the consultation. Moving aircraft from QC0 to QC0.0625 would be in line with paragraph 3.3 of the APF, which expects the aviation industry to share the benefits of technology improvements between itself and local communities.

Should the government reintroduce an exempt category?

No. On the evidence of what has happened in the past at Stansted, the reintroduction of an exempt category is not favoured due to the potentially high number of exempt aircraft that could operate at the airport (170 during summer 2019 according to Annex D). Basing an exemption on aircraft size and/or weight, passenger loading or variations thereof could be complicated and lack transparency.

Do you think we should re-baseline the night quota system in the longer-term?

Yes. Re-baselining the system would make it easier to understand, but any “rounding up” or “rounding down” that is necessary should have an overall neutral effect.

What factors should we consider when anticipating how to best future proof a re-baselined QC system?

This will depend partly upon how far is looked into the future. A main issue to consider will be future fleet mixes – are they more likely to be dominated by smaller aircraft doing point-to-point journeys? What will be the uptake of electrical aircraft and would this change noise signatures?

What costs, if any, would you anticipate in re-baselining the QC system?

No specific direct costs for local authorities, other than familiarisation time for both officers and members.

Would you be impacted if the NQP was extended to 11pm to 7am?

For local communities, this would depend upon whether there was a material impact on the occurrence of noise throughout the extended NQP. According to information contained in Stansted Airport's Noise Complaints Analysis Report 2020, from 2016 – 2020 the greatest intensity of complaints registered were during the evening shoulder period followed by the morning shoulder period.

If the NQP is broadened to the full Night Period, the QC and movement limits would need to be adjusted to reflect movements in the existing shoulder periods, which are busy – especially 06:00 – 07:00. At Stansted, the declared summer 2020 and winter 20/21 capacity for the runway is a maximum of 33 departures from 06:00 – 06:59 within an overall declared capacity of 50 2-way movements (summer) and 44 (winter). It would not be acceptable for any broadening of the NQP to allow (in particular) the earlier or later movement of aircraft in the first and last waves unless part of a prior consultation with local communities. Any such consultation should also consider whether respite should be offered (say between 01:00 – 05:00) when no movements other than genuine emergencies would be allowed.

Do you think night flights in certain hours of the NQP have a greater impact on local communities than other times of the NQP?

Not sure, but in the background section to the national night flight policy part of the consultation, the Government says it expects the industry to seek ways to provide respite wherever possible and to minimise the demand for night flights where alternatives are available.

Would a mechanism that disincentivises aircraft movements in periods of the night that are more sensitive for communities impact you?

This really is a question for individual residents to answer based on their own experience.

What would be the impact on you if QC4 rated aircraft movements were banned between 11pm and 7am after October 2024?

Unlikely to be very significant at Stansted due to the nature of the fleet mix at that time. However, within the APF requirement to share the benefits of technology between the industry and local communities it would be worthwhile.

What would be the impact on you if a scheduling ban was placed on QC2 rated aircraft movements between 11.30pm and 6am after October 2024?

Unlikely to be very significant at Stansted due to the likely nature of the fleet mix at that time. However, within the APF requirement to share the benefits of technology

between the industry and local communities it would be worthwhile. In summer 2019, QC2 movements at Stansted during the NQP were only 3% of the total (277/8455), which is approximately the percentage that they have been for a while now.

What would be the impact on you or your business if a scheduling ban was placed on QC2 rated aircraft movements between 11pm and 7am after October 2024?

Unlikely to be very significant at Stansted due to the likely nature of the fleet mix at that time. However, within the APF requirement to share the benefits of technology between the industry and local communities it would be worthwhile.

If bans are introduced should the implementation be staged?

No. See answers to the three previous questions.

In a future regime how should we manage the number of aircraft movements (detailing the airport or airports relevant to your view)?

In relation to Stansted Airport, there should continue to be a movements limit which should be reduced over time to accommodate only night flights that are deemed essential.

In a future regime how should we manage an airports' noise allowances (detailing the airport or airports relevant to your view)?

In relation to Stansted Airport, there should continue to be a quota cap which should be reduced over time to accommodate only night flights that are deemed essential and to share the benefits of new technology between the industry and local communities.

Should we remove the movement limit and manage night flights through a QC limit only?

No. Movements limits are an integral part of the International Civil Aviation Organisation's (ICAO) Balanced Approach to dealing with aviation noise and have consistently been imposed at Stansted. In the absence of a movements limit, it would be possible for an airport operator to double the number of movements (say by operating QC0.25 instead of QC0.5 aircraft) and stay within a QC limit, which would certainly be noticeable to local communities.

Should we introduce a ring-fencing mechanism to ensure night slots are available for:

- commercial passengers?
- dedicated freight?

- business general aviation?

This is a matter between the airport operator, airlines and the slot coordinator.

Should an airline be able to use unused allowances later in the season?

Yes, within that same season.

If the government decided that unused allowances should be returned to the airport's pool, what would be the impacts on:

- communities?
- airports?
- airport users?
- airlines?
- business in and around airports?

So long as the "banked" allocation is used during that season, either by that airline or another one and not as carry-over, there should be a neutral effect.

Do you agree or disagree that the current carry-over process benefits you?

Disagree that the current carry-over process benefits local residents. The Council again urges the phasing out of the carry over and overrun arrangements. Prolonged use of these at Stansted both disguises and perpetuates higher summer limits which are not transparent, and which are not evident from the movement and quota limits set under the restrictions. Certainty and transparency for local residents can only be achieved by absolute limits, which airport operators will be able to plan for in setting their schedules. If the new regime were to be longer than 5 years in duration, this would assist airport operators in their longer-term planning. Easter dates are known for many years ahead and should be able to be planned for within existing and proposed QC and movement limits.

What changes, if any, would you like to see to the carry-over process and how would this impact you?

The Council would like to see this process phased out.

How fair a balance between health and economic objectives do you think our current night flight approach is?

The current approach seems skewed towards economic objectives rather than health ones. A weighting towards health would imply an 8-hour NQP, rather than the current 6.5 hours. The 6.5 hour NQP would seem to allow 4 rotations of each aircraft under the low fares model, which causes issues of dispensations to arise as dealt with earlier in the consultation.

What are your views on the health impacts of aviation noise at night, including potential impacts on different groups in society?

The Council's view is that they are serious, and notes what the Government says in the consultation that it expects the aviation industry to make extra efforts to reduce and mitigate noise from night flights, and to seek ways to provide respite where possible and to minimise demand for night flights where alternatives are available. This reflects the Government's ambition in Aviation 2050 to reduce noise and minimise health effects, including by reviewing and improving noise insulation schemes. (Council underlining).

What are your views on the economic value of night flights, including the potential value on different businesses and aviation sectors?

The Council's view is that the economic benefits of night flights are always presumed but are not set out on a type-by-type basis. There needs to be a balanced assessment of their economic value against environmental effects and the establishment of a new post-pandemic baseline ought to be a good opportunity for this. The Government's pledge to use the three-year carry-over period of the current regulations until October 2025 to carry out a more meaningful evaluation of the costs and benefits of night flights is welcomed. Local communities must be allowed a full opportunity to give evidence in that evaluation.

There should not be a presumption on returning to the pre-pandemic night flying status quo, which might not occur anyway with a new baseline. For instance, new integrators, such as Amazon, do more daytime flying. The Council strongly considers that, post-pandemic, there is a good opportunity to establish a new night flights baseline and to fully review the economic need for each category of night flights against their environmental disbenefits. From the Council's perspective, the starting point should be that any benefits which have accrued to local communities from reduced night flying over the pandemic period should be captured into a new regime.

What are your views on changes to aircraft noise at night as result of the COVID-19 pandemic?

At Stansted this should be reduced due to a severe downturn in passenger traffic, but with cargo operations holding up. Information provided by Stansted Airport's Managing Director to the meeting of the Stansted Airport Consultative Committee in April 2021 indicates that, in the year to February 2021, the total number of NQP movements and QC points used approximately halved from the same period to February 2020, just before the first lockdown. This can be seen in the context of an 88% fall in passenger numbers (with overnight terminal closures) and a 70% fall in all movements in the same period, but an 8% increase in cargo ATMs. Generally, cargo aircraft are older, noisier, more polluting and add to the airport's carbon

footprint.

Interestingly, when comparing noise complaints received at Stansted Airport in 2019 compared to 2020, there were more complaints in 2020 in the evening shoulder and core night periods than in 2019, although a slightly reduced number in the morning shoulder period. These figures exclude multiple complainers.

What are the advantages or disadvantages that the emergence of new technology will have in relation to night noise from aircraft within the next 10 years?

This is difficult to say with any certainty. New propulsion technologies are likely to take longer than 10 years to become operational to any degree, so what will be locked in will be benefits from new generation aircraft coming onstream within that period. Emerging navigation techniques such as PBN could change noise signatures depending upon the solutions that they enable, such as “concentration versus dispersal” of flightpaths.

Should we include a reference to night noise when we publish a revised aviation noise objective?

Yes.

What factors relating to night noise should we include if we do introduce a noise reference in our revised aviation noise objective?

The additional statement set out in the consultation seems appropriate. From the Council’s point of view as a local planning authority, it would be consistent with Section 2 of the National Planning Policy Framework which sets out overarching but interdependent objectives (*economic, social and environmental*) as a means of achieving sustainable development. The expanded policy would put airport operators on notice that the full effects of night flights should be set out in environmental statements that accompany planning applications at both designated and non-designated airports.

Should the government set criteria for airport designation?

No comment, as Stansted is already a designated airport.

What do you think are the:

- advantages to the government setting criteria for airport designation?
- disadvantages to the government setting criteria for airport designation?

No comment.

What factors, if any, do you think we should consider when setting criteria for designation?

Any proposals for the designation of other airports would need clear grounds and a degree of pragmatism. At many smaller airports, noise is locally managed via discussions with communities.

How should any criteria for designation be agreed?

No comment.

What impact, if any, do you think the designation of an airport have on:

- communities?
- airports?
- airport users?
- airlines?
- business in and around airports?

No comment.

What impact, if any, do you think the de-designation of an already designated airport (Heathrow, Gatwick, Stansted) will have on:

- communities?
- airports?
- airport users?
- airlines?
- business in and around airports?

A potentially disastrous effect on communities in the absence of a suitable replacement scheme. Much would therefore depend upon what is put in its place and who the responsible authority would be for running any replacement scheme. The Council would expect any replacement scheme to be based both on an up-to-date assessment of the economic benefits vs the environmental disbenefits of night flights and on research into which types of night flights are truly essential to the economy. Flights deemed to be non-essential should either be rescheduled for the day period or, if they do still fly during the night period, incur a higher tariff.

Appendix B The Existing Night Flights Restrictions

The Current Restrictions

1.1. The current restrictions were published in July 2017, took effect in October 2017 and are due to expire in October 2022.

1.2. The restrictions are based on a winter and a summer season, the triggers for which are the change to and from Greenwich Mean Time and British Summer Time, resulting in the summer season being longer. The restrictions work by placing limits within both seasons on the number of aircraft that can fly at night (movement limit) and the total amount of noise energy that they can generate (noise quota). The restrictions apply within the night quota period (23:30 – 06:00), which is not the same as the night period (23:00 – 07:00). The remaining hours of 23:00 – 23:30 and 06:00 – 07:00 are known as the shoulder periods within which there are some restrictions on the type of aircraft that can fly. At Stansted Airport, the morning shoulder period is particularly busy with the first wave of departures of home-based aircraft on quick rotations as part of the low fares business model. The evening shoulder period is busy with last wave arrivals.

1.3. The noise quota is the seasonal total of the quota counts (QC) ascribed to each individual aircraft arrival or departure during the night quota period. The QC is the weighting attributed to the arrival or departure of a specified aircraft type by reference to its certified noise performance, divided into 3EPNdb bands¹. Aircraft types can be rated in a different QC band for arrivals and departures. The following table sets out the current aircraft noise classifications. When referring to aircraft by QC type, they are known as QC16, QC4, and QC0.125 etc:

Noise classification (EPNdb)	Quota Count (QC)	Comments
More than 101.9	16	Operational ban within night period.
99 – 101.9	8	Operational ban within night period.
96 – 98.9	4	Scheduling ban within night quota period, but no outright operational ban at the moment.
93 – 95.9	2	Commonly operate during the night quota period.
90 – 92.9	1	Commonly operate during the night quota period.
87 – 89.9	0.5	Commonly operate during the night quota period.
84 – 86.9	0.25	Commonly operate during the night quota period.
81 – 83.9	0.125	From October 2018, this was added as a new category in the current restrictions as these aircraft can still expose affected communities to noise levels capable of causing sleep disturbance. This category prevents a proliferation of exempt aircraft and incentivises the

¹ EPNdb is Effective Perceived Noise Decibels – a specialized noise unit used for aircraft noise certification tests.

		use of quieter aircraft at night. Many of these aircraft are business jets.
Less than 81	0	Count towards the movements limit, but not the quota count. The reason for this is to ensure greater transparency and certainty for communities whilst maintaining incentives for producing and purchasing quieter aircraft.

Dispensations

1.4. Under Section 78(5)(f) of the Civil Aviation Act 1982, the Secretary of State for Transport can grant dispensations such that particular movements are disregarded from the night flight restrictions. As a general principle, these dispensations relate to state matters, where they are required as a result of a Government decision, or where circumstances are so exceptional that the airport's operations become a matter of national interest. The headline categories are as follows:

- 1. Flights involving VIPs – but this does not include businesspeople or celebrities, and also excludes positioning flights,*
- 2. Relief flights – but this does not include the carriage of the media or their equipment*
- 3. Military aircraft, war / hostilities – to meet contingency arrangements, but not once time has been had to assess the situation and make alternative arrangements,*
- 4. Exceptional circumstances – such as recovering from prolonged disruption – (the volcanic ash crisis in 2010 was an example), and*
- 5. Changes to airspace arrangements as a result of Government decisions – such as flypasts where aircraft scheduled to land or depart during the day have had to be delayed, or the establishment of air exclusion zones (2012 Olympic Games).*

1.5. Under Section 78(4) of the same Act, the Secretary of State has the power to specify in a notice circumstances in which movements may be disregarded by the airport manager, who is then under a duty to notify the Secretary of State in writing within one week of the dispensation occurring. As a general principle, these dispensations should be used in relation to operational matters affecting a small number of flights. The headline categories are as follows:

- 1. Emergencies – where there is an immediate danger to human or animal life or health,*
- 2. Widespread and prolonged air traffic disruption – such as caused by computer problems or localised weather conditions that were not anticipated, and*
- 3. Delays as a result of disruption leading to serious hardship and congestion at the airfield or terminal.*

The movement and noise quota limits at Stansted Airport

1.6. The following table sets out the current limits for Stansted. For comparison purposes, it includes the limits from the previous restrictions which ran from October 2014 to October 2017.

Type of limit	2014-17	Current restrictions
Summer night movement limit	7,000	8,100
Summer night quota limit	4,650	4,650
Winter night movement limit	5,000	5,600
Winter night quota limit	3,310	3,310

1.7. In the DfT's decision document of July 2017, the following explanation was given for the upward adjustment of the movement limits in both summer and winter (Paragraph 5.16):

“in order to accommodate the number of movements of aircraft that have until this point been exempt from the restrictions. Airlines have planned their operations at Stansted under the rules that have been in place for many years and failing to make this adjustment would mean we would not achieve the aspect of the environmental objective concerned with maintaining the existing benefits of night flights. While this will not reduce Stansted's movement limits to below the airport's current level of movements, the combination of changes that we are proposing will mean communities do experience a benefit through being exposed to fewer flights that would otherwise be expected if no action was taken to prevent a proliferation of exempt aircraft”.

1.8. Similarly, the following explanation was given (Paragraph 6.26) for freezing the quota limits:

“We continue to think the current noise quota represents a suitable level given that more aircraft movements will have to be accommodated within it. This will incentivise airlines to use quieter aircraft so they can make full use of Stansted's adjusted movements limits”.

Carry-over (and overrun)

1.9. One feature of the restrictions is what is known as carry-over and overrun arrangements which give the airport flexibility to defer or bring forward movements and quota allowance from one season to the next. These arrangements were also part of the earlier restrictions. In the DfT's January 2017 consultation document, it gave the following explanation for these arrangements (Paragraph 1.15):

“As these seasons (summer and winter) vary in length, airports are given flexibility to manage their allowance, and may carry-over unused movements or quota from one season to another, or may over-run in one season which leads to a deduction in the following season. The rules for carrying-over or over-running are as follows:

- If required, a shortfall in use of the movements limits and/or noise quota in one

- season of up to 10% may be carried-over to the next season;*
- Conversely, up to 10% of an overrun in movements and/or noise quota usage in one season (not being covered by carry-over from the previous season) will be deducted from the corresponding allocation in the following season;*
 - An overrun of more than 10% will result in a deduction of 10% plus twice the amount of the excess over 10% from the corresponding allocation in the following season, and*
 - The absolute maximum overrun is 20% of the original limit in each case”.*

Appendix C

CAA Survey of Noise Attitudes 2014: Aircraft Noise and Sleep Disturbance (CAP 2161) – Published July 2021 – “SoNA Sleep”

(This summary is based on the Summary and Conclusions section of SoNA Sleep)

1. SoNA Sleep is a supplementary analysis to the original SoNA 2014 study, which was designed to obtain information on attitudes to daytime annoyance, and as a result, respondents were selected on daytime noise levels. The findings of SoNA Sleep are therefore indicative / exploratory rather than conclusive.
2. SoNA Sleep assesses attitudes to night-time noise using a sample of the 2014 study data set. The sample size is 1,483 respondents from around Heathrow, Gatwick and Stansted. Their average summer night noise exposure ranged from below 39 dB to greater than 54 dB. Below 39 dB effects are at worst modest whilst greater than 54 dB effects are serious and can involve lifestyle adaptation with increasing danger to public health.
3. The SoNA Sleep analysis aimed to do two things:
 - explore relationships between self-reported sleep disturbance and noise exposure
 - explore any potential relationship between self-reported sleep disturbance and self-reported quality of health
4. SoNA Sleep compared reported mean night-time disturbance scores against average night noise exposure using three different noise indicators, all of which are highly correlated with night-time self-reported sleep disturbance:
 - LAeq,8h – equivalent continuous sound level, average summer night 11pm-7am
 - Lnight – equivalent continuous sound level, average annual night 11pm-7am

- N60 – number of events of maximum single event noise level 60 dB or more during an average summer night (11pm – 7am)

Is LAeq,8h an appropriate indicator to use to estimate self-reported sleep disturbance arising from aircraft noise?

5. SoNA Sleep shows it is plausible that Lnight is inferior to LAeq,8h as Stansted and Gatwick Airports experience significant summer seasonality of night flights. N60 correlates almost as well as the other two metrics. There is insufficient evidence to change from the current practice of using LAeq,8h for UK assessments.

Is summer night, average mode, still the best time period to use as opposed to single mode?

6. SoNA Sleep finds no compelling evidence to switch away from average summer-night. It does recommend that future studies investigate associations with the highest noise level of either westerly or easterly runway operation.
7. Other SoNA Sleep findings were that the likelihood of being highly sleep disturbed was found to increase with increasing night-time noise exposure. For a given noise exposure, a higher proportion of residents was found to be highly sleep disturbed at 45 dB and 48 dB compared with pooled data from pre-1990 studies. However, the proportion was lower compared with pooled data from post-1990 studies.
8. Noise exposure and self-reported sleep disturbance were compared against health ratings and a measure of mental well-being. Poorer health ratings and lower mental well-being scores were found to be associated with sleep disturbance, but not with noise exposure.

Recommendations for future surveys

9. Despite the exploratory nature of this analysis, it has been possible to identify some areas where further research would be beneficial, If the objective is to understand better the relationship between night exposure and the effect on sleep, the following recommendations are made:

- conduct research in the summer so that attitudes and exposure are aligned;
- respondent selection to take into account night noise exposure levels and, in particular, any dominance of arrival noise at night;
- adequate sampling to enable further investigation of any association between self-reported night-time disturbance and single-mode LAeq,8h night exposure.