



Gatwick Airport Northern Runway Project

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

Book 10

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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.

ExQ1	Question to:	Question:
NOISE AND VIBRATION		
NV.1.1	The Applicant	<p>Replacement Noise Bund</p> <p>Paragraph 5.2.72 of the ES [APP-030] describes the existing bund which attenuates noise as having a height of up to 12m. It is to be replaced with a new bund and wall which would be up to 8m high in the west and 10m in the east.</p> <p>Why is the height of the replacement lower than the existing?</p>
		<p>Noise modelling of different bund heights was carried out as a sensitivity test to confirm the optimal height. It was found that a height of 10m gave only 0.5dB less attenuation than 12m at the nearest receptor, so 10m was adopted for the preferred design. The height of the bund is 10m and reduces to 8m at its western end due to height restrictions for the main runway.</p>
NV.1.2	The Applicant	Replacement Noise Bund

		<p>Paragraph 8.6.27 of the Planning Statement [APP-245] describes existing and proposed noise bunds.</p> <p>Will the replacement bund be constructed before the existing bund is removed? How would this be secured through the DCO?</p> <p>As explained in ES Chapter 5: Project Description [REP1-016] (paras 5.2.93 to 5.2.94), the western end of the existing noise bund would be removed, before the new noise bund and wall is built to replace it. The western end would be removed within the first year of the airfield works, and there will be a period up to six months when part of the bund will be missing. ES Appendix 5.3.3: Indicative Construction Sequencing [REP2-016] shows the removal and replacement of the western noise mitigation as taking place between 2024 and 2026.</p> <p>Noise modelling was undertaken that showed during this period levels of ground noise could increase by up to 3dB at the nearest noise sensitive receptor, Westfield Place. This property is within the Noise Insulation Scheme Inner Zone and the Applicant would ensure the full package of noise insulation is offered and provided to this property before the bund is removed, as required by the property owner. The requirement to do so will be confirmed in updates to be made in the Code of Construction Practice, to ensure there is a clear secured need to follow this methodology. Noise modelling showed that further away beyond this property the biggest noise increase would be no more than 1dB during this temporary period, which would not generate any additional significant effects.</p>
NV.1.3	The Applicant	Noise Designated Airport

		<p>Paragraph 8.6.3 of the Planning Statement [APP-245] states that Gatwick is a noise-designated airport. What does this status mean?</p> <p>Section 80 of the Civil Aviation Act 1982 provides the Secretary of State with the power to designate aerodromes in Great Britain for the purpose of regulating noise and vibration from aircraft using those airports, including by setting noise controls. Heathrow, Gatwick, and Stansted airports have been designated to avoid, limit or mitigate the effect of noise from aircraft since 1971.</p> <p>Section 78 of the Act then provides the basis upon which the Secretary of State may regulate to direct aircraft operators using designated airports, or the designated airport operators themselves, to adopt procedures which limit noise and vibration.</p> <p>An example of the controls which the Secretary of State may impose by virtue of an airport being designated is the night flight movement limit and quota count restrictions on Gatwick Airport, and the other designated airports.</p>
NV.1.4	CAA	<p>Potential Revisions to Airspace</p> <p>The 4th row of Table 14.2.1 in ES Chapter 14 [APP-039] states “<i>Whilst the development of a third runway at Heathrow would be contingent on major revisions to airspace in the South East of England, this Project is not.</i>”</p> <p>a) Does the CAA agree with this statement, noting that IAG/ British Airways has expressed scepticism in their WR [REP1-198]?</p>

		<p>b) Schedule 2 of the dDCO (Requirements) states “<i>independent air noise reviewer</i>” means the CAA’. Does the CAA agree with this interpretation and consider that the role itself is sufficiently well defined?</p> <p>c) The ExA is aware of the Aircraft Noise Attitudes Survey (ANAS) that is underway. Is it expected that any of the results will be published before the end of the examination on 27 August 2024? If so, what?</p> <hr/> <p>Whilst the Applicant notes that the ExA has directed this question to the CAA, it has provided a response to part a) of the question.</p> <p>a) A third runway at Heathrow would be inoperable without the development of a supporting airspace structure to facilitate the movement of air traffic to/from the new runway. The creation of new arrival and departure routes for the new third runway, as well as the existing Heathrow runways, would be required. To facilitate this development, changes to the arrival and departure routes of the other London airports would also be necessary as part of this project, thus major revisions to the airspace would be a critical enabler for Heathrow’s third runway project.</p> <p>However, the London Gatwick Northern Runway Project is not developing a new runway. Section 4 of ES Chapter 14: Noise and Vibration [APP-039] and Capacity and Operations Summary Paper [REP1-053] explain the Project does not require the routings of aircraft to or from the airport to be changed (see CAA airspace change proposal ACP-2019-81). London Gatwick’s current airspace design includes Standard Instrument Departures (SID) and arrival procedures for both the 26L/08R (main) and 26R/08L</p>
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		<p>(northern) runways.</p> <p>Departure route separation requirements along with the optimisation of the departing aircraft sequence are described comprehensively in Capacity and Operations Summary Paper [REP1-053] with the supporting model data captured in Capacity and Operations Summary Paper Appendix Airfield Capacity Study [REP1-054].</p> <p>The Applicant is separately taking forward airspace change under the Government sponsored Airspace Modernisation Programme [REP1-053, para 1.2.12] and while the London Gatwick operation will benefit directly as a result of this programme, it is not required to deliver the Northern Runway Project. The London Terminal Manoeuvring Area (LTMA) airspace is complex, necessarily integrating the arrival and departure routes for all of the London airports, and as identified by the JLAs [REP1-069, Appendix F] the timeline for the delivery of this complicated, multi-sponsor enterprise is unknown.</p> <p>The Applicant, alongside NERL (National Air Traffic Services (NATS) En-Route plc), is co-sponsoring the London Airspace South (LAS) airspace deployment under the same programme which is, by comparison, a less complex airspace change that can be deployed sooner than the rest of the LTMA airspace, realising benefits earlier than might otherwise have been the case.</p> <p>In particular for London Gatwick, London Airspace South is expected to increase capacity and reduce the air traffic controllers' workload thereby strengthening resilience, reducing delays on the ground pre-departure caused by capacity constraints in the airspace and potentially increasing runway throughput during busy periods.</p>
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		<p>The beneficial geographical location of London Gatwick, to the south of the congested and complex LTMA airspace, means it is easier to take forward airspace change here compared to the north of London Gatwick, which would involve the other main London airports. The deployment of London Airspace South could be in Q1 2027 if the process is complete and approved. Currently, there are over 500 options being considered, so it is not possible to carry out any noise modelling or assessment of the effect it could have on the Northern Runway Project noise assessment.</p>
NV.1.5	The Applicant	<p>Sensitivity Test for Total Aviation Noise</p> <p>In the context of the ongoing ANAS research and the policy tests described at paragraph 5.68 of the ANPS:</p> <p>Can the Applicant provide for the years 2019, 2029, 2032 and 2047, assuming slow transition, for air and ground noise combined, and accounting for all other residential and noise sensitive development consented at the time the application was made, tables equivalent to Tables 7, 8, 9 and 10 of 'Noise Exposure Contours for Gatwick Airport 2019 ERCD REPORT 2002', with the L_{Aeq} 16 hour day values extended in 3 dB steps down to 45 dB and the L_{Aeq} 8 hour night values extended in 3 dB steps down to 39 dB for operational noise?</p> <p>Can the Applicant support the tabulated information with Figures equivalent to B15 and B16 for the years 2029, 2032 and 2047?</p> <hr/> <p>Can the noise modelling be done?</p>

		<p>The request requires air noise to be modelled down to $L_{Aeq\ 16\ hr}$ 45 dB and $L_{Aeq\ 8\ hr}$ 39dB, ie 6dB below LOAEL. These contours are 6dB below those in the current ANCON model used by the CAA’s Environmental Research and Consultancy Department (ERCD) for all the Project’s noise modelling. In response to the request of the ExA, the Applicant has asked ERCD if the modelling can be done. ERCD has advised that the current model does not cover the extended area over which the lower noise contours would lie and in its current form is not fit for this purpose.</p> <p>To model to levels 6dB lower as requested the aircraft tracks and profiles would need to be extended to cover the much larger area. This may include the approach stacks making the modelling complex. The model could be developed to do this, but it would be a sizeable task taking months, and it could not be done in time for the Examination Authority to consider the results before the Examination closes on 27 August. Furthermore, to be used with any confidence that model would then need validation through analysis of Noise and Track Keeping data from monitors that would need to be located under the extended arrivals and departure tracks, which would also take some time to arrange. And there is real uncertainty as to whether it is possible to measure these lower noise levels from aircraft at the higher altitudes they are at in this wider area above ambient noise (see ERCD Report 1006, Measurement and Modelling of Aircraft Noise at Low Levels, 2019).</p> <p>Ground noise could be modelled down to $L_{Aeq\ 16\ hr}$ 45 dB and $L_{Aeq\ 8\ hr}$ 39dB, ie 6dB below LOAEL, although the uncertainty in the predicted levels would be greater. However, the noise levels requested to be modelled are in all cases below the measured baseline levels (see ES Chapter 14: Noise and Vibration [APP-039] Table 14.6.4; during the day 3 to 22dB above and during the night 5 to 22dB above). Since ground noise is assessed relative to ambient</p>
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		<p>noise as well as in terms of noise change, there would be no noise effects at these lower ground noise levels.</p> <p>Modelling noise levels would not show new effects from the Project</p> <p>The purpose of the ES assessment accompanying the DCO Application is to assess the likely significant effects of the Project. Significant effects from air noise arise where a noise change of >3dB arises between LOAEL and SOAEL or >1dB arise above SOAEL using $L_{Aeq\ 16\ hr}$ and $L_{Aeq\ 8\ hr}$ noise levels. The noise modelling provided (see ES Figure 14.9.5) shows that at the daytime LOAEL, $L_{Aeq\ 16\ hr}$ 51dB, noise increases are generally 0-1dB and are 1-2 dB in the areas around Route 4 and Route 3 to the north and immediately north of the airport boundary. No changes of >3dB would occur outside the daytime LOAEL, so modelling noise levels below LOAEL would not reveal any new significant effects. Similarly for night-time the noise modelling provided (see ES Figure 14.9.10) shows that at the night-time LOAEL, $L_{Aeq\ 8\ hr}$ 45dB, noise increases are generally 0-1dB and are 1-2 dB immediately north of the airport boundary. No changes of >3dB would occur outside the night-time LOAEL, so modelling noise levels below LOAEL would not reveal any new significant effects.</p> <p>At such low levels air noise effects would be lessened by ambient noise from road traffic</p> <p>In the year 2000 the government commissioned the Building Research Establishment (BRE) to carry out a major survey of ambient noise levels around the country. Although the survey is more than 20 years old the results give an indication of the general levels of ambient noise experienced across the country. The survey used measurements obtained outside 1020 dwellings and extrapolated the results for the whole of England and Wales. The headline</p>
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		<p>results include the following:</p> <p><i>The National Noise Incidence Study 2000 has found that 55±3% of the population of England and Wales live in dwellings exposed to day-time noise levels above the [then] WHO level of 55 dB $L_{Aeq,day}$.</i></p> <p><i>The National Noise Incidence Study 2000 has found that 68±3% of the population of England and Wales live in dwellings exposed to night-time noise levels above the [then] WHO level of 45 dB $L_{Aeq,night}$.</i></p> <p>BRE released the full set of measured data, from which it is possible to extract estimates of the prevalence of noise at lower levels including those for which aircraft noise modelling has been requested, as follows.</p> <p>The National Noise Incidence Study 2000 data indicates that 99% of the population of England and Wales were living in dwellings exposed to daytime noise levels above 45 dB $L_{Aeq,16\text{ hour day}}$ and 98% of the population of England and Wales were living in dwellings exposed to night-time noise levels above 39 dB $L_{Aeq,8\text{ hour night}}$. The predominant source of ambient noise is road traffic, with rail and air traffic making much smaller contributions. Although this noise exposure data may be out of date and has been superseded by more recent strategic noise mapping studies, it nonetheless indicates that the noise levels down to which the ExA has requested aircraft noise modelling are lower than those experienced by the vast majority of the UK population. It therefore is likely that in locations experiencing these levels of aircraft noise, the effects of noise overall would be caused by other noise sources.</p>
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		<p>What does the WHO say about these levels of air noise ?</p> <p>The Examining Authority asks for noise levels to be modelled 3dB and 6dB below the day and night LOAELs. Effects of noise at levels below LOAEL were discussed in ISH5 when the Examining Authority referred to the large number of interested parties living outside the LOAEL contours (see Written Summary from Oral Submissions from Issue Specific Hearing 5: Aviation Noise [REP1-060]). Those interested parties have referred to the World Health Organisation guidance which suggests that, to prevent any effects of noise on health, noise levels should be no higher than L_{den} 45 dB and L_{Night} 40dB. Whilst the Examining Authority’s suggested noise levels to model do not match the WHO guidelines precisely, they are similar and the relevance of the WHO guidelines and what those recommendations are, is relevant.</p> <p>Firstly, the WHO Environmental Noise Guidelines do not set policy standards for the UK. The setting of those values has taken no account of the cost of achieving those values nor of the economic and social benefits of the source. In setting any limits in policy or standards, the Environmental Noise Guidelines state that cost, feasibility and preferences must be taken into account (page 29).</p> <p>Secondly the WHO Environmental Noise Guidelines note that <i>‘cultural differences around what is considered annoying are significant, even within Europe’</i> and so the guidelines state that data and exposure-response curves derived in a local context should be applied whenever possible to assess the specific relationship between noise and annoyance in a given situation (page 109). The WHO systematic review did not include the UK’s Study or Noise Annoyance (SONA, 2014) because it was published just after the WHO research</p>
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		<p>literature review commenced. The UK government has studied dose response curves in the UK in the SONA study, so as recommended by the WHO these should be used to assess the specific relationship between aircraft noise and annoyance in the UK.</p> <p>Modelling to these lower noise levels would not be consistent with government guidance</p> <p>Paragraph 5.68 of the ANPF states:</p> <p><i>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:</i></p> <ul style="list-style-type: none"> • <i>Avoid significant adverse impacts on health and quality of life from noise;</i> • <i>Mitigate and minimise adverse impacts on health and quality of life from noise; and</i> • <i>Where possible, contribute to improvements to health and quality of life.</i> <p>In October 2017 the DfT published its Consultation Response on UK Airspace Policy: A framework for balanced decisions on the design and use of airspace. This included the following policy guidance on assessing aircraft noise:</p> <p><i>“2.72 So that the potential adverse effects of an airspace change can be properly assessed, for the purpose of informing decisions on airspace design and use, we will set a LOAEL at 51 dB LAeq 16 hr for daytime, and based on feedback and further discussion with CAA we</i></p>
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		<p><i>are making one minor change to the LOAEL night metric to be 45dB LAeq 8hr rather than Lnight to be consistent with the daytime metric. These metrics will ensure that the total adverse effects on people can be assessed and airspace options compared. They will also ensure airspace decisions are consistent with the objectives of the overall policy to avoid significant adverse impacts and minimise adverse impacts.”</i></p> <p>The ES provides an assessment of aircraft noise and recommends mitigation measures to minimise aircraft noise above the LOAELs stated in the 2017 Consultation Response, which notes <i>‘these metrics will ensure that the total adverse effects on people can be assessed’</i>. Hence the ES has assessed the total adverse effects, as required by the ANPS, and there is no policy requirement to consider lower noise levels.</p> <p>The Applicant notes the LOAELs used for the Northern Runway noise assessment are consistent with those used by Applicants for other airport seeking consent to expand, and others have not been required to model and assess lower noise levels.</p> <p>The Applicant therefore confirms that it is not possible to model aircraft noise levels down to LAeq 16 hr 45dB and LAeq 8 hr night 39dB within the timescale of the Examination, and that to do so would go beyond government guidance, not be required by policy, and would be at variance with practice in other DCOs by modelling aircraft noise levels below the LOAELs of LAeq 16 hr 51dB and LAeq 8 hr night 45dB.</p> <p>Air and ground noise combined</p> <p>The request is for noise contours and population exposure data for air and ground noise to be combined, i.e. summed together. ES Chapter 14: Noise and Vibration [APP-039] Section</p>
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		<p>14.11 Combined Effects reports an assessment of the combined effects of construction noise, air noise ground noise and road traffic noise. Paragraph 14.11.2 notes:</p> <p><i>As there is no reliable means of quantitatively assessing the overall noise effect resulting from different noise sources, this section considers the overall effect of noise from combined sources qualitatively. This takes account of factors including the following:</i></p> <ul style="list-style-type: none"> • <i>whether the effects from the different sources would be likely to occur at the same time, or the same time of day;</i> • <i>the duration of any combined effects;</i> • <i>whether one effect dominates or whether effects might be additive; and</i> • <i>whether the effects on individual receptors are likely to be on the same façade of the property.</i> <p>The reasons why the ES has not quantitatively assessed air and ground noise together to report the total of air and ground noise are further clarified as follows. Whereas for air noise there is clear guidance on assessment methodology, including metrics to be used and values for LOAEL and SOAEL, this is not the case for ground noise, so an appropriate methodology has been developed and reported in the ES. Whilst the ground noise assessment methodology adopts the same numerical values for LOAEL and SOAEL, the assessment methodology is different, because the nature of the noise is different, as follows.</p> <p>As discussed briefly in ISH5, air noise is a series of peaks separated by much longer periods</p>
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of no aircraft noise, whereas ground noise fluctuates but is more continuous and rarely absent. Air noise arrives from above so tends to affect all facades of a building, whereas ground noise arrives from ground level, it usually affects only one or two facades of a building. Measures to mitigate ground noise are more readily available including providing bunds and barriers that are present around much of the airport's perimeter and the Applicant has included and maintained in the Project design. Ground noise from an airport is much more like other sources of ground level noise such as that from road traffic or industrial/commercial sources.

British Standard 4142 gives a well-established principle in UK noise assessment methodology of comparing noise with background sound and attaching significance to the difference between the two. The ground noise assessment adopts this principle by considering how ground noise compares with noise generated by other ambient noise sources. This is particularly relevant at Gatwick Airport because the airport is surrounded by roads with the majority of noise sensitive receptors beyond these roads, so that the occupants' perception of ground noise from the airport is in the context of road traffic noise on the same building facades. Air noise assessment methodology does not require a comparison with ambient noise, on the basis that the characteristic of air noise is such that aircraft noise peak events are high and will be above ambient noise regardless of its level. Hence ground noise has to be assessed separately from air noise and adding the two together would yield predicted noise levels which could not be assessed in any meaningful way.

Supporting Noise and Vibration Technical Notes to Statements of Common Ground, Appendix B - Ground Noise Fleet Assessment of (Doc ref 10.13) provides an update of the ground noise assessment including modelling of the slower transition fleet, as requested. It

		<p>also provides context on the relatively small extent of ground noise impacts at Gatwick, and more detail on the mitigation measures for ground noise including the 16 properties that would be added to the Air Noise Insulation Scheme Inner Zone to ensure that the predicted significant adverse effects of ground noise are avoided by offering noise insulation in advance. The Noise Insulation Scheme (see ES Appendix 14.9.10 Noise Insulation Scheme [APP-180]) will be updated to include these 16 properties, but will also retain the provision (in paragraph 4.1.11) to monitor ground noise levels where necessary so that the cumulative noise levels from air noise and ground noise can also be considered for other properties in assessing eligibility for the inner Zone.</p>
NV.1.6	The Applicant	<p>British Standards</p> <p>Paragraph 5.53 of the ANPS says <i>“Operational noise, with respect to human receptors, should be assessed using the principles of the relevant British Standards and other guidance.”</i></p> <p>ES Chapter 14 [APP-039] Table 14.2.1 says in response <i>“The assessment draws on various British Standards including BS 5228...”</i></p>

		<p>a) Which other British Standards are drawn upon in the assessment of operational noise?</p> <p>b) What principles from the relevant British Standards are used to inform the assessment of operational noise?</p>
		<p>British Standard 4142 Methods for rating and assessing industrial and commercial sound is used to assess ground noise from fixed plant as noted in paragraph 14.5.16 of the ES.</p> <p>Paragraph 7.1.1 of ES Appendix 14.9.3 Ground Noise Modelling [APP-173] explains how the principle within this standard requiring fixed noise sources to be assessed by comparing predicted levels against background noise has been adopted.</p>
NV.1.7	The Applicant	<p>Non-residential Receptors</p> <p>Paragraph 5.52 of the ANPS includes some non-residential receptors as noise sensitive premises requiring assessment. For non-residential receptors can the Applicant explain how their operational noise assessment has accounted for receptor specific effect thresholds derived from receptor specific guidance or project precedent, including schools, premises used for live performance, worship or recording, and activities where intelligibility of verbal instructions or the audibility of warnings is important?</p> <p>This question was raised by the ExA in Issue Specific Hearing 5, and a summary of the Applicant's response is provided at Section 5 of Written Summary from Oral Submissions from Issue Specific Hearing 5: Aviation Noise [REP1-060]. The following response provides additional detail.</p>

		<p>Non-Residential Receptor Scoping Criteria</p> <p>In ISH5 the Applicant gave the following verbal response:</p> <p><i>5.1.2 The Applicant explained that its methodology for non-residential receptors is summarised in ES Chapter 14 paragraph 14.4.76. Noise assessment criteria for these types of buildings can be drawn from various guidelines and are in all cases at or above $L_{Aeq\ 16\ hour}$ 50 dB, i.e. within 1dB of the daytime residential LOAEL. For non-residential receptors noise change criteria for significant effects are in all cases 3dB or more. In brief, the approach to assessing non-residential receptors was to scope the potential impacts using the LOAEL assessment criteria for residential receptors, and to consider each non-residential receptor above this in terms of the change expected, on a case by case basis.</i></p> <p><i>5.1.3 The ExA followed up to query whether the Applicant's assessment was limited to only those non-residential receptors which are already above the LOAEL? The Applicant responded that no, this was not the case, as it uses the with development values as a scoping tool. So, any of the noise contours that fall above LOAEL would bring the non-residential receptor into the zone of potentially needing an assessment.</i></p> <p>Table 1 provides screening criteria that can be used on a precautionary basis to scope potential impacts on non-residential receptors during operation of the Project drawn from WHO Community Noise Guidelines, WHO Night Noise Guidelines and UK Noise Insulation Regulations.</p>
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Table 1 Air noise screening Criteria for Non-residential Receptors

Receptor Type	Noise Level Outdoors (dBA free-field)	
	Day 0700-2300	Night 2300-0700
Schools, colleges, libraries	50 dB L _{eq} 16 hr	n/a
Hospitals and hotels	50 dB L _{eq} 16 hr	45 dB L _{eq} 8 hr
Auditoria, concert halls, recording studios	60 dB L _{max}	60 dB L _{max}
	50 dB L _{eq} 16 hr	50 dB L _{eq} 16 hr
Places of worship, courts, lecture theatres and museums	50 dB L _{eq} 16 hr	n/a
Offices	55 dB L _{eq} 16 hr	n/a

These criteria are all within 1dB of the residential LOAEL of 51 dB L_{Aeq} 16 hr for daytime and 45

		<p>dB L_{Aeq} 8 hr for night-time.</p> <p>Whilst the L_{max} metric is used in the screening criteria for critical listening spaces (e.g. auditoria, concert halls, theatres and recording studios) these do not form part of the assessment of likely significant effects for these receptors because L_{max} levels from individual aircraft would be no greater than experienced in the baseline except close to the airport where no auditoria, concert halls or recording studios were identified. The assessment therefore focusses on changes in noise exposure as a result of increases in numbers of aircraft movements and other noise sources.</p> <p>Once non-residential receptors are scoped in, their with Project levels and expected noise change can be assessed against specific assessment criteria. Table 2 provides specific assessment criteria for non-residential receptors using UK guidance from the following:</p> <ul style="list-style-type: none"> • Institute of Environmental Management and Assessment (2014), <i>Guidelines for Environmental Noise Impact Assessment</i>; • British Standard 8233 (2014) Guidance on sound insulation and noise reduction for buildings; • Department for Education (2015), Building Bulletin 93 Acoustic design of schools: performance standards; • Department of Health (2013), Health Technical Memorandum 08-01: Acoustics; and • Department for Communities and Local Government (2019), Planning Practice
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Guidance: Noise.

Table 2 Assessment criteria for non-residential receptors

Receptor Type	Noise Level Outdoors (dBA free-field)		Change (dB)
	Day L_{eq} 16 hr 0700-2300	Night L_{eq} 8 hr 2300-0700	
Schools, colleges, nurseries	55-59	n/a	>3dB
	>63	n/a	>2dB
Hospitals,	>55	>45	>3dB
Doctors surgeries, medical centres	>55	n/a	>3dB
Auditoria, concert halls, recording studios	>50	>50	<3dB

		Places of worship	>50	n/a	<3dB
		Offices	>55	n/a	<3dB
		Museums	>55	n/a	<3dB
		Community and village halls	>60	n/a	<3dB
		Courts	>50	n/a	<3dB
		Libraries	>55	n/a	<3dB
		Hotels	>50	>45	<3dB
		<p>These criteria are all within 1dB of the residential LOAEL of 51 dB $L_{Aeq\ 16\ hr}$ for daytime and 45 dB $L_{Aeq\ 8\ hr}$ for night-time. So scoping impacts using the residential LOAELs for with Project noise levels ensures all impacts on non-residential receptors are identified. (Noise level without the Project above $L_{Aeq\ 16\ hr}$ 50dB that have increases by at least 1dB with the Project will be identified in this way as above $L_{Aeq\ 16\ hr}$ 51dB with the Project.)</p> <p>The noise change criteria are in all cases (except Schools above $L_{Aeq\ 16\ hr}$ 63dB) 3dB. The</p>			

		<p>area within which the air noise $L_{Aeq\ 16\ hr}$ noise increases of more than 3dB are expected is 2.9 to 3.1 km² (see ES Table 14.9.10), which is mostly within the airport boundary over the apron areas, and outside the airport includes approximately 40 residential properties scattered over the rural area to the west of the airport.</p> <p>The change criterion for schools above $L_{Aeq\ 16\ hr}$ 63dB is 2dB. There is only one school or Nursery above this level of air noise (with the NRP), the Little House Montessori in Burstow, where the greatest noise increase predicted is 0.6dB (See Table 4.3.2 in ES Appendix 14.9.2 Air Noise Modelling [APP-172]). The largest increase in air noise at any school is $L_{Aeq\ 16\ hr}$ 1.4dB in 2032 with the Project compared to the 2032 baseline.</p> <p>The area within which $L_{Aeq\ 8\ hr}$ night noise increases of more than 3dB are expected is 0.8 km² (see ES Table 14.9.11) and is entirely within the airport boundary.</p> <p>Air Noise Assessment</p> <p>The air noise assessment provides modelled noise levels at non-residential properties to scope impacts above the residential LOAELs. Figure 14.9.32 (ES Noise and Vibration Figures - Part 3 [APP-065]) shows 50 noise sensitive community buildings (21 schools, one hospital, 18 places of worship and 7 community buildings) for which noise levels are predicted and assessed. The seven Community Representative Locations chosen to describe impacts in more detail in ES paragraphs 14.9.150 to 14.9.158 are non-residential (6 schools and one care home).</p>
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		<p>Ground Noise Assessment</p> <p>Non-residential receptors were considered in assessing the worst affected properties for baseline surveys, with measurements carried out and used to characterise the ambient noise levels at non-residential receptors in two of the 13 Noise Sensitive Receptor Areas used in the ground noise assessment. Ground noise has been modelled at all buildings regardless of use. The residential LOAELs were used to scope impacts at all receptors within the study area, including non-residential. ES Appendix 14.9.3 Ground Noise Modelling [APP-173] provides predicted noise levels at locations representative of a school, a nursery, offices, a care home and an aquatic centre and assesses impacts where relevant on a case by case basis.</p> <p>Road Traffic Noise</p> <p>Road traffic noise has been modelled at all buildings regardless of use. The residential LOAELs were used to scope impacts at all receptors within the study area including non-residential. Noise changes in the Riverside Garden Park have been assessed in detail. Potential noise impacts at two hotels and the Gatwick Airport Police Station are assessed on a case by case basis in ES Chapter 14: Noise and Vibration [APP-039].</p>
NV.1.8	The Applicant	<p>Description and Character of Aviation Noise</p> <p>Paragraph 5.52 of the ANPS states that the noise assessment should include a description of the noise sources and the characteristics of the existing noise environment, including noise from aircraft. ES Appendix 14.9.3 on Ground Noise Modelling [APP-173] presents sound power levels for taxiing aircraft.</p>

		<p>At 3.1.2 it says “<i>The calculated sound power levels for each aircraft type are presented in octave bands at Table 3.1.1 below. It should be noted that due to difficulties with accurately measuring in the 31.5 Hz octave band, calculated levels in the 63 Hz band have been assumed to be representative of levels in the 31.5 Hz band</i>”.</p> <p>a) Can the Applicant explain the difficulties with measuring and justify this assumption?</p> <p>b) Can the Applicant confirm that:</p> <ul style="list-style-type: none"> i. This assumption only applies to ground noise? ii. Air noise is modelled using the complete audible sound spectrum based on traceable and verifiable information? <p>c) Can the Applicant provide the noise source sound power values for aircraft used in the modelling, as octave band or more granular information, either with reference to an application document, an additional submission or other publicly accessible source over the normal range of operation for those aircraft?</p>
		<p>a) Sound power has been calculated in line with methodology from the Madrid airport study (as noted at para 2.2.1 of ES Appendix 14.9.3 Ground Noise Modelling [APP-173]) which derives sound power levels by reverse implementation of the ISO9613-2 methodology to predict sound power based on measured levels at a known distance. The methodology in ISO9613 includes formulae for deriving ground attenuation and tables of atmospheric attenuation in octave bands. All the formulae and tables start from the 63 Hz octave band which makes it difficult to apply the methodology below this frequency band.</p>

		<p>Furthermore, during the measurements, there were greater levels of ambient sounds from other sources across the airport in the low frequencies and even in the 63 Hz band, the signal to noise ratio was significantly reduced for a lot of the aircraft pass-bys measured. For the measurements with better signal to noise ratio in the low frequencies, it was observed that noise in the 31.5 Hz octave band was generally the same as, or lower than, that in the 63 Hz octave band. The assumption that noise in the 63 Hz octave band is representative of noise in the 31.5 Hz octave band is conservative, ensuring that noise in this frequency band is taken into account and is not underestimated at residential receptors.</p> <p>b) i) Yes, this assumption only applies to ground noise.</p> <p>ii) Yes, air noise is modelled using the complete audible sound spectrum based on traceable and verifiable information.</p> <p>c) Air noise was modelled with the latest version of the Aircraft Noise Contour Model (ANCON) (v2.4). A full description of modelling assumptions can be found in Environmental Research and Consultancy Department (ERCD) Report. The Environmental Research and Consultancy Department of the Civil Aviation Authority (or as was) has been producing noise contours for Gatwick airport using the ANCON model since 1988 including annual contours every year. Up until 2015 the contours were produced for the DfT, and since then they have been carried out for GAL. ERCD has a team who maintain the model and calibrate it for Gatwick Airport using thousands of data points measured at the Noise and Track Keeping Noise Monitoring Terminals around the airport. Measurements of SEL and L_{max} levels are captured, in all cases A-weighted, to</p>
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		<p>allow the full audible spectrum of aircraft noise to be modelled. The model uses Noise Power Distance curves specific to each aircraft type to define the decay of A weighted noise level over distance so as to ensure frequency dependent distance attenuation is used specific to each aircraft type.</p>
NV.1.9	The Applicant	<p>Noise Envelopes</p> <p>At paragraph 4.1.11 d) of its RR [RR-3043] MSDC states that <i>“There should be no allowance for noise contour area limits to increase.”</i> It refers to the APF and Guidance CAP 1129.</p> <p>5.60 of the ANPS states that <i>“the design of the envelope should be defined in consultation with local communities and relevant stakeholders, and take account of any independent guidance such as from the Independent Commission on Civil Aviation Noise”</i>,</p> <p>and goes on to state that:</p> <p><i>“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.”</i></p> <p>Where in the ES does it show that the Applicant has taken account of independent guidance?</p>
		<p>The Independent Commission on Civil Aviation Noise (ICCAN) was a non-statutory advisory body, established to act as the impartial expert adviser to Government and others on all matters relating to aviation noise from January 2019 to September 2021 when it was disbanded with its responsibilities being passed to the CAA. ICCAN published various</p>

		<p>research and guidance reports which are referred to in ES paragraph 14.2.47 and which have been taken into account in preparing the ES. However, it did not produce guidance on Noise Envelopes. Noting ICCAN’s responsibilities were passed to the CAA, CAA guidance is the key source of independent guidance available.</p> <p>The main published CAA guidance on Noise Envelopes is CAP1129 Noise Envelopes (CAA, 2013). It provides the guidance that the DfT referred to in 5.60 of the ANPS. It is notable that CAP 1129 is a summary of research into noise envelopes and options to develop them, rather than a set of requirements to be met. ES Appendix 14.9.5 Air Noise Envelope Background [APP-175] provides an account of how CAP1129 guidance was taken into account in formulating the Noise Envelope. Section 2 of that ES appendix discusses the noise envelope options considered. Section 2.2 sets out the structure of CAP1129, listing the contents of the six chapters and quoting key sections, and explains how the guidance was used to set the key themes to be discussed by the Noise Envelope Group. Section 2.3 discusses CAP1129 guidance on approaches to noise envelopes. Section 2.4 discuss options for a noise envelope at Gatwick including the 11 metrics described in CAP1129 and their merits for Gatwick Airport. Section 2.5 discuss the preferred option, making reference to CAP1129 guidance on multiple metrics and combining parameters. This section also refers to further CAA guidance in CAP1731 Aviation Strategy Noise Forecast Analysis. CAP1731 analysed the correlation between 13 different noise metrics and annoyance and sleep disturbance in the community. These metrics included ATM limits, QC limits, L_{Aeq} contour areas and population, N60 contours, N65 contours etc. ES Appendix 14.9.3 paragraphs 2.5.7 and 2.5.8 note that $L_{Aeq\ 16\ hr}$ day and $L_{Aeq\ 8\ hr}$ night contours provide the closest correlation to daytime annoyance and night-time sleep disturbance respectively in the CAP1731 analysis, and it is on the basis of this CAA guidance that these were chosen as the two primary noise metrics for the Noise</p>
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		<p>Envelope.</p> <p>Other CAA guidance was also used in developing the Noise Envelope including CAP1616 Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements, as also referred to ES Appendix 14.9.3 [APP-173].</p> <p>The Noise Envelope Group’s Aviation Sub-Group included the CAA, as well as the independent Chairman of the Noise Management Board (NMB) and the independent chairman of the NMB’s Noise Community Forum. The NMB’s technical advisor’s To70 also contributed and NATS were also on represented on that committee. ES Appendix 14.9.9 Report on Engagement on the Noise Envelope [AS-023] provides details of the 12 Noise Envelope Group meetings held between May 2022 and October 2022, the material presented and opinions expressed.</p> <p>Pages 92 to 231 of ES Appendix 14.9.9 Report on Engagement on the Noise Envelope [APP-179] are the material prepared by the Applicant for the NEG meetings. Pages 232 to 296 provide the main material prepared by Community Noise Groups for the NEG meetings. The consultation was structured around 4 main themes drawn from CAP1129 guidance:</p> <ol style="list-style-type: none"> 1. Background – policy, Project Noise Objective, PEIR proposal and PEIR Consultation feedback analysis 2. Options – defining the noise envelope 3. Operating the Noise Envelope – monitoring and reporting, actions GAL can take
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		<p>4. Enforcement – periodic review, enforcement</p> <p>In the Theme 2 meetings, metrics to set limits were discussed, and so too were where the limits should be set in view of the policy objective to share the benefits of future technology with the community.</p> <p>The Applicant noted there is no policy guidance on how to assess benefits sharing, and options were presented. GACC presented an analysis of sharing the benefits using the proposed Noise Envelope limits for 2032 and 2038. See ES Appendix 14.9.9 Report on Engagement on the Noise Envelope [AS-023] pages 245 to 249. GAL responded to this and also produced its own analysis of sharing the benefits, see ES Appendix 14.9.9 Report on Engagement on the Noise Envelope [AS-023] pages 165 to 175. The Applicant’s analysis used the methodology included in the Bristol Airport Planning Appeal Decision, Appeal Ref: APP/D0121/W/20/3259234, 2 February 2022 Inspectors' Report. The Bristol method can be summarised in three steps, as follows:</p> <p>Step 1: The “total available benefit” to be shared with the community can be expressed as the area of L_{Aeq} noise baseline contours in a future year with no improvement in fleet noise performance, less the contour area in the same future baseline year where fleet improvement occurred.</p> <p>Step 2: The part of the total available benefit that goes to the community is then calculated as the area of the future “no improvement with fleet” baseline less the area of the L_{Aeq} contour with the Project.</p> <p>Step 3: The benefits shared between community and industry can be expressed as relative</p>
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		<p>percentages of the total available benefit.</p> <p>The analysis summarised in the Inspector’s report showed that, in terms of population within the daytime LOAEL, 77% of the benefit would be consumed by the expansion plans, leaving 33% to the community. The Inspector noted in paragraph 271 of the report:</p> <p><i>271. The concept of sharing the benefits is set down by the APF, but it gives no guidance on how it should be calculated or assessed. The figures cited above demonstrate, along with the raw data from the ‘with’ and ‘without development’ scenarios against the baseline, that all benefits are not fully taken up by the proposed expansion and thus there would be some sharing. However, the benefits are weighted more in favour towards expansion, rather than towards the community.</i></p> <p>Following the same methodology, the Applicant’s analysis showed that in 2038 when the Noise Envelope limits reduce, compared to the future 2038 baseline the degree of sharing the benefits would be 50% to the industry (as growth) and 50% to the community (as noise reduction) when measured in terms of the area of the day LOAEL with the Slower Transition Fleet. For night-time the degree of sharing the benefits would be 34% to the industry (as growth) and 66% to the community (as noise reduction). It was noted that in the early years after opening noise increases and there is a smaller benefit to the community, and that the Central Case fleet had not been assessed. There is nothing in the guidance on Noise</p>
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		Envelopes indicating that noise levels cannot increase.
NV.1.10	IPs N/A	Noise Envelopes Recognising that concerns have been expressed by some IPs about noise envelopes, what would other IPs propose for the initial (2029) areas of the 51 dB L _{Aeq, 16hr} contour and the 45 dB L _{Aeq, 8hr} contour and any other noise envelopes, including the use of other metrics? What is the basis for the proposed values with reference to policy and guidance?
		N/A
NV.1.11	The Applicant	Other Controls Paragraph 5.62 of the ANPS states that “ <i>The Government also expects a ban on scheduled night flights for a period of six and a half hours, between the hours of 11pm and 7am, to be implemented...</i> ” At ISH2 the Applicant explained [REP1-057] about the quota for night flights (a control on inputs) imposed by Government, as the airport is a designated airport, <ul style="list-style-type: none"> a) How would this work in relation to any controls proposed as DCO requirements? b) Can the Applicant commit to a ban on night flights for six and a half hours between 2300 and 0700? If not, can the Applicant provide an explanation as to why this is not reasonable?

		<p>a) The night flight movement limit and quota count restrictions on Gatwick Airport by virtue of the requirements of the Secretary of State and the Airport's designated status will continue to operate, and they will do alongside the DCO Requirements which are not in conflict with them. As those are secured by a separate legislative regime, they do not also require to be secured in the DCO. Moreover, the Secretary of State reviews those over time, and as such it would not be appropriate to fetter that exercise in the DCO.</p> <p>b) Paragraph 5.57 of the ANPS makes clear that the following paragraphs are stated in relation to the Heathrow Northwest Runway scheme. There is nothing in the ANPS which requires a ban on night flights from Gatwick Airport in connection with any expansion project, much in the same way as there is not anything which require a runway alternation scheme that provides communities affected with predictable periods of respite (see para 5.61 of ANPS). Nonetheless, the Applicant has committed to not use the Northern Runway hours of 23:00 – 06:00 unless the southern runway (being the airport's current main runway) is not available for use for any reason. As such, the night flight restrictions on movements and quota limits will continue to apply, and the southern runway will continue to be the Airport's primary runway for night flights.</p> <p>The ANPS refers to Heathrow Airport and the then night ban policy, that was never implemented. In forming that policy government may have felt was appropriate for an airport whose night LOAEL covered 1.1 million people (in 2017) and was planning to increase this substantially, whereas at Gatwick the night LOAEL is forecast to cover 28,000 people and the Project would increase it by only 3,100.</p>
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NV.1.12	The Applicant	<p>What evidence does the Applicant rely upon to show that significant effects caused by aircraft noise are avoided through the installation of a noise insulation scheme, in relation to occupants of any form of permanent residential accommodation?</p> <p>What does the Applicant consider to be the limitations of a noise insulation scheme (NIS)?</p> <p>Paragraphs 14.2.55 and 14.2.56 of ES Chapter 14: Noise and Vibration [APP-039] quote the findings of the Inspector in the Cranford Agreement Secretary of State’s Decision, February 2017 (DCLG, 2017):</p> <p>14.2.55 In the Cranford case, the inspector noted <i>‘the parties do not differ about the SOAEL for aircraft noise: it is 63 dB L_{Aeq, 16 hour} (or its equivalent if other metrics are considered). Noise impacts at that level require to be avoided.’</i></p> <p>14.2.56 In the Cranford case the Inspector also noted:</p> <p><i>‘the Examining Authority’s Report and the Secretaries of States’ decision on the Thames Tideway Tunnel (TTT) Development Consent Order application confirms that the aims of the NPSE are satisfied by the provision of acoustic insulation at the level of SOAEL (whatever that is determined to be in the particular case), and by other mitigation measures below that level.’</i></p> <p>The NPSE requires that significant effects on health and quality of life should be avoided. The Secretary of State, in the Thames Tideway Tunnel decision and the Cranford Agreement</p>

		<p>decisions confirmed that acoustic insulation meets this policy requirement.</p> <p>Noise insulation is widely used around UK airports. The Applicant carried out a review of its Noise Insulation Scheme in 2018, as required under the Airport’s Noise Action Plan. The review involved consultation with the scheme provider and local authorities, a review of other schemes within Europe, consideration of ventilation options, a postal survey of homes who had taken up the scheme, and an assessment of the overall effectiveness of the scheme and recommendations for improvement. A short questionnaire was designed to ask householders what benefit they gained from Gatwick Airport’s Noise Insulation Scheme (NIS) and how it could be improved. In early July 2019 the questionnaire was sent to over 1,000 households who have taken up the scheme, and 158 householders returned the completed questionnaire. Of the 158 completed questionnaires:</p> <ul style="list-style-type: none"> • 68% found the scheme had improved aircraft noise within their home; • 50% said the scheme had reduced sleep disturbance; • 80% said aircraft noise would disturb them less if the house could be adequately ventilated without opening the windows; and • 74% would consider an alternative form of ventilation such as a wall mounted acoustic ventilators. <p>So, whilst not all residents with noise insulation felt it had eliminated noise, a majority felt it had reduced noise and its disturbance.</p>
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		<p>The main recommendations of the review were to increase the funds available (at that time £3,000 plus VAT, now £4,300 plus VAT) and for any new scheme to offer ventilation. The fact that 80% of those with the noise insulation scheme felt that aircraft noise would disturb them less if the house could be adequately ventilated without opening windows suggests that the addition of ventilators as proposed in the Northern Runway NIS will greatly improve the effectiveness of the scheme.</p> <p>ES Appendix 14.9.10 Noise Insulation Scheme [APP-180] notes:</p> <p><i>Residential properties within this zone would be offered acoustic ventilators to noise sensitive rooms. This would allow windows to remain closed more easily in summer, which, with modern double-glazed windows, would increase the sound attenuation of the window by approximately 15 to 20dB. For properties with older single glazed windows, double glazed windows would be offered to noise sensitive rooms in addition to ventilators to ensure equivalent levels of protection.</i></p> <p>A 15 to 20dB reduction in noise from closing a window would provide a considerable drop in internal noise levels, sufficient in many cases to considerably reduce noise disturbance including awakening when asleep. Thus, the provision of acoustic ventilators is expected greatly improve the effectiveness of the noise insulation scheme to be rolled out with the Northern Runway Project.</p>
NV.1.13	The Applicant	Why has the Applicant only set a nighttime aviation noise threshold (55 dB) for the NIS inner zone?

		<p>For the inner zone the policy requirement is to provide mitigation to avoid noise levels above SOAEL that is defined in terms of daytime and nighttime noise levels.</p> <p>In December 2018, Aviation 2050 consulted on measures to improve aviation noise management giving proposals on noise insulation in paragraph 3.122 as follows:</p> <p>3.122 Such schemes, while imposing costs on the industry, are an important element in giving impacted communities a fair deal. The government therefore proposes the following noise insulation measures:</p> <p>to extend the noise insulation policy threshold beyond the current 63dB $L_{Aeq\ 16hr}$ contour to 60dB $L_{Aeq\ 16hr}$ to require all airports to review the effectiveness of existing schemes. This should include how effective the insulation is and whether other factors (such as ventilation) need to be considered, and also whether levels of contributions are affecting take-up the government or ICCAN to issue new guidance to airports on best practice for noise insulation schemes, to improve consistency for airspace changes which lead to significantly increased overflight, to set a new minimum threshold of an increase of 3dB L_{Aeq}, which leaves a household in the 54dB $L_{Aeq\ 16hr}$ contour or above as a new eligibility criterion for assistance with noise insulation.</p> <p>The latest policy guidance for consultation suggests noise insulation should be set for daytime $L_{Aeq\ 16\ hr}$ noise levels, not night-time.</p> <p>When developing the proposals for the Outer Zone, noting there is no policy requirement to fully mitigate noise to avoid effects below SOAEL, the Applicant took this consultation proposal and set the boundary of the Outer Zone to contribute to noise insulation at noise levels above the $L_{Aeq\ 16\ hr}$ 54 dB level in Aviation 2050, albeit that significant increases in overflight and increases in 3dB are not expected in the vast majority of the zone.</p>
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		<p>Comparing ES Figures 14.9.1 and 14.9.9 (or viewing day and night L_{Aeq} contours in the Air Noise Viewer¹) shows that the L_{Aeq 16 hr} 54 dB contour that forms the Outer Zone follows approximately the L_{Aeq 8 hr} 48dB contour, both of which are 3dB above the respective day and night LOAELs, indicating a broadly equivalent level of protection for noise effect during the day and night. As such, whilst the Application could have also included the L_{Aeq 8 hr} 48dB contour, there would have been no practical difference in terms of the area which is covered and which will benefit from the Outer Zone scheme.</p>
<p>NV.1.14</p>	<p>The Applicant</p>	<p>With regard to the new NIS, can the Applicant explain why this could not be open for applications immediately after the making of the DCO to allow any eligible dwellings to benefit as soon as practicable from it?</p> <p>It is not appropriate or necessary for the scheme to open until a final decision has been taken to deliver the expansion that the DCO would permit, and in respect of which the new NIS is required to mitigate impacts. Until that decision is taken and the expansion scheme is being delivered, there will be no additional impacts that will need to be mitigated.</p> <p>The Applicant is confident that it can deliver the noise insulation measures to all properties within the Inner Zone within 4 years, and so before the northern runway is operable and the significant effects which are required to be avoided arise.</p> <p>With regard to the Outer Zone, it will take longer to deliver those measures, but it is also the case that there are not significant adverse impacts on health and quality of life which need to be avoided for the Outer Zone. The Applicant is applying the noise insulation scheme to this zone so as to mitigate and minimise adverse impacts on health and quality of life from noise experienced by those properties, but it is not the case that should those impacts arise before</p>

¹ [NRP - Public Aircraft Noise Viewer](#)

		the scheme measures have been delivered significant adverse impacts on health and quality of life will arise that policy would require are avoided.
NV.1.15	The Applicant	Can the Applicant explain why it cannot identify dwellings eligible as a result of total aviation noise, that is to say air and ground noise combined, based on calculations, rather than wait until measurement of ground noise have been made after the Proposed Development becomes operational?
		<p>Appendix B - Ground Noise Slower Transition Fleet Assessment of Supporting Noise and Vibration Technical Notes to Statements of Common Ground (Doc Ref. 10.13) provides an update to the extent of noise insulation to be required for ground noise based on predicted noise levels. It also explains the approach taken to insulation for air and ground noise including the following.</p> <p>Ground noise at Gatwick Airport is mitigated through operating procedures and a sizeable noise bund running around the northern perimeter of the airport, up to 12m high in places, and the serpentine wall noise barrier that can be seen around the eastern apron area. There is no apron or taxiing routes along the south side of the airfield. The main housing area is to the north, well screened by the noise bund and beyond Povey Cross Road. To the immediate east and west under the flight paths there is no housing. To the south there is mainly airport and commercial property with scattered housing on the far side of the Charlwood Road. To the northwest there is a single property and scattered properties before the village of Charlwood 700m from the nearest taxiway. Consequently, ground noise has not been a major concern to the local community in recent years. In the 10 years from the beginning of 2010 to the end of 2019, there was a total of 16 recorded noise complaints linked with ground noise. In contrast complaints from aircraft in flight, i.e. from aircraft in the air, peaked at 25,593 complaints in the 2019 year.</p>

		<p>The numbers of properties affected by ground noise is very small compared to Air Noise for which there are about 400 properties above SOAEL. It is for this reason that the Inner Zone Noise Insulation Scheme has been developed primarily for Air Noise. The few properties that are predicted to be significantly affected by ground noise and lie outside the Air Noise Inner Zone are listed in Section 5 of that report, and will be added to the NIS to ensure that significant effects on health and quality of life due to ground noise are avoided.</p> <p>The NIS will still provide for measurements if needed to further add properties to the scheme as a back up to the modelling to address the inevitable uncertainty with modelling, and in particular with additive ground and air noise levels.</p>
NV.1.16	The Applicant	<p>In terms of the initiation of the NIS for eligible dwellings can the Applicant explain why it is not proposing to identify all eligible dwellings and engage with occupiers and owners of those dwellings to promote the take up of the NIS?</p>
		<p>As referred to in our response to NV.1.14 above, we have taken account of further views on the NIS and ES Appendix 14.9.10 Noise Insulation Scheme Update Note [REP2-031] provides further details of the scheme. These include the commitment to contact all owners/occupiers of eligible properties including following up where any household requires assistance in understanding what is on offer.</p>
NV.1.17	The Applicant	<p>Can the Applicant set out any procedures that would be put in place as part of the NIS [APP-180] to ensure the required acoustic performance is maintained?</p>
		<p>ES Appendix 14.9.10 Noise Insulation Scheme Update Note [REP2-031] states the acoustic specification of the glazing and acoustic ventilators. Tenderers will be required to demonstrate compliance with these acoustic performances for both new and in-service products that will also be provided to the home owner with suitable guarantees. The Applicant</p>

		will audit the installation of the acoustic products as a sample of first home to receive the scheme. This commitment will be added to an update of the Noise Insulation Scheme [APP-180] to be submitted to the ExA.
NV.1.18	The Applicant	In relation to the schools NIS, can the Applicant confirm the process for a school to raise a concern and the timeframes involved. Can the Applicant also clarify how significant improvement of teaching conditions would be assessed to determine the eligibility of the school?
		<p>The process for schools to apply for consideration for the noise insulation scheme would open upon commencement of routine operations on the Northern Runway as part of dual runway operations, because it may not be possible to carry out the noise surveys to establish if acoustic treatments should be offered until the Northern Runway is in routine use. The Applicant will write to all qualifying schools. A description of the process will be added to the Noise Insulation Scheme confirming that the scheme would open upon commencement of routine operations on the Northern Runway as part of dual runway operations, with the aim of carrying out surveys within 1 year and any remedial works within 2 years.</p> <p>For any school applying for noise insulation, the Applicant will arrange an acoustic study to determine if remedial works are necessary and appropriate. The first stage will involve establishing if teaching areas are currently compromised by noise intrusion. This would involve surveys to compare internal noise levels with the standards set out in Building Bulletin 93, Acoustic design of schools: performance standards, 2015, such as the recommendation for aircraft or train noise to be no louder than 60 dB LA1, 30 minutes OR internal ambient noise levels to be no higher than 40 dB LAeq 30 minutes. Schools meeting the standards would not require improvement. The second stage would involve analysing the internal noise levels to establish whether aircraft noise was contributing to the exceedance of the preferred standards. Where aircraft noise was at least as loud as other external noise sources, the need</p>

		for remedial measures to be considered would be established. In these cases, measures to improve the internal noise environment would be identified where practicable. In many cases this is likely to involve improving ventilation to allow windows to remain closed in warmer weather, or it could include upgrading the acoustic performance of glazing.
NV.1.19	The Applicant	Can the Applicant set out the justification for not applying the schools NIS to nurseries or pre-schools?
		The Applicant acknowledges that some Nurseries and Pre-Schools do have teaching rooms that require low ambient noise conditions, as referred to in <i>Building Bulletin 93, Acoustic design of schools: performance standards, 2015</i> . The Noise Insulation Scheme [APP-180] will be adjusted so as to include Nurseries and Pre-Schools.
NV.1.20	The Applicant	Construction Noise and Vibration
		The CoCP [REP1-021] includes various topic-based Annexes [APP-083 to APP-087]. The Applicant is asked to consider including a noise and vibration management plan as an Annex.
		As explained in the noise and vibration section of the CoCP [APP-082] , the Section 61 applications to be made by the contractor once the final methods of working are available, to be agreed with the local planning authority, will in effect become site specific noise management plans at that time. Accordingly, it is not considered that a further noise and vibration management plan to re-explain the information in that section of the CoCP is required.