Gatwick Airport Northern Runway Project

Response to the Examining Authority's Written Questions (ExQ2) – Noise and Vibration

Book 10

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Table of Contents

1 Response to the Examining Authority's Written Questions – Noise and Vibration

1.1.1 The below table sets out the Applicant's response to the Examining Authority's Written Questions relating to Noise and Vibration.

ExQ2	Question to:	Question:
NOISE AND VIBRATION		
NV.2.1	Applicant	**Noise Thresholds** As noted in the Communities Against Gatwick Noise and Emissions (CAGNE) D2 submission [REP2-070], Stansted and Bristol airport expansion schemes used an adverse effect level of 69 L_{Aeq} day and 63 L_{Aeq} night, and the same values were not contested during the Examination of the Luton DCO. Why should the same values not be used for the Proposed Development? How would the Applicant propose to modify its off-site mitigation proposals through Appendix 14.9.10: Noise Insulation Scheme [REP4-017], if these noise levels were to be regarded as unacceptable?
		The Applicant gave a brief response on UAELs in ISH5, (see para 4.2.8 in **Written Summary of Oral Submissions from ISH5 5: Aviation Noise** [REP1-060]) which is expanded upon here. Government Planning Guidance on Noise (www.gov.uk/guidance/noise--2) provides a Noise Exposure Hierarchy Table which describes an "Unacceptable Adverse Effect", which should be prevented from occurring as follows: *Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effects of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.*

		The NPSE makes no reference to a UAEL, nor does DfT policy on aviation noise since then. There is therefore no aviation noise policy basis for a UAEL. The Heathrow Airport Third Runway PEIR referred to UAELs of $L_{eq,\ 16\ hour}$ 71 dB and $L_{eq,\ 8\ hour}$ 66 dB at night. The justification for the UAEL at this level was provided in the Heathrow PEIR Appendix 17.1 Annex F. The methodology adopted in the Heathrow PEIR was reviewed by an appointed Noise Expert Review Group (NERG) who confirmed the methodology was technically robust, and appropriately applied policy guidance. Gatwick Airport noise modelling for the NRP shows zero population counts for air noise contours at these values. If the Examining Authority wish to see the derivation of the Heathrow UAELs the extract from the Heathrow PEIR Appendix 17.1 Annex F is provided in the following box.

Heathrow PEIR Appendix 17.1 Annex F

18.1.5 UK policy does not define daytime or night-time UAEL values for aircraft noise or aircraft ground noise. In the assessment, the UAEL value for the daytime is based on the London Borough of Richmond, Supplementary Planning Document: Development control for noise generating and noise sensitive development. The Supplementary Planning Document is based on Professional Practice Guidance on Planning and Noise (ProPG) guidance (ProPG, 2017) which states that

'Once internal LAeq levels exceed the target levels by more than 10 dB, they are highly likely to be regarded as "unacceptable" by most people, particularly if such levels occur more than occasionally. Every effort should be made to avoid relevant rooms experiencing "unacceptable" noise levels at all and where such levels are likely to occur frequently, the development should be prevented in its proposed form." (ProPG 2017, Figure 2)'

18.1.6 ProPG incorporates BS8233 to set indoor 'target levels' and sets target level of 35 dB LAeq,16h for resting in the daytime. Thus, an internal level of 45 dB LAeq,16h would mark the onset of unacceptable levels in the daytime. Assuming a precautionary outdoor to indoor level difference of 26 dB [6] this leads to a daytime external UAEL value of 71 dB LAeq,16h. A 26 dB level difference represents property with a masonry construction and either single glazed windows (closed) or thermal double-glazed windows (closed) with an open trickle vent. This represents a precautionary approach to identifying an external exposure above which, without mitigation**,** people will have exhausted their ability to protect themselves from unacceptable levels indoors (i.e. by closing their existing windows). This is an external level at which Heathrow would offer full noise insulation which would ensure that internal noise levels would be controlled well below the UAEL. It is also a level of exposure where the property owner would be eligible to the offer to purchase the property under the WPOZ scheme (Heathrow would then install full noise insulation before resale). However, in the event that the owner of the property refuses or does not respond to both Heathrow's offer to purchase and Heathrow's reasonable endeavours to offer and install the noise insulation, then the occupier would still be exposed to levels above the UAEL. In these situations, it would be justified for Heathrow to seek powers though the DCO to install the noise insulation to prevent the unacceptable exposure from occurring.

18.7.7 This daytime UAEL would apply to all DCO Project noise sources, except construction noise.

18.1.8 The daytime UAEL is similar to those set on other infrastructure projects and implied by previous policy / guidance.

18.1.9 The night-time UAEL value for aircraft noise and aircraft ground noise is set at 66dB LAeq,8h. This is based on the Richmond SPD identifying a night-time target level of 30 dB LAeq,8h for bedrooms [the same value for bedrooms is provided in ProPG Figure 2] and specifying that levels more 10 dB above this target level would be unacceptable. Applying the same precautionary outdoor to indoor 26 dB level difference described earlier, yields a night-time UAEL of 66dB LAeq,8h (i.e. 30 dB target level, + 10 dB to define an indoor threshold for unacceptable levels, +26 dB indoor to outdoor level difference). 1[6] The sound level difference assumes that windows are closed. The 26dB(A) sound level difference is precautionary and conservative, set lower than the range of sound level difference achieved in the existing Heathrow Quieter Homes Initiative (35-45dB). Greater levels of attenuation will be practical with enhanced levels of façade insulation.

		The APF requires airport operators to provide assistance with relocation at a level of Leq 16 hr 69dB. The **Luton Airport expansion project** ES refers to a 'precautionary UAEL' of Leq 16 hr 69dB, noting '*69 dB LAeq,16h may therefore be considered a 'precautionary UAEL' for daytime noise (because this is the threshold for assisting with the costs of moving rather than mandatory acquisition of homes that would be expected to be required at a high level of noise exposure where the actual UAEL is reached)*'. The Luton ES notes no houses are above this noise level. Hence the project could take a precautionary approach rather than deriving the actual UAEL as was done at Heathrow, and this was not challenged during Examination. The Luton Airport expansion project ES also refers to a 'precautionary UAEL' of Leq 8 hr 63dB for night-time, noting '*the night-time UAEL is informed by the approach adopted in the Bristol Airport Application to increase airport capacity*'. The Bristol Airport expansion project ES provides no justification for this value. The Luton Airport Expansion project ES notes no houses are within this area. Hence the project could take a precautionary approach, rather than deriving the actual UAEL as was done at Heathrow, and this was not challenged during Examination. The Heathrow PEIR was reviewed by a Noise Expert Review Group (NERG) of independent experts to scrutinise the methodology adopted. Appendix 17.1 provides the NERG Statement that included the following: *The Noise Expert Review Group (NERG) has reviewed the noise and vibration elements of the PEIR (Chapter 17 and Appendix 17.1, Annex A to H) prepared for Heathrow Airport. We consider that:* • *The information has been presented in an objective manner;* • *The methodology is technically robust, and has appropriately applied policy guidance;* • *The analysis has properly made use of the relevant available evidence regarding the effects of noise on health; and* • *The conclusions reached reflect the analysis undertaken.*

		The UAELs derived in the Heathrow PEIR (daytime external UAEL value of 71 dB LAeq,16h and night-time external UAEL of 66dB LAeq,8h) are therefore considered more appropriate actual UAEL values than the 'precautionary' UAELs referred to in the Luton expansion project ES, which were also acknowledged to be below the actual UAEL. NPPF (para 180 €) states: "*Planning …decisions should contribute to and enhance the natural and local environment by: e) preventing new ... development from contributing to ... unacceptable levels of ... noise pollution …*". The PPG(N) definition of unacceptable adverse effect is: "*Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and nonauditory" and that "this situation should be prevented from occurring*" (para 005) The threshold for these effects is described as an Unacceptable Adverse Effect Level (UAEL). As an example of an action to prevent unacceptable adverse effects, the NPS for National Networks sets out that "*the applicant may consider it appropriate to provide noise mitigation through the compulsory acquisition of affected properties in order to gain consent for what might otherwise be unacceptable development*." (para 5.199). The APF states "*The Government continues to expect airport operators to offer households exposed to levels of noise of 69 dB LAeq,16h or more, assistance with the costs of moving.*" 69 dB LAeq,16h is therefore considered a 'precautionary UAEL' because this is the threshold for assisting with the costs of moving rather than mandatory acquisition of homes that would be expected to be required at a high level of noise exposure where the actual UAEL is reached. Of the projects referred to in recent years, and as is summarised above, only Heathrow as had to explore noise levels above the precautionary UAEL because the other airports did not have properties in this noise zone. The Heathrow UAELs of Leq 16 hr 71dB and Leq 8 hr 66dB, that were endorsed by the Noise Expert Review Group are therefore considered the actual UAELs.

		The Northern Runway Project air noise modelling shows zero population counts for air noise above these UAEL values. There is therefore no requirement to prevent the noise impact at any properties. The Applicant's forecasts in the ES show there are approximately 35 properties above the precautionary UAELs referred to at Luton. All of these properties would be offered the Inner Zone noise insulation scheme that would reduce internal noise levels to below the internal UAELs referred to above. The Applicant notes the APF requires airport operators to provide assistance with relocation at a level of Leq 16 hr 69dB and has adopted a more generous offer using a threshold noise level of Leq 16 hr 66 dB, above which home owners would be offered the Home Relocation Assistance Scheme specified in **ES Appendix 14.9.10: Noise Insulation Scheme** [REP4-017]. In order to offer homeowners the option to move from the areas most affected by the highest noise levels from the Project, homeowners within the Leq 16 hr 66 dB standard mode noise contour with the Northern Runway in operation would be offered a package to assist them in moving. Our ES noise forecasts indicate approximately 100 homes would be in this noise zone in the noisiest year. Approximately 75 of these homes have already (in 2019) been above this noise level and we therefore expect only a small number of homeowners to take up this offer. Eligible applicants would receive a payment covering reasonable moving costs, estate agent fees up to 1% of the sale price, and stamp duty, up to a total maximum of £40,000. The Examining Authority has asked how the Applicant would modify the Noise Insulation Scheme or the Home Relocation Assistance Scheme if the UAELs adopted for the Bristol and Luton expansion project are adopted. The Applicant's proposed mitigation for properties above these levels, which is to offer noise insulation and home relocations assistance, is consistent with the APF, and so there would be no need for any modification.
NV.2.2	Applicant	**Off-site mitigation**

		As a general principle is it accepted that once a premises is predicted to be eligible for off-site mitigation the aim is to ensure the necessary mitigation is in place before the noise occurs that would otherwise be likely to cause the significant adverse noise effect on occupants of the premises? Is it also accepted that the internal living environment must remain acceptable, including with regard to ventilation and overheating?
		It is accepted that once a premises is predicted to be eligible for off-site mitigation to mitigate significant adverse effects the mitigation should be in place before the noise occurs that would otherwise be likely to cause the significant adverse noise effect on the occupants of the premises. Significant adverse noise effects from the Project or from total noise from the airport arise only within the Inner Zone of the Noise Insulation Scheme. Accordingly **ES Appendix 14.9.10: Noise Insulation Scheme** [REP4-017] para 4.3.2 commits to launch the Inner Zone scheme within 6 months of the commencement of Work Nos. 1 – 7 comprised in the Project, and paragraph 4.3.6 notes the aim of completing the scheme prior to opening of the Northern Runway. The Applicant is proposing measures to assist the internal environment to remain acceptable in hot weather by providing acoustic ventilators which provide ventilation whilst windows are closed. The NIS has been revised to specify the minimum air change performance at 170m^3 /hr noting this would allow for at least two air changes per hour to be provided for the vast majority of rooms treated. The acoustic ventilators should allow windows to remain closed more often in warmer weather, but are not expected to completely negate the need to open windows in certain circumstances. Experience at other airports is that one acoustic ventilator at this air throughput is sufficient. In order to provide further reassurance that overheating can be avoided, the Applicant is prepared to also offer thermal insulation to roof spaces above noise sensitive rooms and window blinds, if not already in place. The Applicant notes that in the ANPS Paragraph 5.68 the requirement to meet the aims of avoiding and minimising noise effects is within the context of Government policy on sustainable development.

		The Applicant is holding a noise Topic Working Group with the local authorities planned for July 18th to discuss details of the NIS including options to help further reduce the risk of overheating and will submit a revision to the ExA as soon as possible.
NV.2.3	Applicant	**Noise insulation inner and outer zones** Given that the 2013 APF says *"We will continue to treat the 57dB LAeq 16 hour contour as the average level of daytime aircraft noise marking the approximate onset of significant community annoyance"* and that post Survey of Noise Attitudes (SONA) the ANPS 2018 refers to 54 dB day, would not a single noise insulation scheme, aligned at least with the timescales of the proposed zone 1 scheme, starting at 54 dB achieve greater consistency with ANPS 5.68? Could not the same argument apply to night-time noise, recognising attention drawn to night-time noise and sleep disturbance in policy wording?
		The ANPS paragraph 5.58 footnote refers to Leq 16 hr 54dB as the annual average noise levels for reference above which noise should be limited and where possible reduced. Government consultation draft document Aviation 2050 (2018) in paragraph 3.121 refers to the same noise level as appropriate for noise insulation, albeit for airspace changes that lead to significant increased overflight and noise levels increase by at least Leq 3dB. Accordingly, the Applicant has chosen Leq 16 hr 54dB as the threshold above which to offer noise insulation to mitigate adverse noise effects, notwithstanding the government policy has not changed from the requirement to offer insulation at 63dB. All adverse effects, above LOAEL, Leq 16 hr 51dB are minimised through the range of air noise mitigation measures summarised in Section 14.8 of **ES Chapter 14: Noise and Vibration** [APP-039].

		Paragraph 5.68 of the ANPS draws the distinction between adverse effects, which are to be minimised within the context of Government policy on sustainable development, and significant adverse effects on health and quality of life, which are to be avoided within the context of Government policy on sustainable development. The NPSE clarified significant adverse effects on health and quality of life as those above SOAEL, without giving SOAELs for any noise sources. SOAELs are discussed and derived for aircraft noise in Section 14.2 of **ES Chapter 14: Noise and Vibration** [APP-039] as Leq 6 hr 63dB and Leq 8 hr 55dB. To respond to the policy requirement to avoid significant noise effects above these levels the Applicant has introduced an Inner Zone noise insulation package that offers the highest levels of insulation to all noise sensitive rooms. As discussed in Section 14.2 of the ES, airport planning precedent confirms that the provision of noise insulation above a SOAEL of Leq 16 hr 63 dB is taken as satisfying the first aim of the NPSE to 'avoid significant adverse impacts on health and quality of life'. Hence, significant annoyance may arise in a community above Leq 16 hr 54dB, ie 3dB above the LOAEL, but the requirement to avoid significant adverse effects in policy by offering noise insulation to individuals arises at SOAEL, Leq 16 hr 63dB ie 9dB higher. It is for this reason that that in recent years airports have offered two-tiered noise insulation schemes, such as that proposed by the Applicant, albeit these exceed stated policy requirements. These schemes ensure homeowners exposed to the highest noise levels receive the highest level of noise protection, and those which experience noise levels which are lower receive mitigation which is appropriate to the level of impact. This approach is consistent with the aims and requirement of policy, and the Applicant would not want to move away from this approach. With regard to night-time noise, similarly the ES notes the distinction between adverse effects to be minimised and significant adverse effects on health and quality of life above SOAEL (Leq 8hr 55dB) which are to be avoided, within the context of Government policy on sustainable development.

		The Inner Zone NIS is set at the Leq 8r hr 55dB contour, which encompasses the Leq 16 hr 63dB contour, avoiding the need to have separate day and night Inner Zones, which would unnecessarily complicate the scheme yet provide no additional protection to any property. There is no policy guidance on a lower threshold for night-time noise above which to offer noise insulation, but the Applicant notes that the Leq 8hr 48dB, ie 3dB above the night LOAEL contour approximately aligns with the Leq 16 hr 54dB, ie 3dB above the daytime LOAEL contour that forms the Outer Zone boundary of the NIS. Accordingly, it is considered that an equivalent level of mitigation from night noise is provided through the receipt of insulation by properties which are within the Leq 16 hr 54dB contour area.
NV.2.4	All IPs	**Off-site mitigation** To what extent could relevant authorities, including local planning authorities, play a role in, for example, reviewing the forecasts of premises identified as eligible, involvement in community engagement including support with special cases, and approving proposed designs with regard to relevant standards, to assure consistency with the first aim of noise policy as set out in the ANPS at para 5.68?
		ANPS Paragraph 5.68 notes: Development consent should not be granted unless the Secretary of State is satisfied that the proposals will meet the following aims for the effective management and control of noise, within the context of Government policy on sustainable development: • Avoid significant adverse impacts on health and quality of life from noise; etc The noise insulation scheme is required to be effective in reducing external noise levels above SOAEL (i.e. in the Inner Zone) coming into homes. The scheme has been designed in consultation with the local planning authorities and will be delivered to achieve this objective.

		The Applicant considers that **ES Appendix 14.9.10: Noise Insulation Scheme** [REP4-017] and Requirement 18 of the **Draft Development Consent Order** [REP6-006] clearly detail what is required for eligible persons and which persons are eligible. The noise contours identifying premises as eligible are those contained in **ES Appendix 14.9.10: Noise Insulation Scheme** [REP4-017] and available on the on line air noise viewer, the link to which can be found here: www.gatwickairport.com/business-community/future-plans/northern-runway**/**. The Applicant has consulted the local planning authorities on these through the TWG in preparing the ES and the NIS. Paragraph 4.3.1 of **ES Appendix 14.9.10: Noise Insulation Scheme** [REP4-017**]** and Requirement 18(1) of the **Draft Development Consent Order** [REP6-006] require the Applicant to submit to each relevant planning authority details of how the noise insulation scheme is to be promoted and administered to persons considered to be vulnerable to noise related effects to ensure equitable access to the noise insulation scheme. In this way special cases should be adequately considered and aided. The Noise Insulation Scheme has also been developed in consultation with local planning authorities through the TWG process and the DCO Examination. Revision 1 to the Noise Insulation Scheme was submitted at the DCO Examination at Deadline 4 on 15 May 2024, addressing comments and questions from the Examination Authority, and stakeholder representations made. A further TWG is planned to confirm the final details of the scheme. Through this engagement the views of the local planning authorities have been taken into account and responded to as appropriate in developing the scheme. It is not agreed that it is necessary for local planning or other authorities to be provided with roles in implementing the noise insulation scheme beyond those already proposed, which incur the need for resource requirements for the relevant authorities and inevitably increased costs for an undertaker, where this is not proven to be necessary for the mitigation to be effective. Therefore, it is not accepted that there is a need for the local planning or other relevant authorities to have the further roles detailed by the ExA to assure consistency with ANPS paragraph 5.68.

NV.2.5	Applicant	**Noise limit values** Para 5.60 of the ANPS states that "*The benefits of future technological improvements should be shared between the applicant and its local communities, hence helping to achieve a balance between growth and noise reduction*." The Applicant summarised at D3 a benefits sharing calculation in relation to Bristol airport, provided an updated central fleet transition case at D4, introduced its revised noise limit proposals at ISH8 and would submit these revised proposals at D6. Comparing 2029 with 2019 how much quieter is the aircraft fleet expected to be in terms of source noise levels? Please provide sufficient details to support the response provided. If the noise limits for air noise only were expressed as follows: From the commencement of dual runway operations, the forecast change in air noise level caused by the operation of the airport at any residential premises shall be no greater than: x_1 dB in terms of L_{Aeq} day summer period y_1 dB in terms of the L_{Aeq} night summer period x_2 dB in terms of L_{Aeq} day non-summer period y_2 dB in terms of the L_{Aeq} night non-summer period compared with the 2019 forecast values for the same parameters, where x_1, y_1, x_2, y_2, are real numbers. Whilst the comparison is between values of the same parameter, which parameter is considered most appropriate in this context and why? Are limits in terms of other parameters considered necessary? What would be the proposed values of x_1, y_1, x_2, and y_2? How do the values proposed demonstrate consistency with the ANPS statement above?

		Please provide sufficient details to support the response provided.
		The Applicant has advised on how much quieter the Updated Central Case fleet is expected to be in 2029 compared to 2019 in Section 3 of **The Applicant's Response to Actions ISH8 – Noise** [REP6-087] in response to Action Point 14. It was explained that future reduction in arrivals noise would be smaller than in departures noise, and estimates were provided. Moreover, it was explained that for day and night the baseline noise contour areas reduce by about 7% for the Leq 16 hr 51dB contour and 8% for the Leq 8 hr 45dB, indicating an average noise reduction of approximately 0.3dB and 0.4dB respectively. The changes in the contour areas between the 2019 baseline levels and the 2029 Updated Central Case baseline levels from which the estimation of how much quieter the aircraft fleet expected to be in terms of source noise levels is contained in the aforementioned document, and it is not repeated here. The ES details the predicted noise changes from the 2019 baseline to 2032 with the Project in various figures including: • Figure 14.9.6: 2032 Air Noise with Project Central Case v 2019 Baseline Difference, Leq 16 hr • Figure 14.9.7: 2032 Air Noise with Project Slower Transition Case v 2019 Baseline Difference, Leq 16 hr • Figure 14.9.12: 2032 Air Noise with Project Central Case v 2019 Baseline Difference, Leq 8 hr Night • Figure 14.9.13: 2032 Air Noise with Project Slower Transition Case v 2019 Baseline Difference, Leq 8 hr Night It can be seen that during the day the increases vary between about -2dB to + 3 dB outside the airfield with the majority in the range 0 to +1dB. At night increases are smaller, varying between about -2 and +1 in most areas outside the airfield. The study area encompasses a population of about 28,000 who would experience noise changes in these ranges over the 2019 baseline.

		What would be the proposed values of x1, y1, x2, and y2 ? The ES makes clear that the impacts of the Project are not measured by this comparison, because it includes future baseline change irrespective of the Project. Rather the impacts of the Project are assessed by the noise change between the Project and the baseline in a given future year. 2032 is identified as the year of peak noise impacts and the noise changes compared in this way are tabulated in Table 14.9.10 for daytime and Table 14.9.11, for night-time listing the numbers of people experiencing each degree of change. These tables show that different noise changes are expected across the study area of about 28,000 people such that there would be no single values to the numbers x1, y1 postulated in the question, but rather numerous values applying to different areas around the airport. If such limits were simplified to the highest increase over the 2019 baseline for any property, 3dB for Leq 16 hr, then this may provide control and certainty for the area worst affected i.e. that directly overflown by the Northern Runway, shown purple in ES Figure 14.9.7. This is the area where approximately 40 properties are identified in the ES (Paragraphs 14.9.102 to 14.9.103) with noise increases (over the 2032 baseline) of over 3dB where significant effects are predicted, and mitigated with the Inner Zone NIS. But if applied universally it would provide a very poor level of control over the vast majority of the 28,000 people for whom lower noise increases are forecast. If such limits were simplified to the lower levels, say 1 or 2 dB, then the area directly overflown by the Northern Runway, shown purple in ES Figure 14.9.7 could not comply. This is the area where approximately 40 properties are identified in the ES (Paragraphs 14.9.102 to 14.9.103) with noise increases (over the 2032 baseline) of over 3dB where significant effects are predicted, and mitigated with the Inner Zone NIS. So, to provide a high level of control or certainty it would be necessary to apply differing noise change limits across study area of about 28,000 people, which would be extremely complicated and in the Applicant's view unenforceable. Furthermore, it may not give the airport sufficient flexibility to operate in different conditions. This is therefore not a realistic and appropriate form of limit for a Noise Envelope.

		Whilst the comparison is between values of the same parameter, which parameter is considered most appropriate in this context and why? The Noise Envelope should limit noise at all times of day and night. Therefore x1 and y1 are both considered appropriate and necessary. x1 and y1 are LAeq day summer period and LAeq night summer period, i.e. from 16 June to 15 September. In ISH8 the Applicant explained that the noise contours and noise impact assessment methodology prescribed in government policy (e.g. in defining LOAEL) and CAA guidance (e.g. CAP1616) relate to the 92-day summer season (16 June to 15 September) for good reason, because UK airports tend to be busier in that period and Gatwick too has more traffic in this period. Accordingly, and as previously explained, LAeq day summer period and LAeq night summer period are considered to the most appropriate parameter (or metric In ISH8, the Applicant explained that there is no realistic prospect that the winter season could become noisier than summer. The Applicant notes also the submissions by the JLAs that they believed summer will remain peaky and could become more peaky, and the Applicant's response to these. As there is no realistic prospect that winter could become noisier or as noisy as summer, the Applicant is content that limiting noise in the summer period means the airport is appropriately capped in terms of its overall noise impact. The Applicant notes that other airports follow DfT policy and CAA guidance and limit noise in the 92 day summer season without the need for non-summer limits. Therefore, the x2 and y2 values are not necessary. *Are limits in terms of other parameters considered necessary?* The Applicant's consideration of which noise metrics to use to form limits in the noise envelope is documented in Section 2 of **ES Appendix 14.9.5: Air Noise Envelope Background** [APP-175] and stakeholder consultation on the same in **ES Appendix 14.9.8: Noise Envelope Group Output Report** [APP-178] and **ES Appendix 14.9.9: Report on Engagement on the Noise Envelope** [AS-023]. **ES Chapter 14: Noise and Vibration** [APP-039] paragraphs 14.9.182 to 14.9.184 summarise briefly:

		14.9.182 More commonly, noise envelopes that restrict noise impacts use noise contours to either limit the area of the contour or the population within it. Leq, 16 hour day or Leq, 8 hour night contours are the most common contours used because, although communities can feel they do not reflect their experience on noise, the relationships between Leq, noise levels and annoyance and sleep disturbance in the UK are well established compared to other metrics, ensuring the contour metric relates to the impact. Noise event metrics such as Lmax are less effective, because, taking no allowance for numbers of noise events, they are not good indicators of health effects when used in isolation, and provide no certainty on the numbers of events. *14.9.183 Whilst setting a noise envelope in terms of the population within a given noise contour, such as Leq, 16 hour day or Leq, 8 hour night, has the advantage that it directly relates to the noise impact on the community, the population within the area around Gatwick is not within the airport's control and a contour limit set on this basis could not be monitored or applied with certainty.* *14.9.184 Using the physical size of the Leq, 16 hour day or Leq, 8 hour night contours is therefore considered to be the most appropriate option. A contour which fixes the maximum noise footprint of the airport would limit the throughput of the airport, unless quieter planes can be encouraged to operate. It would incentivise the airport to encourage airlines to use the quietest aircraft and quietest operating procedures to meet it, whilst allowing growth to occur within a clear noise limit. It would also provide local communities with certainty on future noise levels.* Therefore, additional limits based on other parameters, including x2 and y2 values, are not considered necessary. *How do the values proposed demonstrate consistency with the ANPS statement above?*

		The ANPS statement from §5.60 is: "*The benefits of future technological improvements should be shared between the applicant and its local communities, hence helping to achieve a balance between growth and noise reduction.*" The Applicant has provided an assessment of noise impacts for the Updated Central Case fleet in **ES Addendum - Updated Central Case Aircraft Fleet Report [REP4-004**] which is the most likely. In oral evidence at ISH8 **The Applicant's Written Summary of Oral Submissions ISH 8: Agenda Item 6 – Noise [REP6-080]** and Deadline 6 submissions **ES Appendix 14.9.7 The Noise Envelope - Version 3 – Tracked [REP6-056]** the Applicant confirmed its commitment to setting the noise envelope limits based on the Updated Central Case fleet. An illustration of how the benefits of noise improvements are shared is provided in **ES Appendix 14.9.9 Report on Engagement on the Noise Envelope** [AS-023] pages 165 to 175 in respect of the slower transition fleet. The methodology adopted is described fully in that appendix, and is that referred to in the Inspector's report on the Bristol Airport Planning Appeal Decision, Appeal Ref: APP/D0121/W/20/3259234, 2 February 2022**.** The Inspector in that decision considered sharing of the noise benefit in terms of the proportion of the full potential reduction in LOAEL and SOAEL contour areas possible due to fleet transition to quieter types, which is then taken up by ATM growth and the amount of reduction which is remaining. Page 168 of ES Appendix 14.9.9 provide a worked example of the method used for the Bristol airport case. Applied to this case, 2019 can be taken as the baseline starting point. The full potential reduction in LOAEL contour area by a given year, eg 2038, is the difference between the contour area with the 2019 fleet and the contour area with the fleet transitioned in the future baseline without the Project. The extent of the difference in the contour area which is then taken by ATM growth is the proportion of the benefit goes to the airport/industry, with the remaining share going to the community. Page 173 of Appendix 14.9.9 gives the calculation for the slower transition fleet. The results are reproduced in the table below along with the results

of the same calculation using the Updated Central Case noise contour areas reported in **ES Addendum - Updated Central Case Aircraft Fleet Report** [REP4-004] and values for 2032 added**.**

	Daytime Benefit Share % to Community		**Night Benefit Share % to Community**	
	2032	2038	2032	2038
Slower Fleet Transition	-15%	50%	13%	66%
Updated Central Case Fleet	**31%**	**58%**	**50%**	**69%**

The following calculations show how these percentages are calculated for the Updated Central Case (UCC) fleet using the same methodology. The calculations for the 2038 Slower Transition Fleet (SFT) are as related in Appendix 14.9.9 on p173 day and p175 night.

2038 UCC Day:

2038 Baseline Contour Area with 2019 fleet = 144.0

2038 Baseline Contour Area with UCC fleet = 101.7

NE limit = 119.4

Full benefit available =144.0-101.7 = 42.3

Community benefit = 144.0-119.4 = 24.6

% share to community = 24.6/42.3 = 58%

		2038 UCC Night: 2038 Baseline Contour Area with 2019 fleet = 159.4 2038 Baseline Contour Area with UCC fleet = 123.2 NE limit = 134.6 Full benefit available = 159.4-123.2 = 36.2 Community benefit = 159.4-134.6 = 24.8 % share to community 24.8/36.2 = 69% 2032 UCC Day: 2032 Baseline Contour Area with 2019 fleet = 144.0 2032 Baseline Contour Area with UCC fleet = 116.5 NE Limit = 135.5 Full benefit = 144.0-116.5 = 27.5 Community benefit = 144.0-135.5 = 8.5 % share to community = 8.5/27.5 = 31% 2032 UCC Night: 2032 Baseline Contour Area with 2019 fleet = 159.4 2032 Baseline Contour Area with UCC fleet = 134.5 NE Limit = 146.9 Full benefit available = 159.4-134.5 = 24.9 Community benefit = 159.4-146.9 = 12.5 % share to community = 12.5/24.9 = 50%

		2032 STF Day: 2032 Baseline Contour Area with 2019 fleet = 144.0 2032 Baseline Contour Area with SFT fleet = 125.6 NE Limit = 146.7 Full available benefit = 144.0-125.6 = 18.4 Community benefit = 144.0-146.7 = -2.7 % share to community = -2.7/18.4 = -15% 2032 SFT Night: 2032 Baseline Contour Area with 2019 fleet = 159.4 2032 Baseline Contour Area with SFT fleet = 143.9 NE Limit = 157.4 Full available benefit = 159.4-143.9 = 15.5 Community benefit = 159.4-157.4 = 2.0 % share to community = 2.0/15.5 = 13% The change made to the noise envelope limits to reflect the Updated Central Case fleet, increases the share of the benefits going to the community. In 2019 the area of the Leq16 hr day contour was 136.0 km^2 and the area of the Leq 8 hr night contour was 159.4 km^2. With the noise envelope limits now based on the Updated Central Case Leq, 16 hour day or Leq, 8 hour night contours, for any year of operation the noise envelope ensures that air noise contours do not exceed contour areas with one runway in 2019, and that an amount of the benefit of technological improvements in noise is always required to be shared.

		As can be seen from the above, the extent to which the benefits of improvements in noise performance are shared with the community is greater in 2038 than it is in 2032, and this is because in the early years there is anticipated to be a greater increase in the number of ATM's, which would be expected of any airport expansion project. The above summarises a calculation of how the benefits of improvements in aircraft noise performance are shared. There are also significant wider socio-economic benefits of the airport which arise from the point the runway opens and which are relevant to the consideration of the benefits of the Project as a whole.
NV.2.6	Applicant	**Noise limit compliance** Despite the Applicant's assurances at ISH8, and considering the submissions made by the Joint Local Authorities, does the Applicant accept that once capacity has been declared it may not be able to prevent a forecast breach of a noise limit because of, for example, slot allocations that have already been made through existing rights? Is this what is meant by *"including respecting, for example, historic slot rights"* at 7.2.3 of the Appendix 14.9.7: The Noise Envelope Version 2 [REP5-029]? To what extent would a requirement within the DCO carry sufficient weight to overcome any or other such constraint that may interfere with compliance with any noise limit? Would it be possible to factor in any constraints imposed by '*other laws and international obligations'* with reference to R15(3) of the dDCO [REP5-004] into the forecasting process, in addition to the noise limits, to determine capacity that could be declared that would be consistent with meeting the noise limits?
		The Applicant accepts that should the number of slots allocated be such that the noise levels from the aircraft exceed the noise envelope contour then the Applicant would need to seek to negotiate the return of slots with the airlines to achieve compliance, as it could not compel the return of such slots where they have gained

		historic rights status. However, as is detailed in Appendix A to **The Applicant's Response to Actions from ISH 8: Noise** [REP6-087]: - At no point in the operation of the airport to date have all slots which are made available been taken through historic rights, meaning there have always been slots available in the slot pool and flexibility to remain within capacity limits; - It is not considered that there is any realistic possibility of that situation arising, taking into account the robust forward-looking nature of the controls that are proposed, the need to evidence how compliance will continually be achieved and the measures to do this year on year, and the early 'shadow' implementation of the noise envelope two years prior to operations from the NRP commencing. The words at paragraph 7.2.3 of **ES Appendix 14.9.7: The Noise Envelope** [APP-177] do mean that measures in a compliance plan would need to respect historic rights, and that these cannot require airlines to give up slots, or to operate them using different aircraft to achieve compliance with the noise envelope. The ExA has asked "*To what extent would a requirement within the DCO carry sufficient weight to overcome any or other such constraint that may interfere with compliance with any noise limit?*". That question appears to ask whether a DCO Requirement could be drafted such that historic rights do not have to be respected. The Applicant has not and will not request any ability to not respect the position of historic rights, which would place the Project at a variance with the position for all other regulated 'co-ordinated airports'. It is with a view to respecting historic rights and ensuring such a circumstance as the ExA have hypothesised in their question that the Applicant has produced its primarily forward-looking noise envelope, which will ensure that such breaches do not occur. Whilst the above sets out the Applicant's position on not seeking anything to disapply historic rights, as the Applicant has also already detailed in Appendix A to **The Applicant's Response to Actions from ISH 8:**

		Noise [REP6-087], in the event of persistent breach enforcement action may be taken under the Planning Act 2008. An ultimate sanction under such Planning Act 2008 enforcement procedures could be the imposition of a court injunction, to prevent continued operations which result in breaches of the Noise Envelope contour limits. Whilst this would not remove historic rights, it would have a more direct impact upon and likely commercial consequences for the airport. This would be an incredibly serious business and reputational issue for the airport, and the Secretary of State should be reassured not only by the noise envelope processes which the Applicant has committed itself to, but also the knowledge that no major airport would operate their business in a manner which would allow this situation to come to pass. The approach taken to capacity planning and seasonal declaration undertaken by the Airport is explained at paragraph 2.3 of Appendix A to **The Applicant's Response to Actions from ISH 8: Noise** [REP6-087]. Gatwick is designated as a fully co-ordinated airport i.e. it is capacity constrained and without imposing limits on the number of aircraft which can operate from the airport, the capacity of the airport would be exceeded. Gatwick therefore must plan capacity at the Airport to be confident it will be within the relevant capacity constraints and the business will perform to the required level. This business planning exercise of course ensures that as part of remaining within its capacity constraints the Airport's level of capacity will remain compliant with any other constraints which are imposed by '*other laws and international obligations*'. As has been explained, the noise envelope forecasting exercise is to be undertaken in lock-step with the business capacity planning, to ensure the two are in alignment and the airport is operated in accordance with all of the relevant capacity constraints, including those imposed by the DCO and those imposed by other relevant applicable laws. Whilst this is the case, it is not considered that it would be an appropriate exercise for the independent noise reviewer to otherwise be checking that the airport is operating within all constraints imposed by '*other laws and international obligations*', particularly in circumstances where the noise forecast for each of the future five years, correlated against the actual noise levels year on year, shows there is not an exceedance.
NV.2.7	Other IPs	**Independent noise reviewer**

		Provided the compliance process is detailed sufficiently within the requirement(s) of the dDCO would other Interested Parties accept that the Civil Aviation Authority, acting as the independent noise reviewer, would be a relevant authority to review the Applicant's analysis and forecast and confirm compliance with the requirement(s)?
		N/A – this question is not directed at the Applicant.
NV.2.8	All IPs	**Noise limit reviews** Whilst routine periodic reviews and extraordinary reviews are considered in R16 in conjunction with Section 8 of Appendix 14.9.7: The Noise Envelope Version 2 [REP5-029] to what extent could this be sufficiently detailed in requirement(s) that allows for both routine periodic reviews and the extraordinary reviews? How often should routine reviews take place? Who should be able to initiate an interim/extraordinary review? Who should participate in them and how? What would be the scope of such reviews?
		The Applicant's view is that the inclusion of this information in Section 8 of **ES Appendix 14.9.7: The Noise Envelope** [APP-177], which will be a certified document under the DCO, and the cross-reference to this in R16 of the DCO, is the most effective way to detail when reviews are required and what the scope of those are in a manner which is clearly intelligible. Moreover, it is not considered that there would be any particular benefit from a perspective of clarity of enforceability should the detail of Section 8 be included on the face of the DCO. Put simply, what Section 8 of **ES Appendix 14.9.7: The Noise Envelope** [APP-177] provides for must be complied with.

		In terms of the four questions in relation to the specifics of the reviews, the Applicant has set out the position for how often reviews should be undertaken, who should be capable of initiating extraordinary reviews, who should participate in those and what the scope of them should be. Much like the rest of the Noise Envelope, the approach to reviews has been very carefully considered to ensure that it is appropriate in terms of its scope and frequency, and in respect of extraordinary reviews to ensure fairness. Whilst the Applicant will of course note responses of Other IP's on those matters, it is not anticipated that there is any necessity for amendments to be made to the review processes which have been provided for in Section 8 of **ES Appendix 14.9.7: The Noise Envelope** [APP-177].